Welcome

On behalf of the Management Committee, it is our great pleasure to welcome you to Singapore for the IEEE International Magnetics Conference in Asia, INTERMAG 2018.

INTERMAG is the premier Conference on all aspects of applied magnetism. It has the tradition of bringing international researchers together, to discuss the latest developments in magnetism. With the aim of keeping that tradition and high standard, we have arranged the Conference program with a range of oral and poster presentations, invited talks and symposia, a tutorial session, two special evening sessions and exhibits. The presentation topics range from fundamental science to applied magnetism, including advances in magnetic recording, spintronics, energy and power technologies, biomagnetism, and the emerging fields of Internet-of-Things and smart living. All members of the international scientific community interested in new developments in magnetism and associated technologies are invited to attend INTERMAG 2018.

Singapore is located at the tip of the Malay Peninsula. Singapore's tropical climate welcomes both leisure and business travelers all year round. The island republic's excellent infrastructure enables visitors to enjoy its many sites and attractions in a safe, clean and green environment. This tiny island-state is also remarkably culturally diverse. Visitors can taste the foods of Chinatown or Little India, visit a historic mosque on Arab Street, stroll or cruise along the Singapore River, and enjoy the wildlife of the Singapore Zoo Night Safari or the Jurong Bird Park. Finish it off with fireworks and a beautiful view of the city from the Marina Bay Sands Hotel. We hope you will have the opportunity to explore Singapore during the Conference.

On behalf of the Management Committee of INTERMAG 2018, we wish all INTERMAG 2018 participants a fruitful and enjoyable stay in Singapore.

Sara Majetich
S. N. Piramanayagam (Prem)
Conference General Chairs
Contents

Welcome .................................................. F1
Venue and Map ........................................... F3
Transportation .......................................... F4
Registration ............................................ F5
Badge Policy ............................................ F6
Special Conference Events ......................... F7
Coffee Service and Bierstuben ..................... F7
Tutorial Session ....................................... F7
Symposia ................................................ F7
How to Get a Job ........................................ F8
Plenary Session and Award Ceremony ......... F9
Plenary Lecture ......................................... F10
Plenary Reception ..................................... F11
Meet the Experts Lunch ............................ F11
IEEE Magnetics Society Annual Meeting F12
The Future of Data Storage & MRAM..... F12
Women’s Networking Event ....................... F13
Next Generation Magneticians Network . F13
Sponsors ................................................. F13
Exhibits .................................................. F14
List of Exhibitors ...................................... F14
Wireless Access ........................................ F15
Speakers Practice Room ............................ F15
Oral Sessions ........................................... F15
Best Student Presentation Award .......... F16
Poster Sessions ....................................... F17
Best Poster Awards ................................ F17
Student Travel Grants ............................... F18
Additional Information .............................. F18
IEEE Magnetics Society ......................... F19
Joining the Magnetics Society ............... F19
Conference Management Committees .... F21
Publication Editors .................................. F22
Conference Local Support ......................... F22
Future Conferences ................................. F22
Program at a Glance ............................... F23
Detailed Program ..................................... 1
Author Index .......................................... 223
Venue and Map

The technical program and exhibits of INTERMAG 2018 are being held in Marina Bay Sands (MBS) Expo and Convention Centre. We wish to highlight to the participants that the Marina Bay Sands Hotel and Sands Expo and Convention Centre are located next to each other and that the Conference is held in the Sands Expo & Convention Centre.

The location of each session is based on the second letter of the session ID. (E.g. Session BF will be held in the Peony I room.)

KEY:
SP – Speaker practice room
Study – Quiet study area
Disc. – Discussion room (first come first served)
Office – Conference secretariat
MS – IEEE Magnetics Society office
Melati, Lotus – Committee meeting rooms
**Location**

Marina Bay Sands Expo & Convention Centre is located in the heart of Singapore's business and entertainment district. A convenient 20-minute ride from Changi Airport and in the heart of the central business district area, Marina Bay Sands is just minutes away from popular cultural and leisure spots like Chinatown, Little India and Orchard Road. Well-served by the transport system with a train station just at its doorstep, it has never been more convenient for you to experience Singapore.

**Transportation**

**Car and Taxi:**

Sands Expo & Convention Centre is situated at 10 Bayfront Avenue, and is also accessible by vehicle via Sheares Avenue. From Changi Airport, you can reach us in a 20-minute direct drive along the East Coast Parkway (ECP) expressway, which leads directly into Sheares Avenue across the Benjamin Sheares Bridge.

**MRT Train Services:**

Marina Bay Sands is linked directly to CE1/DT16 Bayfront Station on the Circle Line and Downtown Line of Singapore's Mass Rapid Transit (MRT) train system. MRT services to/from Bayfront Station operate daily from (approximately) 6:00 am to 12:00 am midnight.

Exits at Bayfront Station:

- **Exits C & D** - Connect to The Shoppes at Marina Bay Sands (1 minute walk), Sands Expo & Convention Centre (3 minute walk), the Hotel (5 minute walk), Sands SkyPark (10 minute walk), ArtScience Museum (10 minute walk), and Mastercard Theatre (10 minute walk). Signs direct the way to each location and other attractions at Marina Bay Sands.
- **Exit E** - Connects to Sands Expo & Convention Centre.

**Bus Services**

Marina Bay Sands is serviced by the following bus routes:

- **97 / 106 / 518 / 133 / 502** (every day)
- **97E / 502A / 518A** (every day except Sat, Sun & public holidays)
- **NR1 / NR6** (late night Fri, Sat & eve of public holidays)
Registration

All INTERMAG 2018 attendees, including invited speakers, must pay registration fees. Registration should be done in advance via the online system at https://goo.gl/1n9Cka. Incomplete or incorrect payments will be considered late and the onsite rates will be collected onsite.

Onsite registrations during the Conference will be at the onsite rates listed below. Onsite payments are by credit card or cash (SGD only).

<table>
<thead>
<tr>
<th>Onsite registration fee</th>
<th></th>
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<tbody>
<tr>
<td>Full Registration</td>
<td></td>
</tr>
<tr>
<td>IEEE Member</td>
<td>1000 SGD</td>
</tr>
<tr>
<td>Non-IEEE Member</td>
<td>1220 SGD</td>
</tr>
<tr>
<td>Student/Retiree/Life</td>
<td></td>
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<tr>
<td>IEEE Member</td>
<td>510 SGD</td>
</tr>
<tr>
<td>Non-IEEE Member</td>
<td>605 SGD</td>
</tr>
</tbody>
</table>

Student registrants should be prepared to show a confirmation of their student status (student ID card or similar) when they pick up their conference materials at the registration desk.

Lunch is provided each day (Tue-Fri) for each registered participant in the Exhibit/Poster Area (Roselle and Simpor II ballrooms)

Registration Cancellation Policy:

Cancellations of advanced registrations must be submitted in writing and received before 9:00 am GMT on Sunday, March 25, 2018. Refunds of the original payment, less a SGD 80 service fee, will be mailed to the original registrant following the Conference. Later cancellations will not be refunded.

For a registrant who has paid the registration fee in advance but cannot attend the Conference, attendee substitution can be made at any time, either online or at the Onsite Registration Desk. Onsite substitutes must bring authorization of their substitution in writing from the original registrant.
The Registration Desk will be located at Lotus Foyer on Level 4 of the Sands Expo & Convention Center. It will be open during the following hours:

- Monday, April 23: 2:00 pm – 6:00 pm
- Tuesday, April 24: 7:30 am – 6:00 pm
- Wednesday, April 25: 7:30 am – 6:00 pm
- Thursday, April 26: 7:30 am – 6:00 pm
- Friday, April 27: 7:30 am – 4:00 pm

Many thanks to Singulus Technologies AG for sponsoring registration lanyards.

Badge Policy

When you check in at the Registration Desk, you will receive a personalized name badge. It enables you to access all Conference areas. All attendees will be required to wear their name badges to enter the Technical Sessions, Exhibits and Special Conference Events.
Special Conference Events

Coffee Service and Bierstube

Coffee service will be available Tuesday through Friday mornings starting at 8:30am in the Poster and Exhibits Hall (Roselle/Simpan Ballroom).

Join your colleagues at the traditional Bierstube, which will take place on Tuesday and Thursday evenings from 5:00 pm - 6:00 pm in the Poster and Exhibits Hall.

Many thanks to Materion Corporation for partial sponsorship of the Bierstube.

Tutorial Session

Monday, April 23
3:30 pm - 5:45 pm

This session will present tutorials on recent advances in antiferromagnetic films and their applications. The first speaker will introduce antiferromagnetic materials in their film form. The second speaker will explain the detection of antiferromagnetic ordering using synchrotron radiation. The third speaker will discuss spintronic device applications of the antiferromagnetic films. The tutorials will not only be accessible to those with no background in the subjects, but they will also provide comprehensive and timely summaries to specialists in the field. The tutorial session is organized by the Education Committee of the IEEE Magnetics Society.

- Kevin O’Grady, University of York, UK
  "Characterisation of Antiferromagnets"

- Elke Arenholz, Lawrence Berkeley National Laboratory, USA
  "Making the Invisible Visible: Probing Antiferromagnetic Order in Novel Materials"

- Tomas Jungwirth, Academy of Sciences, Czech Republic & University of Nottingham, UK
  "Antiferromagnetic Devices"

Symposia

AA  Compensated Spintronics
BA  Synchrotron X-Ray and Neutron Sciences for Magnetism
CA  Skyrmions for the Future
DA  Magnetism in Biomedicine: Where Next?
EA  Novel Hard Magnetic Materials and Their Applications
EE  Symposium on recent advances and Future Challenges of Computational Magnetics
Special Evening Session

Tuesday, April 24
5:30 pm – 7:00 pm

Orchid I

HOW TO GET A JOB IN INDUSTRY,
ACADEMIA OR GOVERNMENT LABORATORY

Chairs: Usha Varsheny and Albrecht Jander

This special evening session will focus on jobs in magnetics research. The three panelists, with distinguished leadership positions in industry, academia and government laboratory, will provide perspectives and advice on how to prepare for, and apply to, research positions. An extended question-and-answer period will follow their presentations. Although this session is primarily intended for prospective and recent graduates, all conference attendees are encouraged to participate.

Panelists:

- **Dr. Steve Hwang,**
  Vice President of Product Development, Seagate Technology

- **Dr. Liesl Folks,**
  Dean, School of Engineering and Applied Sciences, University at Buffalo

- **Dr. Lucian Prejbeanu,**
  Executive Director, SPINTEC, CEA
Plenary Session and Award Ceremony

Wednesday, April 25
4:00 pm – 6:00 pm

Orchid I-II

Session Chairs: Sara Majetich and S. N. (Prem) Piramanayagam

Awards Chair: Burkard Hillebrands

IEEE Magnetics Society Achievement Award
Professor Roy Chantrell
For contributions to the theory of interacting spin systems and application to the understanding of magnetic recording media and ultrafast magnetization processes

IEEE Magnetics Society Early Career Award
Dr. Anjan Soumyanarayanan
For contribution to tailoring interfacial interactions to generate and manipulate room temperature topological spin structures

IEEE Magnetics Society Distinguished Service Award
Professor Kevin O’Grady
For advancing international participation and inclusive representation in the IEEE Magnetics Society

Newly elected Fellows of the IEEE

- Hideo Ohno, Tohoku University, for contributions to materials and device design for spintronics

2018 Magnetics Society Distinguished Lecturers

- Yoshichika Otani, University of Tokyo, “Spin Conversion Phenomena in Spintronics”
- Mitsuteru Inoue, Toyohashi University of Technology, “Magnetic Phase Interference in Artificial Magnetic Lattices: Functions and Applications to Optical, High-Frequency, and Spin Wave Devices”
- Can-Ming Hu, University of Manitoba, “Cavity Spintronics”
- Alison B. Flatau, University of Maryland, “Structural Magnetostrictive Alloys: From Flexible Sensors to Energy Harvesters and Magnetically Controlled Auxetics”
Plenary Lecture

Wednesday, April 25
5:00 pm – 6:00 pm

Orchid I-II

SPINTRONICS NANODEVICES

Professor Hideo Ohno
Tohoku University, Sendai, Japan

Abstract:
Development of spintronics nonvolatile nanodevices and their integration with CMOS circuits are critical to realize standby power free, low-power consumption, yet high performance integrated circuits for Internet-of-Things (IoT), high performance computing and artificial intelligence. Endurance and low supply-voltage operation make these spintronics device capable of being used in the place of current volatile working memories such as DRAM and SRAM and beyond. The magnetic tunnel junction (MTJ), a two-terminal nonvolatile spintronic device that can scale down to 20 nm with the perpendicular-easy-axis CoFeB-MgO system, is the device most widely employed for such a purpose. I will review the development of MTJs, and discuss about its ultimate scalability below 10 nm by showing MTJs with current induced switching and high thermal stability in the range of 4-8 nm. I will then describe the work on three-terminal devices that separate the write current path from the read current path. Here I focus on devices that utilize spin-orbit torque arising from structures involving heavy metals as well as from antiferromagnets; the latter is shown to operate as analog memory suitable for neuromorphic applications.

Biography:
Professor Hideo Ohno, is an internationally renowned physicist, recognized for his extensive work on spintronic devices. He currently serves as the director of the Research Institute of Electrical Communication and a vice president of Tohoku University. Professor Ohno has been selected to serve as president of Tohoku University starting in April 2018.

Appointed as professor at Tohoku University in 1994, Ohno holds B.S., M.S. and Ph.D. degrees from the University of Tokyo. He spent time as a graduate student at Cornell University in 1979 and was a visiting scientist at IBM T. J. Watson Research Center from 1988 to 1990. From 1982 to 1994 he was appointed as lecturer and then associate professor at Hokkaido University.

Professor Ohno has received the IBM Japan Science Award (1998), the IUPAP Magnetism Prize (2003), Japan Academy Prize (2005), Presidential Prize for Research Excellence,
Tohoku University (2005), Agilent Technologies Europhysics Prize (2005), Thomson Reuters Citation Laureate (2011), JSAP Outstanding Achievement Award (2012), and the IEEE David Sarnoff Award (2012). He was a distinguished lecturer for the IEEE Magnetics Society in 2009 and has recently been elevated to Fellow of the IEEE “for contributions to materials and device design for spintronics.”

**Plenary Reception**

**Wednesday, April 25, Sands Ballroom, Level 5**

6:15 pm – 7:45 pm

Invitation from Sara Majetich and S. N. (Prem) Piramanayagam, Conference General Chairs of INTERMAG 2018:

Following the Plenary Lecture, a Plenary Reception will be held for all registered participants of INTERMAG 2018. This reception is supported by the IEEE Magnetics Society, Singapore Tourism Board and Nanyang Technological University, Singapore. All registered participants are cordially invited to attend and celebrate the achievements of our award winners and to network with your colleagues. A Western/Chinese/Indian vegetarian buffet will be served. Accompanying guests have the option to buy a Reception Ticket at the Onsite Registration Desk no later than noon on Tuesday, April 24, 2018.

**Meet the Experts Lunch**

**Thursday, April 26**

12:00 – 1:30 pm

Student and post-doc participants of the Conference are invited to join experts in their field at lunch time on Thursday for informal discussion. Prior registration is mandatory. To see a list of available “experts” and to sign up for a table, please visit:

bit.ly/MeetTheExperts2018

This event is sponsored by Capres A/S and Evico Magnetics.
IEEE Magnetics Society Annual Meeting

Thursday, April 26
5:00 pm – 6:00 pm

Lotus Junior

This meeting is particularly open to all INTERMAG participants. Come to learn more about what the IEEE Magnetics Society is doing to support and strengthen the Magnetics Community. By joining the IEEE Magnetics Society, you become part of the world’s best-known magnetics organization and benefit of discounts on registration for conferences as well as educational, technical and other professional benefits. Your suggestions and feedback are most welcome! Beverage and light food will be provided.

Special Evening Session

Thursday, April 26
5:30 – 7:00 pm

Orchid I

PANEL DISCUSSION: THE FUTURE OF INFORMATION STORAGE AND MEMORY TECHNOLOGIES

Session Chair: Jingsheng Chen

This Special Evening Session features executives from the leading hard disk drive and memory companies discussing the state of the art and future directions of magnetic storage and memory technology. Each will present their vision and roadmap of technology development. What revolutionary approaches will extend the dominance of the hard disk in mass data storage? How and when will magnetic random access memory (MRAM) become competitive? What breakthroughs are still anticipated to keep these technologies growing at historic trends?

The session will be conducted as a panel discussion, with an extended question and answer period following the presentations of the panelists.

Panelists:

• Dr. Ed Gage
  Vice President, Seagate Research Group

• Dr. Thao A Nguyen
  Senior Vice President of Head Operation, Western Digital Corporation

• Dr. Danny Shum
  Fellow eNVM, Technology Development & Research, GLOBALFOUNDRIES Singapore
Women’s Networking Event
Thursday, April 26 Bayview Foyer
6:00 pm – 7:30 pm (behind Simpor II)
As has been the tradition, the IEEE Magnetics Society will be sponsoring a Networking Reception for women in the magnetism community. This is a great opportunity to become acquainted with other women in the profession and to discuss a range of topics including leadership, work-life balance, and professional development. At the reception you will also have the opportunity to form small dinner groups, build new friendships and expand your professional network. All graduate students, researchers and retirees are encouraged to attend. For questions, please contact Pallavi Dhagat (dhagat@oregonstate.edu).

Next Generation Magneticicians Network
Thursday, April 26 Lotus Junior
7:00 pm – 8:30 pm
All students at the graduate and post-doctoral level are invited for a social event featuring coffee and snacks hosted by the Next Generation Magneticicians Group! This initiative aims to promote networking among young researchers and provide resources for career development. Come find out a little more about us and help to shape the future of this organization. For more information, please contact Joachim Gräfe (graefe@is.mpg.de).

Event is sponsored by

Sponsors
The INTERMAG 2018 Conference Committee would like to gratefully thank the following sponsors (in alphabetical order):

Gold sponsor:
Western Digital

Silver sponsors:
Seagate Technology
Tokyo Electron Ltd

Other sponsors and partner:
CAPRES – Meet the Experts
evico magnetics GmbH – Meet the Experts
Globalfoundries Singapore – Young Professionals Network
Materion – Bierstube on Tuesday
Singulus Technologies AG – Lanyards
Tokyo Electron Ltd – Best Poster Award
Anexus – Best Poster Award
Western Digital – Art in Magnetism
Exhibits
Suppliers of instrumentation, materials, process tools, and other products and services will exhibit their latest offerings for professionals in magnetism and associated technologies. The exhibit will be located in Simpor/Roselle Ballrooms adjacent to the poster sessions. The Exhibit Hall will also be the site of coffee service, Bierstube etc.

Exhibit Opening Hours

- Monday, April 23: 6:00 pm – 7:00 pm
- Tuesday, April 24: 8:30 am – 6:00 pm
- Wednesday, April 25: 8:30 am – 4:00 pm
- Thursday, April 26: 8:30 am – 6:00 pm
- Friday, April 27: 8:30 am – 4:30 pm

List of Exhibitors

(in alphabetical order)

- aNexus
- Bartington Instruments
- CAPRES
- Evatec AG
- GMW Associates
- Hakuto Singapore Pte Ltd
- Hprobe
- Intvac Inc
- IOP Publishing
- Kurt J. Lesker
- Lake Shore Cryotronics
- Materion
- Metrolab Technology SA
- MicroSense, LLC
- MicroXact Inc.
- NanoScan
- Neoark Corporation
- OHT Inc.
- Premier Solutions
- Quantum Design
- Raith Nanofabrication
- Singulus Technologies AG
- Scia Systems GmbH
- SmartTip BV
- Springer Nature
- ULVAC Singapore
- Zurich Instruments

The INTERMAG 2018 Management Committee would like to acknowledge and thank participation of the exhibitors.
Wireless Access

Wireless access will be available in the Conference area including the Poster/Exhibit Hall. An access code and relevant instructions will be posted onsite. The speed of connection serves basic purposes, such as emailing, and may be limited due to the high number of expected attendees.

Speakers Practice Room

Speakers may use the Speaker Practice Room to practice their presentation and test their computer connections with the in-house equipment prior to their individual presentations. Audiovisual equipment (LCD projector and screen) will be available for speakers to use from Monday through Friday. Speakers are encouraged to use this facility to practice their presentation, either alone or with colleagues.

Oral Sessions

All oral sessions will be held on Level 4 of the Sands Expo & Convention Center from 9:00 am to 12:00 pm in the morning and 2:00 pm to 5:00 pm in the afternoon on Tuesday through Friday (except Wednesday, when the abbreviated afternoon session will run from 2:00 pm – 4:00 pm) The detailed order and locations of talks are listed in this program book, also accessible via the Conference web and mobile apps.

Contributed oral presentations are 15 minutes per speaker (including 3 minutes for questions), while invited presentations are 30 minutes per speaker (including 5 minutes for questions).

All oral presentations are to be made using the speaker’s own laptop. The Conference will provide the LCD projector and screen, laser pointer, and microphone in each oral session room. The display aspect ratio is 4:3 (not widescreen). There will also be a multi-port switchbox in each session room so that speakers can connect their laptops during the question period of the previous speaker.

Only standard PC-style VGA connections to the LCD projector will be supplied (not HDMI). Presenting authors must supply any adaptor required for their computer. In particular, Mac OS users must make sure that they have the correct adaptor plug.

Presenters are encouraged to test their connections and display settings in the Speaker Practice Room (see venue map) prior to their presentations.
Speakers should check in with the Session Chair at least five minutes before the scheduled start of the session. Session Chairs have the responsibility of reporting "No-Shows" to the Publication Committee. Papers associated with no-show presentations will not be published in the special INTERMAG issue of the IEEE Transactions on Magnetics.

**IEEE Magnetics Society Best Student Presentation Award**

Following the establishment of this prestigious prize by the IEEE Magnetics Society in 2008, the selection of the six finalists for INTERMAG 2018 has been made after full review of all students entering the competition. This selection has been based on the quality and likely impact of the work, with preference given to students who are within one year of graduation and who are, and whose advisors are, current members of the IEEE Magnetics Society. The six finalists will receive a cash award from the Magnetics Society as well as recognition for their achievement. The eventual winner will be selected by a transnational panel of scientists who will assess each presentation according to the following criteria:

1. The quality/impact of the work
2. The student's contribution/involvement in the work
3. The quality of student's presentation

Each of the criteria will make an equal contribution to the assessment. The panel evaluation process will be overseen by the Chair of the IEEE Magnetics Society Education Committee and the Chair of the Honors and Awards Committee. The award will be made to the student achieving the highest overall ranking in the three criteria.

The six finalists of INTERMAG 2018 are:

- **Jérémy Létang**  
  AE-01 (Tuesday, 09:00, Roselle II)

- **Hiroki Taniguchi**  
  AD-03 (Tuesday, 09:30, Peony IV)

- **Mohammad Zahedinejad**  
  Al-11 (Tuesday, 11:45, Orchid II)

- **Mario Fratzl**  
  BC-01 (Tuesday, 14:00, Orchid IV)

- **Dédalo Sanz-Hernández**  
  BF-05 (Tuesday, 15:00, Peony I)

- **Xueying Zhang**  
  CD-03 (Wednesday, 09:30, Peony IV)
Poster Sessions

All poster sessions will be held in the Simpor/Roselle Ballroom on Level 4 of the Sands Expo & Convention Center. Posters will be displayed from 8:30 am - 11:30 am for morning sessions, and 1:30 pm - 4:30 pm for afternoon sessions. Posters should be set up at least 15 minutes before the session starts and must be removed by the authors promptly at the end of their session. Posters not removed will be discarded.

The maximum poster size is 0.85 meters wide by 1.2 meters high (33 inches wide by 46 inches high). You must include the title and authors on the poster. The Conference provides a small sign designating the paper to be posted on each board and adhesive strips for attaching your poster to the board.

Poster presentations will consist of well-prepared visual materials about the work posted on a designated board. An author of the digest must be available to present details and answer questions during the selected poster session times. If a poster is posted but none of the authors is present, the Session Chairs will count the presentation as a “No-Show”. Papers associated with no-show presentations will not be published in the special INTERMAG issue of the IEEE Transactions on Magnetics.

Best Poster Awards

Best Poster Awards will be given to recognize excellence in research and presentation. There will be one award made for each morning and afternoon session of the Conference. The awards will be made in the last hour of each poster session. The award consists of a SGD 100 cash prize and an award certificate. A ribbon will also be attached to the winning posters. Winning posters will be prominently displayed throughout the remainder of the Conference.

All posters will be eligible for nomination for this award provided that they meet the requirements and guidelines for poster presentations. Selections will be based on the level of the research, quality of the poster, and clarity of the presentation.

Nominations will be made by the individual Session Chairs. The final decision will be made by the Poster Award Committee after reviewing the nominated posters.
Student Travel Grants

The IEEE Magnetics Society awards travel grants of up to $1000 each to a limited number of students wishing to attend INTERMAG 2018. These grants are intended to partially offset travel costs. Support is for current graduate students only. Post-doctoral workers and undergraduate students are ineligible. Students who have previously received travel support from the Magnetics Society are also ineligible.

Preference is given to student members of the Magnetics Society. Preference is also given to students nearing completion of their studies and presenting conference papers. The student’s supervisor must also be a member of the Magnetics Society. The student’s supervisor must write a letter of endorsement for the applicant. A second letter of endorsement from a full member of the Magnetics Society is also required.

Travel grants are a reimbursement for actual expenses. Thus, the students must attend the Conference and submit receipts to the Student Travel Coordinator, which then are processed and reimbursed by IEEE. Reimbursement will be made at the Conference.

Shortly after the Conference, grant recipients must submit a short account of their experience for possible inclusion in the IEEE Magnetics Society newsletter.

Additional Information

Complete and up-to-date Conference information can be found at:
www.intermag2018.com

The Conference language is English.

Camera, Cell Phone and Video Recording Policy

By registering for this meeting, all attendees acknowledge that they may be photographed by Conference personnel while at events, and that those photos may be used for promotional purposes, in Conference publications and websites, and on social media sites. Any recording of sessions (audio, video, still photography, etc.) intended for personal use, distribution, publication, or copyright is strictly prohibited. Attendees violating this policy may be asked to leave the session.
IEEE Magnetics Society

President MANUEL VAZQUEZ
Vice President PALLAVI DHAGAT
Secretary/Treasurer MASAHIRO YAMAGUCHI
Past-President BRUCE TERRIS

Elected IEEE Magnetics Society Administrative Committee Members

Terms expiring December 31, 2018: K. Gao; G. Ju; D. Jiles; O. Kazakova; V. Mazaric; K. Nakagawa; M. Pasquale; and R. Stamps.

Terms expiring December 31, 2019: A. Adeyeye; D. Altbir; Y. Kubota; C-H. Lai; S. Mangin; M. Ruehrig; R. Sommer; and J. Sykulski.

Terms expiring December 31, 2020: C. Dennis; P. Fischer; S. Greaves; M. Klaui; J. Lau; H. Nembach; T. Ono; and T. Thomson.

Appointed Committee Chairs: P. Andrei; O. Chubykalo-Fesenko; B. Hillebrands; A. Hirohata; L. Lewis; P.W.T. Pong; R. Schaefer; B. Stadler; B. Terris; D. Wei; and M. Wu.

Other Appointed Members: G. Hatch, P. Kabos, H. Muraoka and T. McKinnon

Council Representatives: R. Goldfarb and A. Zeller (Supercond.); I. Nlebedim (Engagement with Young Professionals); J. Kosel (Sensors); J-P Wang and J.A. Incorvia (Nanotechnology).

Joining the Magnetics Society

By joining the IEEE Magnetics Society, you become a part of the world’s best-known magnetics organization.

• You gain access to local Chapter events, technical activities and can sponsor students for Conference travel grants.
• You will be recognized as being part of the established and vibrant IEEE technical community
• And you will receive a large discount on Conference registrations, including INTERMAG 2018.

Joining is easy: Go to www.ieeemagnetics.org and follow the links prior to registering for the Conference.

Whether you are a member or not, we cordially invite you to stop by our Membership Table to share with us your experiences and to learn about all the advantages that the IEEE Magnetics Society offers to its members.

We are looking forward to meeting you at INTERMAG 2018.
Social Media
The IEEE Magnetics Society and its sponsored Conferences have an active and wide social media presence.

**IEEE Magnetics Society**
Facebook Page: @ieemagsoc  
https://www.facebook.com/IEEEMagSoc/

Facebook Group  
https://www.facebook.com/groups/IEEEMagSoc/

Twitter: @IEEEMagSoc

Linkedin Page:  
https://www.linkedin.com/company/ieee-magnetics-society/  
Linkedin Group:  
https://www.linkedin.com/groups/3835192

**Intermag Conference**
Facebook Page: @Intermagconf  
https://www.facebook.com/Intermagconf/

Twitter: @Intermagconf

**Conference on Magnetism and Magnetic Materials**
Facebook Page: @MMMConference  
https://www.facebook.com/MMMConference/

Twitter: @MMMConf
Conference Management Committee

General Conference Chairs  Sara Majetich
Treasurers  S. N. (Prem) Piramanayagam
Program Co-Chairs  Mark Kief
Program Co-Chairs  Wen Siang Lew
Treasurers  Jingsheng Chen
Treasurers  Albrecht Jander
Treasurers  Shigeki Nakagawa
Treasurers  Johannes Paulides
Local Chair  Raju V. Ramanujan
Publication Chairs  Petru Andrei
Publicity Chair  Dan Wei
Publicity Chair  Philip Pong
Awards Chair  Burkard Hillebrands
Exhibition and Sponsorship Co-Chairs  Atsufumi Hirohata
Exhibition and Sponsorship Co-Chairs  Young Keun Kim
Exhibition and Sponsorship Co-Chairs  Hyunsoo Yang
Best Poster Awards  Vivian Ng
Student Travel Award  Adekunle Adeyeye
IEEE Representative  Rudolf Schaefer

Program Committee Members

INTERMAG 2018 is being held in Singapore for the first time and we would like to thank various organizations and people for their help in making this happen. INTERMAG 2018 has greatly benefited from the financial support of Singapore Exhibitions and Conventions Beruau (SECB) and Nanyang Technological University (NTU), Singapore. IEEE Magnetics Singapore Chapter has been helpful right from the beginning. We would like to particularly thank several students who submitted an entry for the logo design competition. The winners, Tanmay Dutta and Yu Jiawei, were helpful even at the later stages in the design of cover page for program book. The experience and support of local Conference organizers, Meeting Matters International has been very useful.

Future Conferences

21st International Conference on Magnetism (ICM 2018)
July 15-20, 2018, San Francisco, USA

2019 Joint MMM/Intermag Conference
January 14-18, 2019, Washington DC, USA

2019 Conference on Magnetism and Magnetic Materials
November 4-8, 2019, Las Vegas, USA

2020 Intermag Conference
May 4-8, 2020, Montreal, Canada

2020 Conference on Magnetism and Magnetic Materials
November 16-20, 2020, Fort Lauderdale, USA

2021 Intermag Conference
April 26-30, 2021, Lyon, France

2022 Joint MMM/Intermag Conference, January 14-18, 2022, New Orleans, USA

2022 Conference on Magnetism and Magnetic Materials
October 31-Nov. 4, 2022, Minneapolis, USA

2023 Conference on Magnetism and Magnetic Materials
October 30-November 3, 2023, Dallas, USA
## Program at a Glance

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<td>PL Awards Ceremony and Plenary Talk</td>
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<td>EB Magneto-elastic and Magneto-optic Materials</td>
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**Tuesday Evening, April 24**

**Wednesday Morning, April 25**

**Wednesday Afternoon, April 25**

**Thursday Morning, April 26**
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<td>EE Recent Advances and Future Challenges of Computational Magnetics</td>
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<td>EG Shielding, Electromagnetic Compatibility, Motors and Generators I</td>
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<td>EH Magnetic Semiconductors and Oxides</td>
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<td>EQ Ferrite Materials and Applications</td>
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<td>ES Magnetic Gears</td>
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<td>YA Panel Discussion: The Future of Memory Technologies</td>
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**Thursday Afternoon, April 26**

**Thursday Evening, April 26**
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<td>Exchange Coupling, Superconductivity and Electronic Structures II</td>
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<td>Simpor/ Roselle</td>
<td>Modelling of Machines IV</td>
<td>Poster</td>
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<td>8:30</td>
<td>Simpor/ Roselle</td>
<td>Ultrathin Films and Surface Effects I</td>
<td>Poster</td>
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<td>2:00</td>
<td>Orchid I</td>
<td>Atoms, Molecules &amp; Interfaces for Spin Quantum Engineering</td>
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<td>2:00</td>
<td>Orchid III</td>
<td>Hard Magnets II</td>
<td>Oral</td>
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<td>2:00</td>
<td>Orchid IV</td>
<td>Magnetic Tunnel Junctions and STT-MRAM</td>
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<td>2:00</td>
<td>Peony IV</td>
<td>Spin Injection and Transport</td>
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<td>Roselle I</td>
<td>Dynamics of Skyrmions</td>
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<td>Roselle II</td>
<td>Ultrathin Films and Surface Effects II</td>
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<td>2:00</td>
<td>Peony III</td>
<td>Permanent Magnet and Reluctance Machines VII</td>
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<td>2:00</td>
<td>Peony II</td>
<td>Hysteresis Modelling II</td>
<td>Oral</td>
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<td>2:00</td>
<td>Orchid II</td>
<td>Transformers and Inductors: High Frequency Effects</td>
<td>Oral</td>
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<td>1:30</td>
<td>Simpor/ Roselle</td>
<td>Ab-initio Calculations</td>
<td>Poster</td>
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<td>1:30</td>
<td>Simpor/ Roselle</td>
<td>Analysis and Optimisation of Electrical Machines II</td>
<td>Poster</td>
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<td>1:30</td>
<td>Simpor/ Roselle</td>
<td>Energy Harvesters and Generators II</td>
<td>Poster</td>
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<td>1:30</td>
<td>Simpor/ Roselle</td>
<td>Shielding, Electromagn. Compatibility, Motors &amp; Generators II</td>
<td>Poster</td>
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<td>1:30</td>
<td>Simpor/ Roselle</td>
<td>Micromagnetics II</td>
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<td>1:30</td>
<td>Simpor/ Roselle</td>
<td>Permanent Magnet and Reluctance Machines VI</td>
<td>Poster</td>
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<td>1:30</td>
<td>Simpor/ Roselle</td>
<td>Recording Systems: Coding and Head-Disk Interface</td>
<td>Poster</td>
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<td>1:30</td>
<td>Roselle</td>
<td>Magneto-caloric Materials II</td>
<td>Poster</td>
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<td>1:30</td>
<td>Simpor/ Roselle</td>
<td>Power Transformers</td>
<td>Poster</td>
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Session TU

TUTORIAL ON ANTIFERROMAGNETIC SPINTRONICS
Atsufumi Hirohata, Chair
University of York, York, United Kingdom

3:30

TU-01. Characterisation of Antiferromagnets. (Invited) K. O’Grady¹
and G. Vallejo-Fernandez¹. ¹University of York, York, United Kingdom

4:15

TU-02. Making the Invisible Visible: Probing Antiferromagnetic Order in Novel Materials. (Invited) E. Arenholz¹,²
¹Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA, United States; ²Material Sciences and Engineering, University of California, Berkeley, CA, United States

5:00

TU-03. Antiferromagnetic Devices. (Invited) T. Jungwirth¹,²
¹Institute of Physics, Academy of Sciences of the Czech Republic, Praha, Czechia; ²School of Physics and Astronomy, University of Nottingham, Nottingham, United Kingdom

Tuesday ORCHID I

MORNING
9:00

Session AA

SYMPOSIUM ON COMPENSATED SPINTRONICS
Michael Coey, Chair
Trinity College Dublin, Dublin, Ireland

9:00

AA-01. Compensated ferromagnetic Heusler compounds for antiferromagnetic spintronics. (Invited) C. Felser¹, G. Fecher¹, R. Stinshoff¹, A. Nayak¹ and M. Coey²
¹Solid State Chemistry, Max Planck Institute for Chemical Physics of Solids, Dresden, Germany; ²Physics, Trinity College Dublin, Dublin, Ireland

9:30

AA-02. New functionality in half-metallic Mn₆Ru₆Ga close to compensation. (Invited) Y. Lau¹,²
¹Department of Physics, The University of Tokyo, Tokyo, Japan; ²National Institute for Materials Science (NIMS), Tsukuba, Japan
10:00

AA-03. Ultrafast spin dynamics in antiferromagnets. *(Invited)*
O. Gomonay\(^1\), T. Jungwirth\(^2\) and J. Sinova\(^{1,2}\) \(^1\). Institute of physics, Johannes Gutenberg University, Mainz, Germany; \(^2\). Institute of Physics ASCR, Praha, Czechia

10:30

AA-04. Electrical detection of reversed antiferromagnetic states switched by unidirectional current pulses. *(Invited)*
J. Godinho\(^{1,2}\), H. Reichlova\(^1\), D. Kriegner\(^{1,2}\), K. Olejnik\(^1\), Z. Soban\(^1\), V. Novak\(^1\), R. Otxoa\(^2\), P. Roy\(^1\), T. Jungwirth\(^{1,4}\) and J. Wunderlich\(^{1,3}\) \(^1\). Institute of Physics ASCR, Prague, Czechia; \(^2\). Faculty of Mathematics and Physics, Charles University, Prague, Czechia; \(^3\). Hitachi Cambridge Laboratory, Hitachi Europe LTD, Cambridge, United Kingdom; \(^4\). School of Physics and Astronomy, University of Nottingham, Nottingham, United Kingdom

11:00

AA-05. Spin Current Generation, Detection, and Transport with Antiferromagnets. *(Invited)*
Z. Wei\(^{1,2}\), M. Jungfleisch\(^{1,3}\), W. Jiang\(^{1,4}\), H. Saglam\(^{1,5}\), F. Freimuth\(^6\), J. Sklenar\(^{1,7}\), J. Pearson\(^1\), J. Ketterson\(^7\), Y. Mokrousov\(^6\) and A. Hoffmann\(^1\) \(^1\). Materials Science Division, Argonne National Laboratory, Lemont, IL, United States; \(^2\). Department of Physics, Oakland University, Rochester, MI, United States; \(^3\). Physics Department, University of Delaware, Newark, DE, United States; \(^4\). State Key Laboratory of Low-Dimensional Quantum Physics, and Department of Physics, Tsinghua University, Beijing, China; \(^5\). Department of Physics, Illinois Institute of Technology, Chicago, IL, United States; \(^6\). Peter Grünberg Institut and Institute for Advanced Simulation, Forschungszentrum Jülich, Jülich, Germany; \(^7\). Department of Physics and Astronomy, Northwestern University, Evanston, IL, United States

11:30

AA-06. Spin Transport in Speromagnets: Disordered Spintronic Materials with Antiferromagnetic Correlations. *(Invited)*
B.L. Zink\(^1\) \(^1\). Physics & Astronomy, University of Denver, Denver, CO, United States

TUESDAY MORNING 9:00

Session AB

RARE EARTH TRANSITION METAL BORIDES I

Jinbo Yang, Co-Chair
Peking University, Beijing, China
Weibin Cui, Co-Chair
Northeastern University, Shenyang, China

9:00

AB-01. Electronic states and magnetic properties around the grain boundary in Nd-Fe-B sintered magnets studied by first-principles calculations. Y. Tatetsu\(^1\) and Y. Gohda\(^1\) \(^1\). Department of Materials Science and Engineering, Tokyo Institute of Technology, Yokohama, Japan
AB-02. A novel approach of substitution of Ce for Nd in preparing \( R_2Fe_{14}B \) nanocrystalline magnets with high coercivity. L. Zha\(^1\), Z. Liu\(^1\), G. Tian\(^1\), K. Li\(^1\), M. Xue\(^1\), Z. Shao\(^1\), H. Zhao\(^1\), Y. Zhang\(^1\), W. Yang\(^1\), Y. Lai\(^1\), G. Qiao\(^1\), X. Li\(^1\), L.S. Ding\(^1\), S. Liu\(^1\), H. Du\(^1\), C. Wang\(^1\), J. Han\(^1\), Y. Yang\(^1\) and J. Yang\(^{1,2}\)

1. State Key Laboratory for Mesoscopic Physics, School of Physics, Beijing, China; 2. Collaborative Innovation Center of Quantum Matter, Beijing, China

AB-03. Magnetic performance change of multi-main-phase Nd-Ce-Fe-B magnets by diffusing (Nd, Pr)\( H_x \). W. Zhang\(^1\), T. Ma\(^1\), B. Peng\(^1\) and M. Yan\(^1\)

1. School of Materials Science and Engineering, Zhejiang University, Hangzhou, China

AB-04. Coercivity enhancement of multi-main-phase Ce-Fe-B magnets by spark plasma sintered technique and dual alloy method. Q. Jiang\(^1\), W. Lei\(^1\), S. Rehman\(^1\), Q. Zeng\(^1\), L. He\(^1\), X. Hu\(^1\), L. Zhang\(^1\), M. Zhong\(^1\), S. Ma\(^1\), W. Cui\(^2\) and Z. Zhong\(^1\)

1. Jiangxi University of Science and Technology, Ganzhou, China; 2. Northeast University, Shenyang, China

AB-05. Nd-Fe-B films with perpendicular magnetic anisotropy and extremely large room temperature coercivity. C. Ma\(^1\), S. Wang\(^1\), A. Morisako\(^1\), S. Piramanayagam\(^2\) and X. Liu\(^1\)

1. Faculty of Engineering, Shinshu University, Nagano, Japan; 2. School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore, Singapore

AB-06. Development of non-rare earth grain boundary diffusion process for Nd-Fe-B permanent magnets. Z. Liu\(^1\), Q. Zhou\(^1\), H. Zeng\(^1\), H. Yu\(^1\), X. Zhong\(^1\) and X. Che\(^1\)

1. School of Materials Science and Engineering, South China University of Technology, Guangzhou, China

AB-07. Low spin reorientation transition temperature, high coercivity, Nd\(_2(Fe,Co,Cr)_{14}B_2\) based hard magnetic nanoparticles. V. Chaudhary\(^1\), Y. Zhong\(^1\), H. Parmar\(^1\), X. Tan\(^1\) and R.V. Ramanujan\(^1\)

1. Nanyang Technological University, Singapore, Singapore

AB-08. Effect of impurities on magnetic properties in Nd-Fe-B particles synthesized by reduction-diffusion process. D. Kim\(^{1,2}\), V. Galkin\(^{1,2}\) and K. Haider\(^{1,2}\)


Tuesday
AB-09. Coercivity enhancement of hot-pressed magnet prepared by HDDR Nd–Fe–B powders using Pr-Cu eutectic alloys diffusion. T. Song¹, X. Tang¹, W. Yin¹, R. Chen¹ and A. Yan¹
1. Ningbo Institute of Industrial Technology, Chinese Academy of Sciences, Ningbo, China

AB-10. Corrosion of Co,Al-alloyed NdFeB magnetic nanostructures processed by microwave synthesis. H. Parmar¹, X. Tan¹, Y. Zhong¹, V. Chaudhary¹, D. Peng¹, Y. Huang¹ and R.V. Ramanujan¹ 1. Nanyang Technological University, Singapore, Singapore

AB-11. Mechanism for the enhancement of magnetic properties of Nd-Fe-B, after the addition of Pr, Dy and Tb. K. Haider¹,², V. Galkin¹,², Y. Kang¹ and D. Kim¹²

AB-12. Magnetic Properties of NdFeB Alloys Obtained by Gas Atomization Technique. G. Sarriegui¹,², J.M. Martín¹,², M. Ipatov³, A.P. Zhukov⁴,⁵ and J. Gonzalez⁵
1. Materials and Manufacturing, CEIT-IK4, San Sebastián, Spain; 2. Tecnun (University of Navarra), San Sebastián, Spain; 3. SgiKER (Magnetic Measurements), University of the Basque Country, San Sebastián, Spain; 4. IKERBASQUE Foundation, Bilbao, Spain; 5. Department Materials Physics, Faculty of Chemistry, University of the Basque Country, San Sebastián, Spain

TUESDAY ORCHID IV
MORNING
9:00

Session AC
MICROSCOPY, IMAGING AND CHARACTERIZATION I
Xiaoyan Zhong, Chair
Tsinghua University, Beijing, China

9:00

AC-01. Quantitative magnetic measurement by electron magnetic chiral dichroism with high spatial resolution in the transmission electron microscope. (Invited) J. Zhu¹ and D. Song¹
1. Tsinghua University, Beijing, China
AC-02. Stable skyrmion states at room temperature confined in corrals of artificial surface pits fabricated by a focused electron beam. T. Matsunuma, Y. So, Y. Kohno, Y. Ikuhara, and N. Shibata. 1. The University of Tokyo, Tokyo, Japan; 2. Akita University, Akita, Japan; 3. JEOL, Ltd., Tokyo, Japan; 4. Japan Fine Ceramic Center, Nagoya, Japan

AC-03. Tuning Magnetic Domains with Ion-beam Irradiation in Co/Pd Multilayer. A. Talapatra, A. Chelvane, C. Günther, S. Eisebitt, T. Shibayama, and J. Mohanty. 1. Physics, Indian Institute of Technology Hyderabad, Hyderabad, India; 2. Defence Metallurgical Research Laboratory, Hyderabad, India; 3. Technical University Berlin, Berlin, Germany; 4. Max Born Institute, Berlin, Germany; 5. Hokkaido University, Sapporo, Japan

AC-04. Directly observed dynamics of distorted vortex cores including asymmetric Bloch walls utilizing soft X-ray microscopy. M. Im, H. Han, M. Jung, P. Fischer, J. Hong, and K. Lee. 1. LBNL, Berkeley, CA, United States; 2. UNIST, Ulsan, The Republic of Korea; 3. Daegu Gyeongbuk Institute of Science & Technology (DGIST), DAEGU, The Republic of Korea


AC-06. Off-axis electron holography for the quantitative study of magnetic properties of nanostructures: from the single nanomagnet to the complex device. (Invited) C. Gatel, B. Warot-Fonrose, M. Casanove, A. Masseboeuf, N. Biziere, F.B. Bonilla, L. Lacroix, A. Meffre, and T. Blon. 1. CEMES, CNRS, University of Toulouse, Toulouse, France; 2. Laboratoire de Physique et Chimie des Nano-objets - INSA, Toulouse, France

AC-07. Atomic-plane resolved magnetic circular dichroism by transmitted electrons. Z. Wang and X. Zhong. 1. School of Materials Science and Technology, Tsinghua University, Beijing, China
11:15
AC-08. Effect of annealing on the structural and magnetic properties of CoMnSi investigated by X-ray diffraction and X-ray absorption fine structure measurements. R. Kou1,2, J. Gao3, Y. Ren4, S. Heald3, B. Fisher3 and C. Sun4. 1. Argonne National Laboratory, Argonne, IL, United States; 2. Key Laboratory of Electromagnetic Processing of Materials (Ministry of Education), Northeastern University, Shenyang, China

11:30
AC-09. Spatially resolved investigation of all optical magnetization switching in TbFe alloys. M.A. Mawass1, A. Arora1,2, O. Sandig3, C. Luo2, A.A. Ünal4, F. Radu3, S. Valencia1 and F. Kronast1. 1. Department Materials for Green Spintronics, Helmholtz-Zentrum Berlin für Materialien und Energie, Berlin, Germany; 2. Department of Physics, University of Regensburg, Regensburg, Germany; 3. Institut für Experimentalphysik, Freie Universität Berlin, Berlin, Germany; 4. Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy, Berlin, Germany; 5. Institut für Physik und Astronomie, Universität Potsdam, Potsdam, Germany

11:45
AC-10. A Magnetic Field Camera for Real-Time Subsurface Imaging Applications. A.B. Suksmono1,2, D. Danudirdjo1, R.P. Prastio1, A.D. Setiawan3 and D. Rahmawati1. 1. School of Electrical Engineering and Informatics, Institut Teknologi Bandung, Bandung, Indonesia; 2. ITB Research Center on ICT (PPTIK-ITB), Institut Teknologi Bandung, Bandung, Indonesia; 3. School of Electrical Engineering, Telkom University, Bandung, Indonesia

TUESDAY MORNING
9:00
Session AD
SPIN-ORBITRONICS I
Wanjun Jiang, Chair
Tsinghua University, Beijing, China

9:00
AD-01. Modulated spin orbit torque in a Pt/Co/Pt/YIG multilayer by nonequilibrium proximity effect. Q. Liu1, K. Meng1, X. Xu1, J. Miao1, Y. Wu1, J. Chen1 and Y. Jiang1. 1. School of Materials Science and Engineering, University of Science and Technology Beijing, Beijing, China

9:15
AD-02. Spin orbit torque and topological Hall effect in MnX(X=Ga or Al)/heavy metal bilayers. K. Meng1, J. Zhao2 and Y. Jiang1. 1. University of Science and Technology Beijing, Beijing, China; 2. Institute of Semiconductors Chinese Academy of Sciences, Beijing, China
AD-03. Strong suppression of spin Hall effects induced by spin fluctuations. H. Taniguchi1, T. Arakawa1, T. Taniguchi1, Y. Niimi1,2 and K. Kobayashi1,2. 1. Graduate School of Science, Osaka University, Toyonaka, Japan; 2. Center for Spintronics Research Network, Osaka University, Toyonaka, Japan

AD-04. Symmetry and magnitude of intrinsic spin-orbit torques in the half-Heusler alloy PtMnSb. J. Mendil1, J. Krieß2, P. Dao1, C. Avci1, M.H. Aguirre1, K. Rott2, J. Schmalhorst2, F. Freimuth4, G. Reiss5, T. Kuschel2 and P. Gambardella1. 1. Department of Materials, ETH Zurich, Zurich, Switzerland; 2. Center for Spintronic Materials and Devices, Department of Physics, Bielefeld University, Bielefeld, Germany; 3. Instituto de Nanociencia de Aragon & Laboratorio de Microscopias Avanzadas, Dpto. de Fisica de Materia Condensada, Universidad de Zaragoza, Zaragoza, Spain; 4. Peter Grünberg Institut and Institute for Advanced Simulation, Forschungszentrum Julich and JARA, Julich, Germany; 5. Massachusetts Institute of Technology, Materials Science and Engineering, Cambridge, MA, United States

AD-05. Anomalous Hall effect in fully compensated half-metallic Mn$_x$Ru$_y$Ga thin films. (Invited) C. Fowley1, K. Rode1, Y. Lau2, N. Thiyyagarajan2, D. Betto1, K. Borisov2, G. Atcheson2, E. Kampert1, Z. Wang1, Y. Yuan1, S. Zhou1, J. Lindner1, P.S. Stamenov2, M. Coey2 and A. Deac1. 1. Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 2. School of Physics, AMBER and CRANN, Trinity College Dublin, Dublin, Ireland

AD-06. A Comparative Study on Spin-Orbit Torque Efficiencies from W/ferromagnetic and W/ferrimagnetic Heterostructures. T. Wang1, C. Pai1, H. Yen1, T. Chen1 and C. Wu1. 1. Material Science and Engineering, National Taiwan University, New Taipei City, Taiwan

AD-07. All-Optical Measurements of Spin Hall Angles in Tungsten and Tantalum. S. Mondal1, S. Choudhury1, J. Sinha1 and A. Barman1. 1. I. S. N. Bose National Centre for Basic Sciences, Kolkata, India

AD-08. Demonstration of unidirectional spin Hall magnetoresistance by using naturally oxidized Cu. G. Okano1 and Y. Nozaki1,2. 1. Department of Physics, Keio University, Yokohama, Japan; 2. Center for Spintronics Research Network, Keio University, Yokohama, Japan

AD-09. Dzyaloshinskii-Moriya interaction and spin-orbit torques for controlling skyrmions in Co-based trilayers. J. Hanke1,2, F. Freimuth2, S. Bluegel2 and Y. Mokrousov2. 1. Institut für Physik, Johannes Gutenberg University, Mainz, Germany; 2. Peter Grünberg Institut and Institute for Advanced Simulation, Forschungszentrum Jülich, Juelich, Germany
11:30

AD-10. Spin-orbit effective fields in CoTb single layer. L. Liu¹, J. Deng¹, J. Yu¹, C. Zhou¹ and J. Chen¹. Materials Science and Engineering, National University of Singapore, Singapore

11:45

AD-11. Chiral magnetization switching induced by spin orbit torque in Pt/Co/Ta structure. S. Li² and W. Lew³. School of Physics and Physical Science, Nanyang Technological University, Singapore, Singapore

TUESDAY MORNING

9:00

Session AE
SKYRMIONS, VORTICES & MAGNETISATION DYNAMICS

Teruo Ono, Chair
Kyoto University, Uji, Japan

9:00

AE-01. Modulation of chaotic nanocontact vortex oscillators. J. Létang*, T. Devolder¹, S. Petit-Watelot², K. Bouzehouane³, V. Cros³ and J. Kim¹. Centre de Nanosciences et de Nanotechnologies, CNRS, Université Paris-Sud, Université Paris-Saclay, Orsay, France; 2. Institut Jean Lamour, CNRS, Université de Lorraine, Vandoeuvre Lès Nancy, France; 3. Unité Mixte de Physique, CNRS, Thales, Université Paris-Sud, Université Paris-Saclay, Palaiseau, France

9:15

AE-02. Magnetic vortex dynamics and frequency tunability in Cr-implanted permalloy disks. L. Ramasubramanian¹,², A. Kakay¹, C. Fowley¹, O. Yildirim³, P. Matthes¹, R. Böttger¹, J. Lindner¹, J. Fassbender², S. Gemming³, S.E. Schulz²,³ and A. Deac¹. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 2. TU Chemnitz, Chemnitz, Germany; 3. Empa-Swiss Federal Laboratories for Materials Science and Technology, Dübendorf, Switzerland; 4. Fraunhofer Institute for Electronic Nano Systems, Chemnitz, Germany; 5. Institute for Physics of Solids, TU Dresden, Dresden, Germany

9:30

AE-03. Stability and manipulation of magnetic skyrmions. (Invited) G. Finocchio¹. University of Messina, Messina, Italy

10:30


10:45

AE-06. Static and dynamic behavior of Interlayer exchange coupled Ni80Fe20/Ru Continuous Films and Nanowires. L. Xiong and A. Adeyeye. 1. National University of Singapore, Singapore

11:00

AE-07. Three-dimensional localized spin textures in chiral magnets. (Invited) H. Du and M. Tian. 1. High Magnetic Field Laboratory of Chinese Academy of Sciences, Hefei, China; 2. Collaborative Innovation Center of Advanced Microstructures, Nanjing University, Nanjing, China

11:30

AE-08. Development of the New Measurement Technique for Spin Dynamics of Magnetic Thin Films. Y. Endo, O. Mori, S. Yabukami, R. Utsumi and Y. Shimada. 1. Department of Electrical Engineering, Graduate School of Engineering, Tohoku University, Sendai, Japan; 2. Center for Spintronics Research Network, Tohoku University, Sendai, Japan; 3. Toei Scientific Industrial Co Ltd., Sendai, Japan; 4. Faculty of Engineering, Tohoku Gakuin University, Sendai, Japan

11:45

AE-09. Effects of Anisotropic Dipolar Interaction on Spin-Wave Dynamics in Ni80Fe20 Nanodot Arrays with Honeycomb and Octagonal Lattice Symmetries. S. Mondal, S. Barman, S. Choudhury, Y. Otani and A. Barman. 1. S. N. Bose National Centre for Basic Sciences, Kolkata, India; 2. Institute of Engineering and Management, Kolkata, India; 3. Institute for Solid State Physics, University of Tokyo, Kashiwa, Japan
Session AF
MAGNETIC RECORDING: COMPONENTS AND ARCHITECTURE
Ganping Ju, Chair
Seagate, Cupertino, CA, United States

9:00
AF-01. Comparison between Interlaced, Shingled, and Conventional Heat Assisted Magnetic Recording. (Invited)
S. Hernandez1, S.D. Granz1, Z. Liu1, P. Krivosik2, P. Huang1, G. Ju1, T. Rausch1 and E. Gage1. 1. Seagate Research Group, Seagate Technology, Shakopee, MN, United States; 2. Recording Head Operations, Seagate Technology, Bloomington, MN, United States; 3. Recording Media Operations, Seagate Technology, Fremont, CA, United States

9:30

9:45

10:00
AF-04. Large magnetoresistive outputs in Heusler alloy-based CPP-GMR sensors using with AgInZnO spacers. T. Nakatani1, T. Sasaki1, Y. Sakuraba1 and K. Hono1. 1. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science (NIMS), Tsukuba, Japan

10:15
AF-05. Tailoring epitaxially grown exchange spring Fe/L10-FePt multilayers as perpendicular recording media. A. Syed Mohd1, S. Pütter1, S. Mattau1 and T. Brückel1,2. 1. Jülich Centre for Neutron Science (JCMS) at MLZ, Forschungszentrum Jülich GmbH, Garching, Germany; 2. Jülich Centre for Neutron Science JCNS and Peter Grünberg Institut, JCNS-2, PGI-4: Scattering Methods, Forschungszentrum Jülich GmbH, Jülich, Germany


AF-08. Order-disorder Temperature of MnGa Thin Films on Glass Substrate. C. Huang, Y. Chen, S. Wang and A. Sun. 1. Institute of Materials Science and Engineering, National Taipei University of Technology, Taipei, Taiwan; 2. Chemical Engineering and Materials Science, Yuan Ze University, Taoyuan, Taiwan


AF-10. Influence of Stress and Strain on the $L_1$-ordered Phase Formation in FePt Thin film. M. Futamoto, T. Shimizu, M. Nakamura and M. Ohtake. 1. EECE, Chuo University, Shinjuku, Japan
Session AG

ELECTRICAL MACHINES AND CONTROL I

Jiadan Wei, Co-Chair
Nanjing University of Aeronautics and Astronautics, Nanjing, China
Andrew Knight, Co-Chair
University of Calgary, Calgary, AB, Canada

9:00

AG-01. Design of a Novel Variable-stiffness Permanent Magnetic Mechanism for Flexible Robots. M. Zhang¹, L. Fang² and F. Sun² ¹ School of Mechanical Engineering and Automation, Northeastern University, Shenyang, China; ² Faculty of Robot Science and Engineering, Northeastern University, Shenyang, China; ³ School of Mechanical Engineering, Shenyang University of Technology, Shenyang, China

9:15

AG-02. Two-Converters Based Synchronous Operation and Control of a Brushless Doubly-Fed Reluctance Machine. R. Rebeiro¹ and A. Knight¹ ¹ Electrical Engineering, University of Calgary, Calgary, AB, Canada

9:30

AG-03. A Novel Two-Phase Excitation Switched Reluctance Motor with Symmetrical Winding Distribution. Y. Zhu¹, C. Yang¹ and Y. Zhang¹ ¹ Tianjin University of Science and Technology, Tianjin, China

9:45

AG-04. Rotor Design Optimization of a new Flux Assisted consequent Pole Spoke type Permanent Magnet Torque Motor for low speed applications. M. Onsal¹, Y. Demir¹ and M. Aydin¹,² ¹ R&D, MDS Motor Ltd., Kocaeli, Turkey; ² Mechatronics Engr., Kocaeli University, Kocaeli, Turkey

10:00

AG-05. Manufacturing Condition and Variations of Soft Magnetic Composite Cores for Application in PM Motors Based on Taguchi Method. G. Lei¹, Y. Guo¹ and J. Zhu¹ ¹ University of Technology Sydney, Sydney, NSW, Australia

10:15

AG-06. Design of Cryogenic Permanent Magnet Synchronous Motor for Submerged Liquefied Natural Gas Pump. C. Guo¹, S. Huang¹, J. Wang¹ and Y. Feng¹ ¹ College of Electrical & Information Engineering, Hunan University, Changsha, China

10:30

AG-07. Study on Optimal Current Allocation Strategy for Doubly Salient Electromagnetic Machine based on Particle Swarm Optimization. A. Wang¹, Z. Chen², H. Li¹ and C. Zhang¹ ¹ Department of Electrical Engineering, Nanjing University of Aeronautics and Astronautics, Nanjing, China
AG-08. A Novel Coupled Auto-transformer and Magnetic Control Soft Starter for Super Large Capacity High Voltage Motor. J. Yuan¹, C. Wang¹, Y. Zhu¹, H. Zhou¹, L. Wei², C. Tian¹, Y. Gao¹, K. Muramatsu³ and B. Chen¹ ¹ Electrical and Engineering, Wuhan University, Wuhan, China; ² Department of Electrical Engineering, Graduate School of Engineering, Kyoto University, Kyoto, Japan; ³ Department of Electrical and Electronic Engineering, Saga University, Saga, Japan

AG-09. A novel vector control strategy for six-phase induction motor with low torque ripples and harmonic currents. H. Heidari¹, A. Taheri¹ and M. Holakooie¹ ¹ University of Zanjan, Zanjan, The Islamic Republic of Iran

AG-10. A Novel Dual-Sided PM Variable Flux Memory Machine. H. Yang¹, H. Lin¹, Z. Zhu², S. Lyu¹ and K. Wang¹ ¹ School of Electrical Engineering, Southeast University, Nanjing, China; ² Department of Electronic and Electrical Engineering, The University of Sheffield, Sheffield, United Kingdom

AG-11. Analysis of Torque Characteristics of A Parallel Hybrid Excitation Machine Drives with Sinusoidal and Rectangular Current Excitations. Y. Wu¹, L. Sun¹, Z. Zhang¹, Z. Miao¹ and C. Liu¹ ¹ Nanjing University of Aeronautics and Astronautics, Nanjing, China

AG-12. Improved Analytical Eddy Current Loss Modelling Considering Carrier Harmonics towards Maximum Efficiency Control of PMSM-Drive Systems. A. Balamurali¹, C. Lai¹, H. Dhulipati¹, V. Loukanov² and N. C. Kar¹ ¹ University of Windsor, Windsor, ON, Canada; ² D&V Electronics Ltd., Woodbridge, ON, Canada

TUESDAY MORNING

Session AH
SENSORS: FUNDAMENTAL DEVELOPMENTS AND MATERIALS I
James Deak, Chair
MultiDimension Technology Co., Ltd, Zhangjiagang, China

AH-01. Integrated NEMS Magnetoelectric Sensors and Antennas. (Invited) N. Sun¹ ¹ ECE, Northeastern University, Boston, MA, United States
AH-02. Giant photo-Hall effect in metals. A. Ruotolo\textsuperscript{1,2} and D. Li\textsuperscript{1,2}
1. City University of Hong Kong, Kowloon, Hong Kong; 2. City University Shenzhen Research Institute, Shenzhen, China

9:45

AH-03. Magneto-optical magnetic field sensor based on magnetoplasmonic crystal. N. Gusev\textsuperscript{1,3}, A. Kalish\textsuperscript{1,4}, V. Belotelov\textsuperscript{1,4}, G.A. Knyazev\textsuperscript{1,4}, P. Kapralov\textsuperscript{1,3}, P. Vetoshko\textsuperscript{1,2} and A. Zvezdin\textsuperscript{1,3}
1. Russian Quantum Center, Moscow, Russian Federation; 2. Kotelnikov Institute of Radioelectronics and Electronics Russian Academy of Sciences, Moscow, Russian Federation; 3. Prokhorov General Physics Institute Russian Academy of Sciences, Moscow, Russian Federation; 4. Faculty of Physics, Lomonosov Moscow State University, Moscow, Russian Federation

10:00

AH-04. Phase Transitions in Spin-Crossover Thin Films Probed by Graphene Transport Measurements. J. Dugay\textsuperscript{1}, M. Aarts\textsuperscript{2}, M. Giménez-Marqués\textsuperscript{1}, T. Kozlova\textsuperscript{2}, H. Zandbergen\textsuperscript{2}, E. Coronado\textsuperscript{1} and H. van der zant\textsuperscript{2}
1. Molecular Materials, Institute of Molecular Science (ICMol), Paterna, Spain; 2. Department of Quantum Nanoscience, Delft University of Technology, Delft, Netherlands

10:15

AH-05. Custom-designed GMR- and TMR-sensor functionalities via oblique-incidence deposition. S. Willing\textsuperscript{1,2}, K. Schlage\textsuperscript{2}, L. Bocklage\textsuperscript{2}, G. Meier\textsuperscript{2,3} and R. Roehlsberger\textsuperscript{2,3}
1. PIER Helmholtz Graduate School, Hamburg, Germany; 2. Deutsches Elektronen-Synchrotron (DESY), Hamburg, Germany; 3. The Hamburg Centre for Ultrafast Imaging, Hamburg, Germany; 4. Max-Planck Institute for the Structure and Dynamics of Matter, Hamburg, Germany

10:30

AH-06. Magnetic tunnel junctions with perpendicular synthetic antiferromagnetic CoPt pinned layers for magnetic sensors with wide dynamic range. T. Ogasawara\textsuperscript{1}, M. Oogane\textsuperscript{1}, M. Tsunoda\textsuperscript{2} and Y. Ando\textsuperscript{1}
1. Department of Applied Physics, Tohoku University, Sendai, Japan; 2. Department of Electronic Engineering, Tohoku University, Sendai, Japan

10:45

AH-07. Magnetic Sensor Using Spin-orbit Torque Effective Field as Transverse Bias. Y. Xu\textsuperscript{1}, Y. Yang\textsuperscript{1}, Z. Luo\textsuperscript{1} and Y. Wu\textsuperscript{1}
1. Electrical and Computer Engineering, National University of Singapore, Singapore

11:00

AH-08. Co/Pd Multilayer Structure for Hydrogen Sensing. J. Liang\textsuperscript{1}, K. Chang\textsuperscript{1}, K. Chen\textsuperscript{1} and Y. Tseng\textsuperscript{1}
1. Materials Science & Engineering, National Chiao Tung University, Hsin-chu, Taiwan
AH-09. Enhanced annealing stability of exchange biased pinned layer in magnetic tunnel junctions using a thin Ta/Ru/Ta/Ru underlayer for analog sensor applications. K. Okamoto\textsuperscript{1}, Y. Fuji\textsuperscript{1}, Y. Higashi\textsuperscript{1}, S. Kaji\textsuperscript{1}, T. Nagata\textsuperscript{1}, S. Baba\textsuperscript{1}, A. Yuzawa\textsuperscript{1} and M. Hara\textsuperscript{1}. Corporate Research & Development Center, Toshiba Corporation, Saiwai-ku, Kawasaki, Japan.

AH-10. Modification of Ce valence states by Y/Dy co-doping of CeO\textsubscript{2} nano-particles for effective Electrical and Sensing properties. C. Madhusudan\textsuperscript{1,2}. 1. Department of Physics, Osmania University, Hyderabad, India; 2. S.R.R Govt. Arts & Science College, Karimnagar, India.

AH-11. Dural Field Frequency Mixing in Piezoelectric/Piezomagnetic Laminates at Acoustic Resonance. P. Li\textsuperscript{1}, L. Bian\textsuperscript{2}, Y. Wen\textsuperscript{1}, X. Ji\textsuperscript{1}, T. Han\textsuperscript{1} and Y. Wang\textsuperscript{1}. 1. Instrument Science and Engineering, Shanghai Jiaotong University, Shanghai, China; 2. Mechanical Engineering, Nanjing Technology University, Nanjing, China.

Session AI

EMERGING AND INTERDISCIPLINARY APPLICATIONS I

Albrecht Jander, Chair
Oregon State University,

AI-01. Highly and tunable spin-to-charge conversion in 2D electron gas at LaAlO\textsubscript{3}/SrTiO\textsubscript{3} interfaces. (Invited) J. Rojas-Sánchez\textsuperscript{1}, E. Lesne\textsuperscript{2}, Y. Fu\textsuperscript{3}, S. Oyarzun\textsuperscript{3}, D. Vaz\textsuperscript{2}, E. Jacquet\textsuperscript{2}, J. George\textsuperscript{2}, L. Vila\textsuperscript{3}, S. Petit-Watelot\textsuperscript{1}, A. Barthélémy\textsuperscript{2}, H. Jaffres\textsuperscript{2}, M. Bibes\textsuperscript{3} and A. Fert\textsuperscript{2}. 1. Institut Jean Lamour - CNRS - Univ. Lorraine, Nancy, France; 2. Unité Mixte de Physique, CNRS, Thaïes, Univ. Paris-Sud, Université Paris-Saclay, Palaiseau, France; 3. Spintec, Institut Nanosciences et Cryogenie, Univ. Grenoble Alpes, CEA, CNRS, Grenoble, France.

AI-02. An Electromagnetic Field Reduction Method for Inductive Power Transfer in Transportation System. J. Kim\textsuperscript{1}, K. Kim\textsuperscript{1} and S. Ahn\textsuperscript{1}. 1. The Cho Chun Shik Graduate School for Green Transportation, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, The Republic of Korea.
AI-03. Optimal Design of Quadrature-Shaped Pickup for Omnidirectional Wireless Power Transfer. Z. Zhang\textsuperscript{1}, B. Zhang\textsuperscript{1}, R. Tong\textsuperscript{1}, W. Ai\textsuperscript{1}, S. Chang\textsuperscript{1} and J. Wang\textsuperscript{1}. School of Electrical and Information Engineering, Tianjin University, Tianjin, China

AI-04. A 3D-Printing Magnetic Forward Method for Objects in Motion. Y. Su\textsuperscript{1} and K. Liu\textsuperscript{1}. Jilin University, Changchun, China

AI-05. Fabrication technology of low-propagation-loss plasmonic waveguide containing a ferromagnetic metal. V. Zayets\textsuperscript{1}, H. Saito\textsuperscript{1} and S. Yuasa\textsuperscript{1}. Spintronics Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan

AI-06. Area Efficient Multi Level Cell SOT-MRAM with Shared Diode for High Density Memories Applications. K.A. Ahmed\textsuperscript{1,2}, L. Fei\textsuperscript{1}, S.Y. Lua\textsuperscript{1} and C. Heng\textsuperscript{2}. 1. NVM, Data Storage Institute, Singapore, Singapore; 2. ECE, National University of Singapore, Singapore

AI-07. Rowhammer for Spin Torque based Memory: Problem or not? S. Agarwal\textsuperscript{1}, H. Dixit\textsuperscript{1}, D. Datta\textsuperscript{1}, M. Tran\textsuperscript{2}, D. Houssameddine\textsuperscript{2}, D. Shum\textsuperscript{2} and F. Benistant\textsuperscript{2}. 1. GLOBALFOUNDRIES Engineering Pvt. Ltd, Bangalore, India; 2. GLOBALFOUNDRIES Singapore Pte. Ltd, Singapore, Singapore; 3. GLOBALFOUNDRIES, 400 Stone Break Rd Extension, Malta, NY, United States

AI-08. Artificial neural network based on spin-wave coupled spin torque oscillators. H. Arai\textsuperscript{1,2} and H. Imamura\textsuperscript{1}. Spintronics RC, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Ibaraki, Japan; 2. JST-PRESTO, Kawaguchi, Saitama, Japan

AI-09. Spin-Hall effects and unconventional Anomalous Hall Effects in transition-metal based metallic spintronic multilayers for THz Emission. H. Jaffres\textsuperscript{1}, T. Dang\textsuperscript{1}, Q. Barbedienne\textsuperscript{1}, H. Nong\textsuperscript{2}, J. Tignon\textsuperscript{1}, N. Reyren\textsuperscript{1}, J. George\textsuperscript{1}, S. Collin\textsuperscript{1}, L. Vila\textsuperscript{1}, L. Divay\textsuperscript{4}, P. Bortolotti\textsuperscript{8} and S. Dhillon\textsuperscript{1}. 1. Unité Mixte de Physique CNRS-Thales, Palaiseau, France; 2. Laboratoire Pierre Aigrain, ENS, Equipe THZ & Infrarouge, PARIS, France; 3. INAC/SP2M, CEA-Université Grenoble-Alpes, GRENOBLE, France; 4. Thales Research & Technology, Palaiseau, France
AI-10. Investigation of intrinsic large anomalous Nernst effect in Co-based Heusler compounds for novel energy harvesting applications. Y. Sakuraba1,2, K. Hyodo3, S. Mitani1 and A. Sakuma3 1. National Institute for Materials Science (NIMS), Tsukuba, Japan; 2. JST-PRESTO, Saitama, Japan; 3. Tohoku University, Sendai, Japan

11:45

AI-11. Mutually synchronized 2D spin Hall nano-oscillator arrays. M. Zahedinejad1*, A.A. Awad1, S. Muralidhar2, M. Dvornik1 and J. Åkerman1 1. Physics, University of Gothenburg, Gothenburg, Sweden

TUESDAY SIMPOR/ROSELLE BALLROOM MORNING 8:30

Session AP

BIO-IMAGING AND BIO-DETECTION II (Poster Session)
Neil Telling, Co-Chair Keele University, Stoke-on-Trent, United Kingdom Alfredo García-Arribas, Co-Chair Universidad del País Vasco, UPV/EHU, Leioa, Spain

AP-01. Histamine Magnetic Test for Wine. M. Rivas1, A. Moyano1,3, M. Salvador1,4, J.C. Martinez-García1, M. Fernández2 and M.C. Blanco-López1 1. Physics Department, University of Oviedo, Gijón, Spain; 2. Dairy Research Institute of Asturias, CSIC, Villaviciosa, Spain; 3. Physical and Analytical Chemistry Department, University of Oviedo, Oviedo, Spain; 4. Institute of Structure of Matter, National Research Council, Rome, Italy

AP-02. Microstructure engineering of polymer-based magnetic composites for microfluidic devices. D. Le Roy1, M. Samir2, V. Dupuis1 and A. Deman2 1. Institut Lumière Matière, Villeurbanne, France; 2. Institut des Nanotechnologies de Lyon, Villeurbanne, France

AP-03. Temperature dependence of transverse relaxivity of the nanoparticle contrast agents for MRI: different magnetic cores and coatings. O. Kaman1, V. Herynek2, P. Veverka1, L. Kubickova1, M. Pashchenko1,3, J. Kulickova1 and Z. Jirak1 1. Institute of Physics, Czech Academy of Sciences, Prague, Czechia; 2. Institute for Clinical and Experimental Medicine, Prague, Czechia; 3. Faculty of Mathematics and Physics, Charles University, Prague, Czechia
AP-04. A Novel 1H/3He Dual-Tuned Transmit Coil at Ultra-low Field MRI Designed by Using Electromagnetic Field and Radio Frequency Circuit Co-Simulation Method. Y. Dou$^{1,2}$, Y. Li$^2$, J. Xu$^1$, Q. Chen$^2$, L. Wang$^1$, X. Zhang$^2$, N. Li$^2$, C. Luo$^2$ and F. Du$^2$. 1. School of Electrical Engineering and Automation, Hefei University of Technology, Hefei, China; 2. Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, Shenzhen, China; 3. Department of Radiology and Biomedical Imaging, University of California San Francisco, San Francisco, DC, United States

AP-05. Peak to Peak Voltage Detector Type MI Gradiometer for Real Time Alpha Rhythm Measurement. J. Ma$^1$ and T. Uchiyama$^1$. 1. Graduate School of Engineering, Nagoya University, Nagoya, Japan

AP-06. A Theoretical and Simulational Study on the Chemical Shift Effects on the Magnetic Susceptibility of Iron at Ultra-Short Echo Times. X. Lu$^1$, J. Zhu$^1$, Z. Wang$^1$, S. Wei$^1$, H. Wang$^1$ and W. Yang$^1$. 1. Institute of Electrical Engineering, Chinese Academy of Science, Beijing, China

AP-07. Magnetic-Fluorescent Fe$_3$O$_4$@Chitosan-Graphene Quantum Dots Nanocomposites for Dual-Modal nanoprob of Fluorescence and Magnetic Resonance Imaging. Y. Li$^1$, K. Wang$^1$, X. Xu$^1$ and Y. Jiang$^1$. 1. University of Science and Technology Beijing, Beijing, China

AP-08. Asymmetric Gradiometer System for Magnetocardiograms Measuring Without Magnetic Shielding. Q. Wang$^1$, J. Du$^{2,3}$ and T. Song$^1$. 1. Department of Bioelectromagnetism, Institute of Electrical Engineering, Chinese Academy of Sciences, Beijing, China; 2. University of Chinese academy of sciences, Beijing, China

AP-09. Demonstration of low-field unilateral nuclear magnetic resonance (NMR) for future medical diagnostics. N. Prabhu Gaunkar$^1$, S. Utsuzawa$^2$, M. Mina$^1$, Y. Song$^2$ and D.C. Jiles$^1$. 1. Department of Electrical and Computer Engineering, Iowa State University, Ames, IA, United States; 2. NMR Fluids Division, Schlumberger-Doll Research, Boston, MA, United States

AP-10. Noise reduction in magnetocardiograph based on time-shift PCA just using measurement data. M. Iwai$^1$ and K. Kobayashi$^1$. 1. Science and engineering, Iwate University, Morioka, Japan

AP-11. Quantitative component selection method using attractor analysis for noise reduction by ICA of magnetocardiogram. K. Kobayashi$^1$ and M. Iwai$^1$. 1. Faculty of Science and Engineering, Iwate University, Morioka, Iwate, Japan

AP-13. Improving Tip Position Estimation Accuracy of Gastric Tube by Compensating Geomagnetic Field with Offset Coils. T. Sasayama, Y. Gotoh and K. Enpuku. 1. Kyushu University, Fukuoka, Japan; 2. Oita University, Oita, Japan

AP-14. Effect of Gd$_2$Si$_2$ ferromagnetic nanoparticle sizes on T$_1$, T$_2$ and T$_2^*$ relaxation in MRL. S. Hunagund, J. Rosenberg, S.M. Harstadt, A.A. El-Gendy, V. Pecharsky and R.L. Hadimani. 1. Department of Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA, United States; 2. The National High Magnetic Field Laboratory, Florida State University, Tallahassee, FL, United States; 3. Dept. of Physics, University of Texas at El Paso, El Paso, TX, United States; 4. Iowa State University, Ames Laboratory, US Department of Energy, Ames, IA, United States; 5. Dept. of Material Science and Engineering, Iowa State University, Ames, IA, United States

TUESDAY
MORNING
8:30

Session AQ
HIGH FREQUENCY MAGNETIC MATERIALS AND DEVICES I (Poster Session)
Zhongming Zeng, Chair
Suzhou Institute of Nano-tech and Nano-bionics, CAS, Suzhou, China


AQ-02. Influence of the phase structure on the acoustic and optical mode ferromagnetic resonance of FeNi stripe domain films. D. Cao, L. Pan, Y. Song, X. Cheng, H. Feng, C. Zhao, Q. Li, J. Xu, S. Li, Q. Liu and J. Wang. 1. College of Physics, Qingdao University, Qingdao, China; 2. Lanzhou University, Lanzhou, China

AQ-03. Indirect Permeability Measurements using a ‘Strip-coil’ for Co$_{0.6}$Zn$_{0.4}$Fe$_2$Mn$_2$O$_{12}$. U. Chaudhuri, M. Kumari and R. Mahendiran. 1. Physics, National University of Singapore, Singapore
AQ-04. Microwave absorption properties of polymeric ferrite core-shell nanocomposites. K. Song1, K. Seo2 and J. Jung1
1. Chemistry, Gangneung-Wonju National University, Gangneung city, The Republic of Korea

AQ-05. High frequency magnetic loss in nanogranular FeCoTiO films with different history of induced uniaxial anisotropy. Y. He1, Y. Wang1, Z. Zhong1, H. Zhang1 and F. Bai1
1. University of Electronic Science and Technology, State Key Laboratory of Electronic Thin Films and Integrated Devices, Chengdu, China

AQ-06. Foldover effect in spin-wave optoelectronic active ring resonators. V. Fitko1, A. Nikiit1, A.B. Ustinov1 and B.A. Kalinikos1
1. Saint-Petersburg Electrotechnical University “LETI”, Saint Petersburg, Russian Federation

AQ-07. Effect of annealing on the structural and FMR properties of epitaxial YIG thin films grown by RF magnetron sputtering. B. Bhoi1, N. Venkataramani2, R. Aiyar1, S. Prasad3 and M. Kostylev4
1. Physics, Qingdao University, Qingdao, China; 2. Metallurgical Engineering & Materials Science (MEMS), Indian Institute of Technology Bombay, Mumbai, India; 3. Northeastern University, Boston, MA, United States

AQ-08. Design of an implantable antenna operating at ISM band using magneto-dielectric material. Z. Liu1, L. Liu2, W. Zong2, Z. Jin3, D. Cao1, H. Lin4, N. Sun5 and S. Li6
1. Physics, Qingdao University, Qingdao, China; 2. Electrical and Information, Qingdao University, Qingdao, China; 3. Northeastern University, Boston, MA, United States

AQ-09. Electromagnetic Noise Suppression Composite Sheet Made of Hexagonal Ferrite Particles. M. Sato1, R. Sai1, Y. Miyazawa1, A. Takahashi1 and M. Yamaguchi1,2
1. New Industry Creation Hachery Center, Tohoku University, Sendai, Japan; 2. Department of Electrical Engineering, Tohoku University, Sendai, Japan

AQ-10. Enhancement of Phase-Shifting Nonreciprocity in Metamaterial Lines Loaded with Comb-Shaped Stubs Supporting Slow Wave Propagation of Edge Guided Modes. T. Ueda1, K. Okamoto1, J. Yamamura1 and T. Itoh2
1. Electrical Engineering and Electronics, Kyoto Institute of Technology, Kyoto, Japan; 2. Electrical Engineering Department, University of California, Los Angeles, Los Angeles, CA, United States

AQ-11. Synthesis and Microwave Absorbing Property of SrZn$_{x}$Fe$_{32x}$Fe$_{16}$O$_{27}$ (0.0 $\leq x \leq$ 1.0). J. You1, S. Choi1, S. Lee1 and S. Yoo1
1. Material science and engineering, Seoul National University, Seoul, The Republic of Korea

AQ-12. Transport, magneto-optical and micromagnetic characterization of domain-wall resonance (DWR) in giant magnetoresistance strain and magnetic field sensors. G. Büttel1 and U. Hartmann1
1. Institute of Experimental Physics, University of Saarland, Saarbrücken, Germany
AQ-13. New Measurement Method of Broadband Permittivity and Permeability of Non-Solid Materials in Small Quantity. K. Miura¹, Y. Odagiri¹, T. Umesaka¹, D. Suzue¹ and H. Osada¹ ¹. Faculty of Science and Engineering, Iwate University, Morioka, Japan

AQ-14. Comparative Analysis of Core Loss Calculation Methods for Magnetic Materials Under Nonsinusoidal Excitations. Y. Li¹, S. Yue¹ and Q. Yang² ¹. Hebei University of Technology, Tianjin, China; 2. Electrical Engineering, Tianjin Polytechnic University, Tianjin, China

AQ-15. Design and Analysis of a Novel High Frequency 2-D Magnetization Structure with Ultra-Thin Silicon Steel Sheet. Y. Li¹, Y. Dou¹, C. Zhang¹, A. Li¹ and J. Zhu² ¹. Hebei University of Technology, Tianjin, China; 2. Electrical engineering, University of Technology, Sydney, Sydney, NSW, Australia

AQ-16. High-frequency magnetic and dielectric properties of CaO-SiO₂ codoped NiZnCo spinel ferrites. Z. Zheng¹, Y. Li¹, T. Liu¹, Q. Xiang¹ and Q. Feng¹ ¹. School of Information Science and Technology, Southwest Jiaotong University, Chengdu, China

TUESDAY SIMPOR/ROSELLE BALLROOM
MORNING
8:30

Session AR
MAGNETO-ELECTRONIC DEVICES
(Poster Session)
Yumeng Yang, Chair
National University of Singapore, Singapore

AR-01. Radiation Hardening Techniques for SOT-MRAM Peripheral Circuity, B. Wang¹², Z. Wang¹, C. Hu², Y. Zhao³, Y. Zhang¹ and W. Zhao¹ ¹. Beihang University, Beijing, China; 2. Beijing Micoelectronics Technology Institute, Beijing, China

AR-02. Magnetization uniformity and threshold current of out-of-plane precession in spin-torque oscillator with synthetic ferrimagnet free layer under perpendicular magnetic field: Micromagnetic simulation study. T. Kanao¹, T. Nagasawa¹, H. Suto¹ and K. Mizushima¹ ¹. Corporate Research & Development Center, Toshiba Corporation, Kawasaki, Japan

AR-03. Fabrication of L₁₀−MnAl thin films with high perpendicular magnetic anisotropy for STT-MRAM. M. Parvin¹, M. Kubota¹, M. Oogane¹, M. Tsunoda² and Y. Ando¹ ¹. Applied Physics, Graduate School of Engineering, Tohoku University, Sendai-shi, Japan; 2. Electronic Engineering, Tohoku University, Sendai, Japan
Hybrid memory layer with low Curie temperature CoPd/Pd multilayer for high-density magnetic random access memory cells. W. Zhao1, T. Kimura1, T. Kato1, D. Oshima1, Y. Sonobe2, Y. Kawato2 and S. Iwata1. 1. Department of Electronics, Nagoya University, Nagoya, Japan; 2. Samsung R&D Institute Japan, Yokohama, Japan; 3. Institute of Materials and Systems for Sustainability, Nagoya University, Nagoya, Japan

Magnetic Properties of Mn-based Heusler alloy films with Ru doping. L. Ren1, Y. Zheng1, Y. Liu1 and K. Teo1. 1. Department of Electrical & Computer Engineering, National University of Singapore, Singapore

Reducing the switching current with a Dzyaloshinskii-Moriya interaction in nanomagnets with perpendicular anisotropy. S. Takamatsu1, K. Yamada2 and Y. Nakatani1. 1. University of Electro-Communications, Chofu, Japan; 2. Gifu University, Gifu, Japan


Proposal of an ultra-fast all spin logic device based on RE-TM ferrimagnetic material. Z. Zheng1,2, Y. Zhang1,2, Z. Zhang1,2, J. Nan1,2, K. Zhang1,2, J. Klein1, D. Ravelosona1, Y. Zhang1,2 and W. Zhao1,2. 1. Fert Beijing Institute, Beihang University, Beijing, China; 2. School of Electrical and Information Engineering, Beihang University, Beijing, China; 3. Center for Nanoscience and Nanotechnology, University of Paris-Sud, Orsay, France

Evaluation of ultrahigh-speed magnetic memories using field-free spin orbit torque. Z. Wang1, L. Chang1, X. Lin1, J. Yang1, Y. Zhang1 and W. Zhao1. 1. Beihang University, Beijing, China

Proposal for Multi-gate Spin Field Effect Transistor (Spin-FET). G. Wang1, Z. Wang2, J. Klein1 and W. Zhao2,3. 1. Centre de Nanosciences et de Nanotechnologies, Université Paris Saclay, Orsay, France; 2. Spintronics Interdisciplinary Center, Beihang University, Beijing, China; 3. Fert Beijing Institute, Beihang University, Beijing, China
AR-12. Estimating the spin relaxation time of platinum by second harmonic electrical transport measurement. C. Fang1, C. Wan1, A. Hoffmann2, B. Tao1, H. Wu1 and X. Han1 1. State Key Lab of Magnetism, Institute of Physics, Beijing, China; 2. Materials Science Division, Argonne National Laboratory, Lemont, IL, United States

AR-13. Spin Dice Based on Orthogonal Spin Transfer Devices. X. Li1 and L. You1 1. School of Optical and Electronics Information, Huazhong University of Science and Technology, WuHan, China

AR-14. Magnetization behaviors of magnetic tunnel junctions driven by the spin-orbit torque. T. Wu1 1. Graduate School of Materials Science, National Yunlin University of Science and Technology, Douliu, Taiwan


TUESDAY SIMPOR/ROSELLE BALLROOM
MORNING
8:30

Session AS
NANOPARTICLES AND NANOSTRUCTURED ARRAYS
(Poster Session)
Joachim Gräfe, Co-Chair
Max Planck Institute for Intelligent Systems, Stuttgart, Germany
Valeria Rodionova, Co-Chair
Immanuel Kant Baltic Federal University, Kaliningrad, Russian Federation

AS-01. Domain structure and magnetic properties of magnetostatically coupled epitaxial Co nanostripe arrays with induced anisotropy. A. Kozlov1, A. Kolesnichkov1, E. Pustovalov1, A.S. Samardak and L. Chebotkevich 1. School of Natural Sciences, Far Eastern Federal University, Vladivostok, Russian Federation

AS-02. Exchange bias in Co/CoO core-shell nanowires: roles of antiferromagnetic grain size distribution and interfacial spin glass. X. Wen1, K. Gandha2, P. Liu2 and J. Yang1 1. Physics, Peking University, Beijing, China; 2. Physics, University of Texas at Arlington, Arlington, TX, United States; 3. Ames Laboratory, US Department of Energy, Ames, IA, United States
AS-03. Synthesis and magnetic investigation of CoCr$_2$O$_4$/Ni hybrid core-shell nanowires. W. Li$^1$, C. Wang$^3$, X. Zhang$^1$, M. Irfan$^1$, U. Khan$^1$, Y. Liu$^2$ and X. Han$^1$. 1. State Key Lab of Magnetism, Institute of Physics, Beijing, China; 2. Tongji University, Shanghai, China; 3. Tongji University, Shanghai, China

AS-04. Magneto-thermodynamic properties and anomalous magnetic phase transition in FeRh nano-wires. K. Matsumoto$^1$, M. Kimata$^2$, K. Kondou$^3$, R.C. Temple$^4$, C.H. Marrows$^4$ and Y. Otani$^{1,3}$. 1. Institute for Solid State Physics, The University of Tokyo, Kashiwa, Japan; 2. Institute for Material Research, Tohoku University, Sendai, Japan; 3. Center for Emergent Matter Science, RIKEN, Wako, Japan; 4. School of Physics and Astronomy, University of Leeds, Leeds, United Kingdom

AS-05. Atomic pair ordering and strain relaxation in thermally and vacuum Annealed NiCu nanowires prepared in Al$_2$O$_3$ nanoporous templates. N. Ahmad$^1$ and Q. Abbas$^1$. 1. Physics, International Islamic University, Islamabad, Pakistan

AS-06. Controlled growth of Fe$_3$O$_4$ nanopillars and their magnetic properties. M. Guan$^1$, G. Dong$^1$, Z. Zhou$^1$ and M. Liu$^1$. 1. Xi’an Jiaotong University, Xi’an, China

AS-07. Effect of size on multiferroic SmMn$_2$O$_5$ nanorods. T. Hsu$^1$, C. Yang$^1$, C. Yang$^1$, Y. Tung$^1$, C. Kao$^1$, W. Wu$^1$ and K. Lin$^2$. 1. Physics, Chung Yuan Christian University, Taoyuan City, Taiwan; 2. Department of Chemical Engineering and Material Science, Yuan Ze University, Zhongli, Taiwan


AS-09. One-Pot Synthesis and Surface Modification of Lauric-Acid-Capped CoFe2O4 Nanoparticles. Y. Teng$^1$ and P. Pong$^1$. 1. Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong


AS-11. Solvothermal Synthesis of Uniform Water-Soluble Fe$_3$O$_4$ Nanoparticles. S. Lee$^1$, Y. Chen$^1$ and A. Sun$^1$. 1. Chemical Engineering and Materials Science, Yuan Ze University, Taoyuan, Taiwan

X. Wang1, H. Qian2, P. Si1, Y. Yang3, C. Choi2, J. Park3,
X. Wang1, H. Ge4, K. Shinde2 and K. Chung2 1. China Jiliang University, Hangzhou, China; 2. Korea Institute of Materials Science, Changwon, The Republic of Korea

AS-14. Organization and magnetic properties of FePt nanoparticles deposited on graphene/Ir moiré pattern. F. Tournus1, P. Capiod2, L. Bardotti1, A. Tamion1, O. Boisron1, C. Albin1, V. Dupuis1, G. Renaud2 and P. Ohresser3 1. Institut Lumiére Matière, Université Lyon 1 & CNRS, Villeurbanne, France; 2. CEA-INAC, Grenoble, France; 3. Synchrotron SOLEIL, Gif sur Yvette, France

AS-15. Research on Eddy Current Testing of Functional Polymer Composite Material. Z. Cai2 and C. Liu1 1. Province-Ministry Joint Key Laboratory of Electromagnetic Field and Electrical Apparatus Reliability, Hebei University of Technology, Tianjin, China; 2. East China Jiaotong University, Nanchang, China

TUESDAY SIMPOR/ROSELLE BALLROOM
MORNING
8:30

Session AT
PERMANENT MAGNET AND RELUCTANCE MACHINES I
(Poster Session)
Hui Yang, Co-Chair
Southeast University, Nanjing, China
TW Ching, Co-Chair
University of Macau, Macau, China

AT-01. Optimal Design of Asymmetric Step-Sloping Notches for Reduce the Cogging Torque of Single Phase BLDC Motor. D. Kim1,2, Y. Park1,2, J. So1,2 and Y. You1 1. Electrical Control Engineering, Sunchon National University, Suncheon, The Republic of Korea; 2. Greenenergy Laboratory, Sunchon National University, Suncheon, The Republic of Korea; 3. Honam University, Gwangju, The Republic of Korea


AT-03. Analysis of Flux Reversal Permanent Magnet Machines with Different Consequent-Pole PM Topologies. H. Li1 and Z. Zhu2 1. Electronic and Electrical Engineering, University of Sheffield, Sheffield, United Kingdom

AT-05. Influence of Cooling Air Flow Velocity on Temperature Rise and Output Power for Permanent Magnet Servo Motor. G. Zhao1, X. Gao1, Y. Wang1 and B. Bai1 1. Shenyang University of Technology, Shenyang, China

AT-06. The Method for Reducing Intrinsic Shaft Voltage by Suitable Selection of Pole-arc Coefficient in Fractional Slot Permanent Magnet Synchronous Machines. B. Peng1, X. Wang1 and W. Zhao1 1. Shandong University, Jinan, China

AT-07. Comparison of Rotor Eddy Current Losses in Fractional-Slot Concentrated-Winding IPM machines with Different Rotor Topology. L. Cong1,2, X. Li1 and L. Wu3 1. College of Electrical Engineering, Guangxi University, Nanning, China; 2. School of Automation and Electrical Engineering, Linyi University, Linyi, China

AT-08. Design and Analysis of A Mechanical Flux-varying PM Machine with Auto-rotary PMs. X. Liu1, Z. Zhang1, H. Xu1, J. Xiao1 and Z. Liu1 1. School of Electrical Engineering and Automation, Jiangxi University of Science and Technology, Ganzhou, China

AT-09. Development of Variable Stress Applying System for Shrink Fitting of Stator Housing in IPM Motor. J. Kitao1, J. Aizawa1, M. Nakano1, M. Yamada1 and A. Daikoku1 1. Mitsubishi Electric Corp., Hyogo, Japan

AT-10. Study on structure aimed at low vibration of 16-pole 18-slot IPM motor for Mild-HEV. Y. Hirai1 1. Motor Drive Laboratory, Tokyo City University, Tokyo, Japan

AT-11. Torque Improvement in Partitioned Stator Wound Field Switched Flux Machine By Using Assisted Ferrites. Z. Wu1 and Z. Zhu1 1. Electronic and Electrical Engineering, The University of Sheffield, Sheffield, United Kingdom


Design of slit-like flux barriers to improve space harmonic distribution in a slit stator motor. Y. Yokoi¹, R. Hashizume¹ and T. Higuchi¹ 1. Nagasaki University, Nagasaki, Japan

A New Modular Flux-Concentrated Doubly Salient Machine with PMs in Both Stator Yoke and Slot Openings. Q. Wang¹ and S. Niu¹ 1. Department of Electrical Engineering, The Hong Kong Polytechnic University, Hung Hom, Hong Kong

Rotor Structure for Reducing Demagnetization of Magnet and Torque Ripple in a PMa-synRM with Ferrite Permanent Magnet. Y. Kong¹, M. Lin¹, G. Yang¹ and K. Liu¹ 1. Engineering Research Center for Motion Control of MOE, Southeast University, Nanjing, China

Electromagnetic Performance Analysis of Hybrid Excited Segmental Rotor Flux Switching Machine. Y. Yang¹, J. Chen¹, B. Yan¹, X. Wang¹ and C. Zhu¹ 1. Shandong University, Jinan, China

Performance Analysis of Suspension Force and Torque in an IBPMSM with V-shape PMs for Flywheel Batteries. B. Su¹, X. Sun¹, G. Lei², Z. Yang¹, J. Zhu², Y. Guo² and K. Diao¹ 1. Automotive Engineering Research Institute, Jiangsu University, Zhenjiang, China; 2. School of Electrical, Mechanical and Mechatronic Systems, University of Technology, Sydney, Sydney, NSW, Australia

Tuesday 27
AU-06. Characteristic analysis of a consequent-pole motor with vernier structure using ferrite magnets. M. Choi1, B. Han1 and B. Kim1 1. Electrical, Electronic and Control Engineering, Kunsan National University, South Korea, Gunsan, The Republic of Korea; 2. Electrical System R&D Team Assistant Research Engineer, Jeonbuk Institute of Automotive Convergence Technology, South Korea, Gunsan, Jeollabuk-do, The Democratic People's Republic of Korea

AU-07. Static Characteristics of Hybrid Excitation Machine with Parallel Magnetic Path. J. Zhang1, Z. Xu1, Y. Jiang1 and W. Hua1 1. School of Electrical Engineering, Southeast University, Nanjing, China

AU-08. A Double-Rotor Consequent-Pole Vernier Permanent-Magnet Machine with Toroidal-Winding Arrangement for Hybrid Electric Vehicles. C. Lee1 1. Research Laboratory of Electronics, Massachusetts Institute of Technology, Cambridge, MA, United States

AU-09. Efficiency-Enhanced Variable Flux Reluctance Machine with Reduced Excitation Coils for Electric Vehicles. X. Zhao1 and S. Niu1 1. Electrical Engineering, The Hong Kong Polytechnic University, Kowloon, Hong Kong


AU-11. Comparative Assessments of Flux-switching PM Motor Drives for EV Applications. C. Liu1, C. Hwang2, Y. Chao2, H. Chang3 and C. Hong1 1. Electrical Engineering, National Sun Yat-sen University, Kaohsiung, Taiwan; 2. Electrical Engineering, Feng Chia University, Taichung, Taiwan; 3. Automatic Control Engineering, Feng Chia University, Taichung City, Taiwan; 4. Ph.D. Program in ECE., Feng Chia University, Taichung, Taiwan

AU-12. Analysis and improvement of a variable flux hybrid-permanent-magnet synchronous machine. Y. Hu1,2, B. Chen1,2, B. Zhou1, Y. Xiao1 and M. Wang1 1. Gree Electric Appliances Inc. of Zhuhai, Zhuhai, China; 2. State Key Laboratory of Air-Conditioning Equipment and System Energy Conservation, Zhuhai, China

AU-13. A Simplified Rotor-Shape Optimization Method for IPM Motor to Torque Ripple Reduction. G. Yu1, J. Li1, Y. Xu1, J. Zou1, L. Xiao1 and H. Lan1 1. Harbin Institute of Technology, Harbin, China

AU-14. Design for an Six-Phase Synchronous Reluctance Motor Mounted with Centrifugal Compressor Using Multiobjective Optimization Methods. C. Lin1 and C. Hwang2 1. Electrical Engineering, National United University, Miaoli, Taiwan; 2. Department of Electrical Engineering, Feng Chia University, Taichung, Taiwan
AU-15. Design and investigation of a V-shaped Permanent Magnet Vernier Motor with enhanced Flux-Modulated effect and Low Torque Ripple. Y. Chen¹ and L. Quan¹ 1. Electrical Engineering, School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China

AU-16. A Novel Wide Speed Range Permanent Magnetic Machine Based on Mechanical Flux Weakening Control. Y. Mao¹ and S. Niu¹ 1. Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong, Hong Kong

TUESDAY SIMPOR/ROSELLE BALLROOM
MORNING
8:30

Session AV
SOFT MAGNETIC MATERIALS I
(Poster Session)
Nobuyoshi Imaoka, Co-Chair
Advanced Industrial Science and Technology, Nagoya, Japan
Shinpei Yamamoto, Co-Chair
Advanced Industrial Science and Technology, Nagoya, Japan

AV-01. CoFe–Based Amorphous Microwires for GMI Sensor Applications. P. Sarkar¹,², F. Yuan³, M. Lai², J. Jeng⁴ and C. Lu¹ 1. Department of Mechanical Engineering, National Taipei University of Technology, Taipei, Taiwan; 2. iSentek Inc., Taipei, Taiwan; 3. iSentek Inc., New Taipei City, Taiwan; 4. Department of Mechanical Engineering, National Kaohsiung University of Applied Sciences, Kaohsiung, Taiwan

AV-02. Stress Induced Domain Wall Motion in FeCo microwires for Energy Harvesting. S. Bhatti¹, C. Ma², X. Liu² and S. Piramanayagam¹ 1. School of Physical and Mathematical Science, Nanyang Technological University, Singapore, Singapore; 2. Department of Electrical and Computer Engineering, Shinshu University, Nagano, Japan

AV-03. Magnetic Property of Amorphous Magnetic Thin Ribbon and its Laminated Bulk under the Tensile and Compressive Stress. T. Mizuta¹, Y. Tani¹ and K. Fujiwara² 1. Mitsubishi Electric Corporation, Amagasaki, Japan; 2. Doshisha University, Kyotanabe, Japan

AV-04. Fabrication and evaluation of composite magnetic core using iron-based amorphous alloy powder with different particle-size distribution. N. Yabu¹, K. Sugimura¹, Y. Inagaki¹, D. Ueda¹, M. Sonehara¹ and T. Sato¹ 1. Faculty of Engineering, Shinshu University, Nagano, Japan

AV-05. Analysis of cutting technology influence on the magnetic anisotropy in grain-oriented steel based on the orientation distribution functions. G. Paltanea¹, V. Manescu (Paltanea)¹, L. Dumitru¹ and H. Gavrila¹ 1. Electrical Engineering Department, University Politehnica of Bucharest, Bucharest, Romania

Tuesday 29
AV-06. Effects of Annealing in Magnetic Field or under Tensile Stress on the Magnetic Properties of Fe-based Amorphous Magnetic Material. T. Todaka1, I. Uesugi1 and T. Sato1
1. Division of Electrical and Electronic Engineering, Faculty of Science and Technology, Dept. of Innovative Engineering, Oita University, Oita, Japan

AV-07. Analysis of dynamic permeability and energy loss of ring-shaped Fe-Ga alloy. L. Weng1, W. Li1, X. Cao1, S. Liang1 and B. Wang1 1. The State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin, China

AV-08. Magnetization reversal of helical Co and CoFe nanosprings. D. Nam1, A. Samardak2, Y. Jeon1, S. Kim1, A. Davydenko2, A. Ognev2, L. Chebotkevich2, A.S. Samardak2,3 and Y.K. Kim1
1. Materials Science and Engineering, Korea University, Seoul, The Republic of Korea; 2. School of Natural Sciences, Far Eastern Federal University, Vladivostok, Russian Federation; 3. Center for Spin-Orbitronic Materials, Korea University, Seoul, The Republic of Korea

AV-09. Degradation of static and dynamic magnetic properties of non-oriented steel sheets by cutting. F. Manescu (Paltanea)1, G. Paltanea1, E. Ferrara2, F. Fiorillo2 and I. Nemoianu1
1. Electrical Engineering Department, University Politehnica of Bucharest, Bucharest, Romania; 2. Nanoscience and Materials Division, Istituto Nazionale di Ricerca Metrologica, Torino, Italy

AV-10. Magnetic properties of exchange coupled Fe-Ni/Fe22Ni78 double-layered films. J. Kaji1, H. Aramaki1, K. Koda1, K. Takashima1, T. Yanai1, M. Nakano1 and H. Fukunaga1
1. Nagasaki University, Nagasaki, Japan

AV-11. Investigation of dynamic and continuous heat treatment on the magnetic losses of non-oriented electrical steels. J. Fuzer1, P. Kollar1, S. Martinkova1, F. Kovac2 and I. Petryshynets2 1. Institute of Physics, P.J. Safarik University, Kosice, Slovakia; 2. Division of Metals Systems, Institute of Materials Research, Kosice, Slovakia

AV-12. NiFe2O4 Nano-Hollow Spheres with Improved Magnetic and Dielectric Properties. D. Mandal1 and K. Mandal1
1. Condensed Matter Physics and Material Sciences, S.N.Bose National Centre for Basic Sciences, Kolkata, India

AV-13. Magnetic material deterioration of non-oriented electrical steels as a result of plastic deformation considering residual stress distribution. N. Leuning1, S. Stenčjès2, H. Weiss2, W. Volk2 and K. Hameyer1 1. Institute of Electrical Machines (IEM), RWTH Aachen University, Aachen, Germany; 2. Institute of Metal Forming and Casting (utg), Technische Universität München, Munich, Germany
AV-14. Magnetic properties and crystal structure of high-purity Fe-(6, 6.5, 7) mass%Si alloys. K. Matsuyama1, I. Sasaki1, S. Nakagawa1, H. Era1, M. Takezawa1, Y. Horibe1, S. Hata2, C. Kaidou3, T. Ogawa3 and S. Kubo3. 1. Kyushu Institute of Technology, Kitakyushu, Japan; 2. Kyushu University, Fukuoka, Japan; 3. National Institute of Technology, Kitakyusyu College, Kitakyusyu, Japan; 4. Fukuoka Industrial Technology Center, Kitakyusyu, Japan; 5. Kagoshima University, Kagoshima, Japan


AV-16. Effect of growth conditions on the Soft Magnetostrictive properties of thin Fe-Co-Cr films. S. Baco1, Q.A. Abbas1, Z. Leong1, T. Hayward1, N. Morley1 and T. Thomson2. 1. Material Science and Engineering, The University of Sheffield, Sheffield, United Kingdom; 2. School of Computer Science, University of Manchester, Manchester, United Kingdom

TUESDAY SIMPOR/ROSELLE BALLROOM
MORNING
8:30

Session AW
TRANSFORMERS AND INDUCTORS: MODELLING I (Poster Session)
Cheng-Tsung Liu, Chair
National Sun Yat-Sen University, Kaohsiung, Taiwan

AW-01. Effect of Magnetic Annealing on Magnetic Characteristic of Amorphous Wound Core. T. Sato1 and T. Todaka1. 1. Oita University, Oita, Japan

AW-02. Numerical Simulation of Particle Motion Inside Nano-Modified Transformer by Multi-Scale LBM-FDM Method. L. Xuan1, F. Zeng1, X. Guan1 and H. Peng1. 1. School of Electrical Engineering, Wuhan University, Wuhan, China


AW-04. Relationship Between Drive Frequency and Load Characteristics in Bidirectional Contactless Power Transfer for Electric Vehicles. T. Takura1 and H. Matsuki2. 1. Tohoku Institute of Technology, Sendai, Japan; 2. Tohoku University, Sendai, Japan
AW-05. Insulation Materials Test and Electric Field Analysis for 330 kV IOCT used in Traction Network. B. Bai1, Q. Wang1, D. Chen1, X. He1, T. Fu2 and Q. Ma2 1. Shenyang University of Technology, Shenyang, China; 2. TBEA Shenyang Transformer Group Co. Ltd, Shenyang, China


AW-07. A Novel Magnetic Valve Structure for Magnetically Controlled Reactor. M. Liu1,2, S. Wang2, Y. Li1 and J. Li2 1. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin, China; 2. State Key Laboratory of Control and Simulation of Power System and Generation Equipments, Tsinghua University, Beijing, China


AW-09. Simulation and Impact Analysis of Remanent Flux on Power Transformer Inrush Current. W. Ge1 and Y. Wang2 1. School of Control and Mechanical Engineering, Tianjin Chengjian University, Tianjin, China; 2. State Key Lab of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin, China

AW-10. A Study on the Loss Analysis according to the Switching State of Single-Phase 3kW Transformerless Solar Inverter. P. Je-Seok1,2, P. Young-Un1,2 and D. Kim1,2 1. Electrical Control Engineering, Sunchon National University, Suncheon, The Republic of Korea; 2. Sunchon National University, Greenenergy Laboratory, Sunchon, The Republic of Korea

AW-11. Design and Fabrication of Rotary Magnetostictivie Energy Harvester for Knee-joint wearable applications. B. Yan1, J. Hong1 and C. Zhang2 1. Guangdong University of Technology, Guangzhou, China; 2. Harbin Institute of Technology, Harbin, China
TUESDAY ORCHID I

Session BA

SYMPOSIUM ON SYNCHROTRON X-RAY AND NEUTRON SCIENCES FOR MAGNETISM

Chengjun Sun, Chair
Argonne National Laboratory, Argonne, IL, United States

2:00

BA-01. New opportunities for characterizing magnetic systems using next-generation synchrotron radiation sources. (Invited) J. Lang 1. X-Ray Science Division, Argonne National Laboratory, Argonne, IL, United States

2:30


3:00


3:30


4:00

BA-05. Characterization of Magnetic Nanostructures with Polarized Neutron and Resonant X-ray scattering. (Invited) S. Sinha 1. Physics, University of California San Diego, La Jolla, CA, United States

4:30

BA-06. Imaging the statics and dynamics of sub-10nm skyrmions using x-ray holography and scanning transmission x-ray microscopy. (Invited) F. Buettner 1. Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, United States
**Session BB**

**SOFT MAGNETIC MATERIALS II: AMORPHOUS AND NANOCRYSTALLINE MATERIALS**

Peter Kollar, Chair
P. J. Safarik University, Faculty of Science, Institute of Physics, Kosice, Slovakia

**2:00**


**2:15**

**BB-02.** Fabrication and properties of under 10 µm sized amorphous powders of high B, soft magnetic alloy for high frequency applications. T. Suzuki, P. Sharma, L. Jiang, Y. Zhang and A. Makino. 1. Tohoku University, New Industry Creation Hatchery Center (NICHe), Sendai, Japan; 2. Sendai R&D Center, Sendai, Japan; 3. Tohoku University, Institute for Materials Research, Sendai, Japan

**2:30**

**BB-03.** Nanostructured Soft Magnetic Multilayers with Tunable Properties for On-Chip Micro-Magnetic Devices. C. Falub, R. Hida, M. Meduna, M. Bless, J. Richter, H. Rohrmann, T. Nadig and M. Padrun. 1. Evatec AG, Trübbach, Switzerland; 2. CEA-LETI/Minatec, Grenoble, France; 3. Department of Condensed Matter Physics, Masaryk University, Brno, Czechia; 4. CEITEC, Masaryk University, Brno, Czechia

**2:45**

**BB-04.** Magnetic Properties of Annealed Amorphous Alloys (Fe-rich) Obtained by Gas Atomization Technique. K.L. Alvarez, J.M. Martín, L. Ipatov, L. Dominguez and J. Gonzalez. 1. Materials and Manufacturing, CEIT-IK4, San Sebastián, Spain; 2. Tecnun (University of Navarra), San Sebastián, Spain; 3. Escuela de Ingeniería Mecánica, Pontificia Universidad Católica de Valparaíso, Valparaíso, Chile; 4. SGIker (Magnetic Measurements), University of the Basque Country, San Sebastián, Spain; 5. Escuela de Ingeniería de Gipuzkoa, University of the Basque Country, San Sebastián, Spain; 6. Department Materials Physics, Faculty of Chemistry, University of the Basque Country, San Sebastián, Spain

**3:00**

**BB-05.** Novel making method of high resistive surface layer of Fe-based amorphous alloy powder by surface-modification using two-step acid solution process. K. Sugimura, N. Yabu, M. Sonohara and T. Sato. 1. Faculty of Engineering, Shinshu University, Nagano, Japan
3:15
BB-06. Comparison of magnetostatic and magnetoimpedance properties for amorphous ribbons, wires and glass-coated microwires. N.S. Perov1,2, Y.A. Alekhina1, L.A. Makarova1, M.F. Khajrullin1, I.A. Baraban2 and V.V. Rodionova2,3. 1. Faculty of Physics, magnetism department, Lomonosov MSU, Moscow, Russian Federation; 2. Institute of Physics & Technology and STP “Fabrika”, Immanuel Kant Baltic Federal University, Kaliningrad, Russian Federation; 3. National University of Science and Technology «MISIS», Moscow, Russian Federation.

3:30
BB-07. Tunable structural and magnetic properties of single- and multiphase glass-coated microwires. V. Rodionova1,2, I.A. Baraban1 and N.S. Perov1,3. 1. STP “Fabrika”, Immanuel Kant Baltic Federal University, Kaliningrad, Russian Federation; 2. National University of Science and Technology «MISIS», Moscow, Russian Federation; 3. Lomonosov Moscow State University, Moscow, Russian Federation.

3:45

4:00
BB-09. Comparison between two methods to measuring the magnetic flux density in soft magnetic materials at high frequencies. Y. Wang1, X. Zhang1, L. Chen1, C. Liu1 and Z. Wang1. 1. Hebei University of Technology, Tianjin, China.

4:15
BB-10. Thickness dependent high frequency properties of multistripe patterned FeCoBSi magnetic films. L. Zhang1, Y. Liu1, H. Zheng1, W. Zhu1, M. Zhang1, P. Zhou1, H. Chen1, X. Wang1, H. Lu1, J. Xie1 and L. Deng1. 1. School of Microelectronics and Solid-State Electronics, University of Electronic Science and Technology of China, Chengdu, China.

4:30

4:45
BC-01. Magneto-paper composites for low-cost two-way valves and other active \( \mu \)Pads. M. Fratzl\(^{1,3,*}\), B. Chang\(^2\), S. Oyola-Reynoso\(^2\), G. Blaire\(^3\), S. Delshadi\(^1,4\), O. Cugat\(^3\), M. Thuo\(^2\), J. Bloch\(^2\) and N. Dempsey\(^1\) 1. Univ. Grenoble Alpes, CNRS, Grenoble INP, Institut Néel, Grenoble, France; 2. Department of Materials Science and Engineering, Iowa State University, Ames, IA, United States; 3. Univ. Grenoble Alpes, CNRS, Grenoble, France; 4. Univ. Grenoble Alpes, CNRS, Inserm, Grenoble, France; 5. Univ. Grenoble Alpes, CNRS, Grenoble INP*, 3SR, Grenoble, France

BC-02. Vertical hydrodynamic focusing for cell counting with a magnetoresistive cytometer. A. Chicharo\(^4,1\), L. Barnsley\(^2,3\), M. Martins\(^1\), A. Taouallah\(^1\), B. Silva\(^2\), S. Cardoso de Freitas\(^5\), L. Dieguez\(^2\), B. España\(^4\) and P. Freitas\(^1,5\) 1. Instituto Superior Técnico, Universidade de Lisboa, Lisbon, Portugal; 2. Jülich Centre for Neutron Science at Heinz Maier-Leibnitz Zentrum, Forschungszentrum Jülich GmbH, Garching, Germany; 3. Institute of Biomedical Engineering, University of Oxford, Oxford, United Kingdom; 4. INL - International Iberian Nanotechnology Laboratory, Braga, Portugal; 5. INESC-MN, Lisbon, Portugal

BC-03. Magnetic Micro/Nano Structures for Biological Detection and Manipulations. (Invited) C. Li\(^1\), B. Chen\(^1\), Y. He\(^1\), C. Hou\(^1\), H. Huang\(^1\) and Z. Wei\(^1\) 1. National Tsing Hua University, Hsinchu, Taiwan

BC-04. Magnetic sensing of Antimony bioactivity through Antimony bearing Ferrrihydrite bioreduction. A. Zegeye\(^1\), C. Chang\(^2\), M. Abdelmoula\(^2\) and T. Haue\(^1\) 1. LIEC, Université de Lorraine, Nancy, France; 2. Institut Jean Lamour, Université de Lorraine, Nancy, France; 3. LCPME, Université de Lorraine, Nancy, France

BC-05. Novel Electromagnet for MRI Applications. J. Alonso-Valdesueiro\(^1\), B. Sisniega\(^1\) and J. Collantes\(^1\) 1. Electricity and Electronics, University of the Basque Country (UPV/EHU), Leioa, Spain
3:30

BC-06. Marrying Nanomagnetics with RNA Sequencing of Single Cancer Cells. (Invited) S.X. Wang1,2 and C. Ooi3,4 1. Materials Science and Engineering, Stanford University, Stanford, CA, United States; 2. Electrical Engineering, Stanford University, Stanford, CA, United States; 3. A*STAR, Singapore, Singapore; 4. Chemical Engineering, Stanford University, Stanford, CA, United States

BC-07. Development of Peak to Peak Voltage Detector Type MI Gradiometer for Magnetocardiography. J. Ma and T. Uchityama 1. Graduate School of Engineering, Nagoya University, Nagoya, Japan

4:00

BC-08. Eddy Current-TMR Sensor for micro-motion detection of orthopaedic implants. R.P. Khokle1, S. Cardoso de Freitas2, K. Esselle1, M. Heimlich1, F. Franco2 and D. Bokor1 1. Engineering, Macquarie University, Sydney, NSW, Australia; 2. INESC-MN - Microsistemas e Nanotecnologias, Lisbon, Portugal; 3. Faculty of Medicine, Macquarie University, Sydney, NSW, Australia

4:15

BC-09. On-chip magnetophoretic concentration of Malaria-infected red blood cells and hemozoin nanocrystals. M. Giacometti2, L.B. Callegari1, A. Collovini2, M. Monticelli3, C. Rinaldi1, D. Pett1, G. Ferrari2, M. Sampietro2, A. Dimasi2, M. Piola2, G.B. Fiore2 and R. Bertacco1 1. Department of Physics, Politecnico di Milano, Milano, Italy; 2. DEIB, Politecnico di Milano, Milano, Italy

4:30

BC-10. Effect of anti-LGR5 MicroBeads on CoFeB/Ta/CoFeB spin valve switching. O. Koplak1, A.A. Aristov2, R. Morgunov2,3 and S. Mangin4 1. Laboratory of Nanomaterials Spectroscopy, Institute of Problems of Chemical Physics, Chernogolovka, Russian Federation; 2. Tambov State Technical University, 392000, Tambov, Russia, Tambov, Russian Federation; 3. Institute of Problems of Chemical Physics, 142432, Chernogolovka, Moscow, Russia, Chernogolovka, Russian Federation; 4. Institut Jean Lamour, UMR 7198 CNRS, University de Lorraine, France, Nancy, France
Session BD
MAGNETIC TUNNEL JUNCTION AND SPIN ORBIT TORQUE
Yihong Wu, Chair
National University of Singapore, Singapore

2:00


2:15

BD-02. Nanoscale spin-orbit torque devices with Co/Pt multilayers for wide-temperature range applications. B. Jinnai, S. Fukami, H. Sato and H. Ohno. 1. Tohoku University, Sendai, Japan

2:30


3:00


3:15

BD-05. Ultra Low Power Composite Free Layer Spin-Orbit Torque MRAM. W. Hsu, R. Bell and R.H. Victora. 1. Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN, United States
BD-06. Low frequency noise in vortex spin torque nano-oscillators.
S. Wittrock1, S. Tsumegi2, K. Yukushima2, A. Fukushima3, 
H. Kubota2, P. Bortolotti1, U. Ebels1, S. Yuasa2, G. Cibiel4, 
E. Rubiola5 and V. Cros1 1. Unité Mixte de Physique CNRS/ 
Thales, Palaiseau, France; 2. Spintronics Research Center, 
National Institute of Advanced Industrial Science and 
Technology (AIST), Ibaraki 305-8568, Japan; 3. Univ. Grenoble 
Alpes, CEA, CNRS, Grenoble INP, INAC, SPINTEC, 38000 
Grenoble, France; 4. Centre National d’Études Spatiales 
(CNES), 31401 Toulouse, France; 5. Time-Frequency 
department, CNRS FEMTO-ST, Université de Franche Comté, 
25030 Besançon, France

BD-07. Non-local damping and perpendicular magnetic anisotropy 
in Hf/CoFeB/MgO. J. Lourembam1, A. Ghosh1, M. Zeng1, 
S. Wong2, Q. Yap1 and S. Lim1 1. Non volatile memory, Data 
Storage Institute, Singapore, Singapore; 2. Material Science 
Lab, Data Storage Institute, Singapore, Singapore

BD-08. A thermally robust perpendicular magnetic tunnel junction 
with the FeTa decoupling layer. J. Yu1, X. Wang1 and 
H. Fukuzawa1 1. Emerging Memories, Institute of 
Microelectronics, A*STAR, Singapore, Singapore

BD-09. Effect of MgO interface in double barrier CoFeB MTJ 
structures. S. Srivastava1, A.P. Chen1, T. Dutta1, 
R. Ramaswamy1, M. Saifullah2, K. Yamane3, J. Son1,3, K. Lee3, 
P. Yang1 and H. Yang1 1. National University of Singapore, 
Singapore; 2. Agency for Science, Technology, and Research, 
Institute of Materials Research and Engineering, Singapore, 
Singapore; 3. GLOBALFOUNDARIES Singapore Pte. Ltd., 
Singapore, Singapore

BD-10. Withdrawn

BD-11. Effect of stray field from adjacent bits of high-density STT-
MRAM on switching current. S. Itai1, T. Kai1, M. Nakayama1, 
T. Daibou1 and J. Ito1 1. Institute of Memory Technology 
Research & Development, Toshiba Memory Corporation, 
Kawasaki, Japan

Tuesday 39
Session BE

SPIN INJECTION AND SPIN TORQUE OSCILLATORS

Ciarán Fowley, Chair
Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany

2:00

BE-01. Effects of spin-orbit torque on the magnon gas. (Invited)
V.E. Demidov1, S. Urazhdin2, B. Divinskiy3 and S.O. Demokritov4 1. Institute for Applied Physics, University of Muenster, Muenster, Germany; 2. Emory University, Atlanta, GA, United States

2:30

BE-02. Current-Induced Superparamagnetism in CoFeB Nanodots.
A.M. Abdelgawad1, B. Parks2 and S. Majetich2 1. Materials Science and Engineering, Carnegie Mellon University, Pittsburgh, PA, United States; 2. Physics, Carnegie Mellon University, Pittsburgh, PA, United States

2:45

BE-03. Out-of-plane auto-oscillation in spin Hall oscillator with additional polarizer. T. Taniguchi5 1. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan

3:00

BE-04. Engineering lateral nanostructures for the study of spin accumulation phenomena, giant magnetoresistance, spin Hall effect, and sensors. (Invited) J. Attané6, L. Vila7, A. Marty7, G. Zahnd1, T. Van Pham1, P. Noel1 and W. Savero-Torres1 1. Univ. Grenoble Alpes, CEA, CNRS, Grenoble INP*, INAC, SPINTEC, Grenoble, France

3:30

BE-05. Robust electrical mutual synchronization of spin torque oscillators. S. Tsunegi6, T. Taniguchi1, R. Lebrun2, K. Yukushiji1, A. Fukushima1, J. Grollier2, V. Cros2, S. Yuasa6 and H. Kubota1 1. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Palaiseau, France; 2. Unité Mixte de Physique CNRS, Thales, Univ. Paris Sud, Université Paris-Saclay, Palaiseau, France

3:45

4:00

BE-07. Influence of MgO Tunnel Barrier thickness in 3-terminal Spin Hall Nano-Oscillators. M. Tarequzzaman1,2, T. Boehnert1, A. Jenkins1, J. Borme1, E. Paz1, R. Ferreira1 and P. Freitas1,2
1. Nanoelectronics (Spintronics), International Iberian Nanotechnology Laboratory (INL), Braga, Portugal; 2. Physics Department, Instituto Superior Tecnico (IST) – Universidade de Lisboa, Lisbon, Portugal

4:15

BE-08. Spin torque diode with perpendicular anisotropy used for passive demodulation of FM digital signals. S. Louis2, V.S. Tiberkevich1, J. Li2, O. Prokopenko1 and A.N. Slavin1
1. Physics, Oakland University, Rochester, MI, United States; 2. Electrical and Computer Engineering, Oakland University, Rochester, MI, United States; 3. Faculty of Radio Physics, Electronics and Computer Systems, Taras Shevchenko National University of Kyiv, Kyiv, Ukraine

4:30

BE-09. The reversible spin texture of ferroelectric GeTe for a tunable source of spin currents. C. Rinaldi1,2, S. Varotto1, M. Asa1, J. Slawinska2, J. Fujii3, G. Vinai2, S. Cecchi3, D. Di Sante4, R. Calarco1, I. Vobornik4, S. Picozzi5 and R. Bertacco1
1. Physics, Politecnico di Milano, Milano, Italy; 2. IFN-CNR, Milan, Italy; 3. CNR-SPIN, Chieti, Italy; 4. CNR-IOM, Trieste, Italy; 5. Paul-Drude-Institut für Festkörperelektronik, Berlin, Germany; 6. Institut für Theoretische Physik und Astrophysik, Universität Würzburg, Würzburg, Germany

4:45

BE-10. Charge pumping induced by magnetic texture dynamics in Weyl semimetals. Y. Araki1,2 and K. Nomura1
1. Institute for Materials Research, Tohoku University, Sendai, Japan; 2. Frontier Research Institute for Interdisciplinary Sciences, Tohoku University, Sendai, Japan

TUESDAY AFTERNOON

2:00

Session BF

NANOWIRES, NANOPARTICLES AND CLUSTERS

Paola Tiberto, Chair
Istituto Nazionale di Ricerca Metrologica (INRIM), Torino, Italy

BF-01. Anisotropy and coercivity analysis in tetragonal (Cu,Co) FeO2 particles. H. Latiff1,2, T. Devillers1, H. Yanagihara3, N. Dempsey4 and D. Givord1
1. Université Grenoble Alpes, CNRS, Grenoble INP, Institut Néel, 38000 Grenoble, France; 2. Institute of Applied Physics, University of Tsukuba, 305-8573 Tsukuba, Japan
BF-02. The effect of surface spin disorder on magnetic properties of Fe/FeO core-shell nanoparticles. M. Lostun1, D. Herea1, M. Grigoros1, G. Ababei1, I. Ghemes1 and N. Lupu1. 1. National Institute of Research and Development for Technical Physics, Iasi, Romania


BF-04. Topological control of the magnetic and magneto-transport properties of 3D interconnected nanofiber networks. T. da Câmara Santa Clara Gomes1, J. De La Torre Medina2, Y. Velázquez-Galván1, J. Martínez-Huerta1, A. Encinas1 and L. Piraux1 1. Institute of Condensed Matter and Nanosciences, Université catholique de Louvain, Louvain-La-Neuve, Belgium; 2. Instituto de Investigaciones en Materiales - Unidad Morelia, Universidad Nacional Autonoma de Mexico, Morelia, Mexico; 3. Division de Materiales Avanzados, Instituto Potosino de Investigacion Cientica y Tecnologica, San Luis Potosi, Mexico


BF-06. From vanishing interaction to superferromagnetic dimerization: Experimental determination of interaction lengths for embedded Co clusters. F. Tournus1, A. Hillion1, A. Tamion1, C. Albin1 and V. Dupuis1 1. Institut Lumière Matière, Université Lyon 1 & CNRS, Villeurbanne, France

BF-07. The role of topologically non-trivial structures in magnetization processes of diameter modulated nanowires. J. Fernandez-Roldan1, C. Bran1, R. Perez del Real1, M. Vázquez1 and O. Chubykalo-Fesenko1 1. Instituto de Ciencia de Materiales de Madrid, CSIC, Madrid, Spain

BF-08. Multisegmented cylindrical nanowires: from designed domain configuration to controlled stepped domain wall propagation. (Invited) C. Bran1, E. Berganza1, J. Fernandez-Roldan1, M. Jaafar1, R. Perez del Real1, A. Asenjo1, O. Chubykalo-Fesenko1 and M. Vázquez1. 1. Institute of Materials Science of Madrid, CSIC, Madrid, Spain

BF-10. Dominance of shape anisotropy among magnetostatic interaction and Magnetocrystalline anisotropy in electrodeposited (FeCo)₁₋ₓCuₓ(X=0.1-0.5) Ternary Alloy Nanowires. N. Ahmad¹Ⅱ, M. Zahid Shafiq¹, S. Khan³, R. Sharif⁴, A. Safeer⁴, A. Majid⁵, S.A. Shah⁶ and K. Javed⁶. 1. Physics, International Islamic University, Islamabad, Pakistan; 2. University of Chinese Academy of Sciences, Beijing, China; 3. Spintronics Laboratory, Department of Physics, International Islamic University, Islamabad, Pakistan; 4. Physics, University of Engineering and Technology, Lahore, Pakistan; 5. Physics, University of Gujrat, Gujrat, Pakistan; 6. Physics, FC College University, Lahore, Pakistan
BG-04. Torque Characteristics of Interior Permanent Magnet Spherical Actuators. K. Takahara¹, K. Hirata¹ and N. Niguchi¹
I. Osaka University, Suita-city, Japan

BG-05. Force Estimation Method for a Magnetic Lead-Screw-Driven Linear Actuator. A. Heya¹, Y. Nakata², M. Sakai¹, H. Ishiguro² and K. Hirata¹ 1. Department of Adaptive Machine Systems, Osaka University, Suita, Japan; 2. Department of Systems Innovation, Osaka University, Toyonaka, Japan

BG-06. Performance Investigation of a five-phase Multi-segment primary PMLSM for Ropeless Elevator. Q. Jiang¹ and Q. Lu¹
I. Zhejiang University, Hangzhou, China

BG-07. A Novel Linear Stator PM Vernier Machine with Spoke-Type Magnets. A. Nematsaberi¹ and J. Faiz¹
1. Electrical and Computer Engineering, University of Tehran, Tehran, The Islamic Republic of Iran

BG-08. Development of a new rotary flux switching transverse flux machine with the ability of linear motion. C. Liu¹, Y. Wang¹, J. Zhu¹, Y. Guo¹, G. Lei¹ and S. Wang¹ 1. Hebei University of Technology, Tianjin, China; 2. University of Technology Sydney, Sydney, NSW, Australia; 3. PMG Fussen GmbH, Fussen, Germany

BG-09. Quantitative Comparison of Novel Dual-PM Linear Motors for Ropeless Elevator System. H. Fan¹, K. Chau¹, C. Liu² and T. Ching³ 1. Electrical and Electronic engineering, The University of Hong Kong, Hong Kong Island, Hong Kong; 2. School of Energy and Environment, City University of Hong Kong, Hong Kong; 3. Faculty of Science and Technology, University of Macau, Macao, Macao


BG-11. Design and Analysis of a Planar Flux-Switching Permanent Magnet Motor. H. Hu¹, G. Cao¹, S. Huang¹, C. Wu¹, J. Guo¹, D. Liang² and R. Mai³ 1. Shenzhen Key Laboratory of Electromagnetic Control, Shenzhen University, Shenzhen, China; 2. School of Electrical Engineering, State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, Xi'an, China; 3. School of Electrical Engineering, Southwest Jiaotong University, Chengdu, China
**Session BH**

**SENORS: FRONTIER APPLICATIONS I**

Antonio Ruotolo, Chair
City University of Hong Kong, Kowloon, Hong Kong

**2:00**

**BH-01.** The Ultimate Compact Packaging Technology based on Magnetoresistive devices for a minimum source-sensor distance. *F. Franco*\(^1,2\), R. Dias\(^1\), J. Gaspar\(^1\), T. Materne\(^4\), T. Becker\(^5\), S. Cardoso de Freitas\(^1,2\) and P. Freitas\(^1,3\)

1. INESC-MN, Lisbon, Portugal; 2. Instituto Superior Técnico, Lisbon, Portugal; 3. INL, Braga, Portugal; 4. BOGEN Electronic, Berlin, Germany

**2:15**

**BH-02.** Busbar current transducer with suppression of external fields and gradients. *P. Ripka*\(^1\), A. Chirtsov\(^1\) and J. Vyhnanek\(^1\)

1. Czech Technical University, Prague, Czechia

**2:30**

**BH-03.** Small Eddy Current Testing Sensor Probe using Tunneling Magnetoresistance Sensors for Detection of Cracks in Steel Structures. *K. Tsukada*\(^1\), M. Hayashi\(^1\), Y. Nakamura\(^1\), K. Sakai\(^1\) and T. Kiwa\(^1\)

1. Okayama University, Okayama, Japan

**2:45**

**BH-04.** Nondestructive testing of wire rope based on shoving magnetic field structure. *X. Yan*\(^1\) and D. Zhang\(^1\)

1. Electrical Engineering and Electronics, Harbin Institute of Technology Shenzhen Graduate School, Shenzhen, China

**3:00**

**BH-05.** Magnetic detection of steel corrosion at a buried position near the ground level using a magnetic resistance sensor. *K. Tsukada*\(^1\), T. Tomioka\(^1\), S. Wakabayashi\(^1\), K. Sakai\(^1\) and T. Kiwa\(^1\)

1. Okayama University, Okayama, Japan

**3:15**

**BH-06.** Remote Underwater Animal Monitoring Magnetic Sensor System. *A. Kaidarova*\(^2\), S. Amara\(^2\), M. Karimi\(^2\), A. Shamimi\(^2\), N. Gerald\(^1\), C. Duarte\(^1\) and J. Kosef\(^1\)

1. Red Sea Research Center (RSRC), King Abdullah University of Science and Technology (KAUST), Thuwal, Saudi Arabia; 2. Computer, Electrical and Mathematical Sciences & Engineering (CEMSE), King Abdullah University of Science and Technology (KAUST), Thuwal, Saudi Arabia
BH-07. High-performance micro magnetic sensors installed in wearable electronic compasses and I-o-T magnetic sensors promoting new information society - Amorphous Wire CMOS IC Magneto-Impedance Sensors -. (Invited) K. Mohri1,2, 1. Graduate School of Engineering, Nagoya University, Nagoya, Japan; 2. Division of Research, Nagoya Industrial Science Research Institute, Nagoya, Japan

4:00

BH-08. A localization method of submarines by using an airborne three-axis magnetometer carried on cruising aircraft. Y. Shangguan1, J. Yuan1 and J. Zou1 1. Dept. of Electrical Engineering, Tsinghua University, Beijing, China

4:15

BH-09. Efficient wireless power transmission to medical implant using Wiegand sensor. K. Takahashi1, T. Yamada1 and Y. Takemura1 1. Yokohama National University, Yokohama, Japan

4:30

BH-10. Accurate Position Detection in Wireless Power Transfer Using Magnetoresistive Sensors for Implant Applications. W. Han1, K. Chau1, C. Jiang1 and W. Liu1 1. Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong

4:45


TUESDAY ORCHID II
AFTERNOON

2:00

Session Bi

COMPUTATIONAL MAGNETICS: MICROMAGNETICS AND AB-INITIO CALCULATIONS
Andrivo Rusdyi, Chair
National University of Singapore, Singapore

2:00

BI-01. GPU-Accelerated Atomistic Energy-Barrier Calculations for Skyrmion Annihilation. P.T. Heistracher1, C. Abert1, F. Bruckner1, C. Vogler1 and D. Suess1 1. Physics of Functional Materials, University of Vienna, Vienna, Austria
BI-02. Effect of dipolar interactions on magnetization reversal process using ultra-large-scale micromagnetics simulation. H. Tsukahara¹, K. Iwano¹, C. Mitsumata², T. Ishikawa³ and K. Ono¹. 1. High Energy Accelerator Research Organization, Tsukuba, Japan; 2. National Institute for Materials Science (NIMS), Tsukuba, Japan

BI-03. Withdrawn

BI-04. Novel micromagnetic approach for self-consistent modeling of magnetization and temperature dynamics. O. Chubykalo-Fesenko¹, D. Serantes², P. Nieves³, C. Muñoz-Mendez⁴ and R.W. Chantrell⁴. 1. Instituto de Ciencia de Materiales de Madrid, CSIC, Madrid, Spain; 2. Universidad de Santiago de Compostela, Santiago de Compostela, Spain; 3. Universidad de Burgos, Burgos, Spain; 4. University of York, York, United Kingdom

BI-05. Simulation of the Novel Magnetic Response of the Perpendicular Synthetic Ferrimagnet Ni₃Pt/Ir/Co using VAMPIRE. J.N. Scott¹, W.R. Hendren¹, R. Bowman¹, R.W. Chantrell⁴ and R.F. Evans². 1. Queen’s University Belfast, Belfast, United Kingdom; 2. University of York, York, United Kingdom


BI-07. Stable Bloch point in helimagnetic nanostructures containing boundary between grains with different chirality. M. Beg¹,², D.I. Cortes², R. Pepper², M. Bisotti³, G. Downing³, B. Atie³, O. Hovorka⁴ and H. Fangohr¹,². 1. European XFEL GmbH, Schenefeld, Germany; 2. Faculty of Engineering and the Environment, University of Southampton, Southampton, United Kingdom

BI-08. The effect of antisite disorder on magnetic and magnetocaloric properties of Ni-Co-Mn-In alloys: ab initio and Monte Carlo studies. V. Sokolovskiy¹, V. Buchelnikov¹ and P. Entel². 1. Condensed matter, Chelyabinsk State University, Chelyabinsk, Russian Federation; 2. Duisburg-Essen University, Duisburg, Germany
BI-09. Analysis of switching times distributions for uniaxial magnetic particles. M. d’Aquino¹, C. Serpico² and V. Scalera³
1. Dipartimento di Ingegneria, Università degli Studi di Napoli “Parthenope”, Napoli, Italy; 2. DIETI, University of Naples Federico II, Naples, Italy

BI-10. Ab initio prediction of giant perpendicular magnetic anisotropy at Fe/CuIn₁₋ₓGaₓSe₂ interface. K. Masuda¹, S. Kasaï¹, Y. Miura¹,² and K. Hono³ 1. National Institute for Materials Science (NIMS), Tsukuba, Japan; 2. Electrical Engineering and Electronics, Kyoto Institute of Technology, Kyoto, Japan

TUESDAY SIMPOR/ROSELLE BALLROOM
AFTERNOON
1:30

Session BP
TMR, VCMA AND MULTIFERROIC MATERIALS I
(Poster Session)
Xiufeng Han, Chair
Institute of Physics, Chinese Academy of Sciences, Beijing, China

BP-01. Coexistence of Large Voltage Controlled Magnetic Anisotropy, Large Surface Anisotropy, and Large TMR by a new MTJ structure having MgO/CoFeB/1r/CoFeB. S. Oikawa¹, Y. Saito¹, H. Yoda¹, Y. Kato¹, A. Tiwari¹, M. Ishikawa¹, N. Shimomura¹, K. Koi¹, T. Inokuchi¹, H. Sugiyama¹, M. Shimizu¹, S. Shiratori¹, A. Buyandalai¹, Y. Ohkawa¹ and A. Kurobe¹ 1. Corporate R&D Center, Toshiba Corporation, Kawasaki, Japan

BP-02. Ionic Liquid Gating Modulation of Diluted Magnetic Semiconductor (Zn, Mn)O Thin Films. H. Wong¹, S. Ng¹, Y. Liu¹, K. Lam¹, K. Chan¹, W. Cheng¹, D. von Nordheim², C. Mak¹, B. Ploss² and C. Leung¹ 1. Department of Applied Physics, The Hong Kong Polytechnic University, Hong Kong, Hong Kong; 2. Department of SciTec, University of Applied Sciences Jena, Jena, Germany

BP-03. Development of all spinel magnetic tunnel junctions: epitaxial Fe₂O₃/MgAl₂O₄/Fe₂O₃(001) structure. T. Tainosho¹, H. Yanagihara¹ and H. Sukegawa¹ 1. Applied physics, University of Tsukuba, Tsukuba, Japan; 2. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science (NIMS), Tsukuba, Japan

BP-04. Large enhancement of magneto-dielectric effect in Co–MgF₂ nano–composites by small addition of Si. Y. Cao¹, N. Kobayashi², S. Ohnuma¹,² and H. Masumoto¹ 1. Frontier Research Institute for Interdisciplinary Science, Tohoku University, Sendai, Japan; 2. Research Institute for Electromagnetic Materials, DENJIKEN, Sendai, Japan

BP-06. Study of magnetic and electrical properties of Zn_{98}Mn_{2}Fe_{2}O_{4}-BaTiO_{3} multiferroic composites. A. Farheen and R. Singh. 1. School of Physics, University of Hyderabad, Hyderabad, India

BP-07. Theory of electrically tunable thin-film electromagnetic crystals based on a coplanar waveguide. A.A. Nikitin, A.B. Ustinov, E. Lähderanta and B.A. Kalinikos. 1. Physical Electronics and Technology, St. Petersburg Electrotechnical University, St. Petersburg, Russian Federation; 2. Laboratory of Physics, Lappeenranta University of Technology, Lappeenranta, Finland

BP-08. Dielectric relaxation and conduction mechanism of magnetoelectric hexaferrite BaFe_{12}Sc_{1}O_{19}. R. Tang, Q. Zhu and X. Su. 1. College of Physics, Optoelectronics and Energy, Soochow University, Suzhou, China

BP-09. Magnetodielectric effects in multiferroic M-type hexaferrite thin films. R. Tang, Q. Zhu, X. Su and H. Yang. 1. College of Physics, Optoelectronics and Energy, Soochow University, Suzhou, China; 2. School of Science, Nanjing University of Aeronautics and Astronautics, Nanjing, China

BP-10. Room-temperature multiferroic properties of 0.5LaFe_{12}Co_{8}O_{19}-Bi_{2}Ti_{2}O_{7} thin films. J. Su. 1, 2. 1. Qingdao University, Qingdao, China; 2. Nanjing University, Nanjing, China

TUESDAY SIMPOR/ROSELLE BALLROOM

AFTERNOON 1:30

Session BQ

ENERGY ASSISTED RECORDING AND RECORDING MEDIA (Poster Session)

Stephanie Hernandez, Chair

Seagate Technology, Shakopee, MN, United States

BQ-01. Micromagnetic model analysis of spin-torque oscillator (STO) integrated into recording write head for microwave-assisted magnetic recording—Oscillation of STO vs. rise time of in-gap field. Y. Kanai, R. Itagaki, S. Greaves and H. Muraoka. 1. Information and Electronics Engineering Department, Niigata Institute of Technology, Kashivazaki, Japan; 2. RIEC, Tohoku University, Sendai, Japan

BQ-02. Effect of SIL magnetic design on STO optimization in MAMR. I. Tagawa. 1. Electrical and Electronics, Tohoku Institute of Technology, Sendai, Japan
BQ-03. Magnetic recording using a spin torque oscillator.
S. Greaves1. Tohoku University, Sendai, Japan

K. Dong1, F. Jin1, W. Mo1 and J. Song1. School of Automation, China University of Geosciences, Wuhan, China

J. Chen1, G. Xie1, K. Luo1, W. Cheng1, P. Lu1 and Y. Wang1. Wuhan National Laboratory for Optoelectronics, Huazhong University of Science and Technology, Wuhan, China; 2. Key Lab of Jiangxi Province for Numerical Simulation and Emulation Technology, Gannan Normal University, Ganzhou, China; 3. Electrical and Computer Engineering Department, Carnegie Mellon University, Pittsburgh, PA, United States; 4. Key Laboratory of Information Storage System (School of Computer Science and Technology, Huazhong University of Science and Technology), Ministry of Education of China, Wuhan, China

BQ-06. Lattice Mismatch Induced Oscillatory Feature Size and its Impact on the Physical Limitation of Grain Size.
J. Deng1, H. Li1, K. Dong2, R. Li2, Y. Peng2, G. Ju3, J. Hu4, G. Chow1 and J. Chen1. 1. Materials Science and Engineering, National University of Singapore, Singapore; 2. Key Laboratory of Magnetic Materials and Devices & Zhejiang Province Key Laboratory of Magnetic Materials and Application Technology, Ningbo, China; 3. Seagate Technology, Fremont, CA, United States; 4. Singapore Institute of Manufacturing Technology, Singapore, Singapore; 5. School of Automation, China University of Geoscience, Wuhan, China

BQ-07. Magnetic properties and microstructure of [FePt-Mg(Ti, Ta, Zr, Nb, B)O] granular films.
J. Tsai1, Y. Chen1, C. Pi1, Y. Wu1, C. Chang1 and G. Varvaro2. 1. Department of Materials Science and Engineering, National Chung Hsing University, Taichung, Taiwan; 2. nM2-Lab, Istituto di Struttura della Materia, CNR, Monterotondo Scalo (Roma), 00015, Roma, Italy

BQ-08. First order reversal curves and intrinsic parameter determination for magnetic materials: limitations of hysteron-based approaches in correlated systems.
S. Ruta1, O. Hovorka2, K. Wang3, P. Huang3, G. Ju3 and R.W. Chantrell1. 1. Physics, University of York, York, United Kingdom; 2. Faculty of Engineering and the Environment, University of Southampton, Southampton, United Kingdom; 3. Seagate Technology, Fremont, CA, United States

BQ-09. Magnetization Reversal of antiferromagnetically coupled (Co/ Ni) and (Co/ Pt) Multilayers.
A.Y. AlSubhi1. Physics, Sultan Qaboos University, Muscat, Oman

BQ-10. In-plane components of FePt nanogranular films on MgO underlayer with and without carbon segregant.
J. Wang1, Y. Takahashi1 and K. Hono1. Research Center for Magnetic and Spintronics Materials, Magnetic Materials Gr., National Institute for Materials Science (NIMS), Tsukuba, Japan; 2. International Center for Young Scientists (ICYS), National Institute for Materials Science (NIMS), Tsukuba, Japan
BQ-12. Ion beam patterning of ultrathin L10-MnGa (001) film grown on CoGa buffer layer. Y. Horie1, D. Oshima1, T. Kato1 and S. Iwata1 1. Nagoya University, Nagoya-shi, Japan

BQ-13. Exchange coupling through a Pt spacer to enable ultrafast memory devices. C.A. Lambert2,1, J. Gorchon1, Y. Yang1, A. Pattabi1, R. Wilson1, J. Bokor1 and S. Salahuddin1 1. EECS, UC Berkeley, Berkeley, CA, United States; 2. Materials Science, ETH Zürich, Zürich, Switzerland

BQ-14. Thermodiffusion and the replenishment phenomena of PFPEs for the application of heat-assisted magnetic recording. P. Chung1 1. Energy Engineering, Inje University, Gimhae-si, The Republic of Korea

BQ-15. Investigation Nonlinear GPR Target for BCJR Algorithm on Perpendicular HAMR Channel with Volterra Model. W. Wongtrairat1, T. Sopon1, S. Wongsuthavas2, S. Sophan1 and P. Supnithi3 1. Faculty of Engineering and Architecture, Rajamangala University of Technology Isan (RMUTI), Nakhonratchasima, Thailand; 2. Faculty of Science and Liberal Arts, Rajamangala University of Technology Isan (RMUTI), Nakhonratchasima, Thailand; 3. Faculty of Engineering, King Mongkut’s Institute of Technology Ladkrabang (KMITL), Bangkok, Thailand

TUESDAY SIMPOR/ROSELLE BALLROOM
AFTERNOON
1:30

Session BW
TMR, VCMA AND MULTIFERROIC MATERIALS II
(Poster Session)
Shiheng Liang, Chair
Institute of physics, Chinese Academy of Sciences, Beijing, China

BW-01. Voltage control of perpendicular exchange bias in Pt/IrMn/Co/(Co/Pt)x/Ta/PMN-PT(011) multiferroic heterostructures. Q. Yang1, Z. Hu1, Z. Zhou1, S. Zhao1 and M. Liu1 1. Xi’an Jiaotong University, Xi’an, China

BW-02. Voltage switching of perpendicular magnetic anisotropy in (Co/Pt)y/PZN-PT heterostructures at room temperature. B. Peng1, M. Feng1, Q. Yang1, Y. Zhang1 and M. Liu1 1. Xi’an Jiaotong University, Xi’an, China

BW-03. High isotropic Terfenol-D/PZT magnetoelectric sensor based on ring nested structure. X. Wu1, J. Ouyang1, W. Wang1, Y. Ren1, S. Chen1 and X. Yang1 1. School of Optical and Electronic Information, Huazhong University of Science and Technology, WuHan, China
Preparation and Characterization of Permalloy and Cobalt Doped BiFeO3 Hybrid Core-shell nanostructures. K. Javed1,2, N. Ahmad3, M. Shahzad4 and S. Shah1
1. Physics, Forman Christian College, Lahore, Pakistan; 2. Institute of Physics, Chinese Academy of Sciences, Beijing, China; 3. Department of Physics, FIAS, International Islamic University, Islamabad, Pakistan

Large Magnetolectric coupling in a Y-type hexaferrite. Y. Yang1,2, K. Jiang1, J. Li1, C. Duan2, X. Wang1 and H. Ge1
1. College of Materials Science and Engineering, Zhejiang University, Hangzhou, Hangzhou, China; 2. Key Laboratory of Polar Materials and Devices, Ministry of Education, East China Normal University, Shanghai, Shanghai, China

Resistive switching in Pt/BiFeO3/SrRuO3/SrTiO3 heterostructures. T. Wang1, W. Cheng1,2, C. Wang1, H. Wang2, Y. Hao1 and X. Miao1,2
1. School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, China; 2. Wuhan National Research Center for Optoelectronics, Huazhong University of Science and Technology, Wuhan, China

Integrated Thin-Film Magnetolectric Waveguide with Tunable Resonance Frequency. A. El-Ghazaly1, J. Evans3, N. Sato1, N. Montross3, R.M. White4 and S.X. Wang1,4

Study of magneto-dielectric behaviour in Haldane spin chain Ho2BaNiO5. S.K. Upadhyay1 and E.V. Sampathkumaran1
1. Department of Condensed Matter Physics and Material Science, Tata Institute of Fundamental Research, Mumbai, MUMBAI, India

Prediction of Room Temperature Oxygen Vacancy-mediated Multiferroicity in a Cobalt-substituted Perovskite. M. C. Onbasli1
1. Dept. of Electrical and Electronics Engineering, Koc University, Istanbul, Turkey

Magnetolectric characteristics in three–phase magnetostrictive/piezoelectric composites with different high permeability materials. L. Chen1 and Y. Wang2
1. Key Lab of Computer Vision and Intelligent Information System, Chongqing University of arts and sciences, ChongQing, China; 2. School of Electronic Information and Electric Engineering, Shanghai Jiao Tong University, Shanghai, China

High-Performance Photovoltaic Readable Ferroelectric Nonvolatile Memory Based on La Doped BiFeO3 Films. D. Li1, D. Zheng1, C. Jin1 and H. Bai1
1. Tianjin University, Tianjin, China
BR-01. Enhancement of magnetoresistance by cobalt substitution in double exchange ferromagnets: Pr$_{0.4}$Sr$_{0.6}$Mn$_{1-x}$Co$_x$O$_3$ ($x = 0$, 0.05 and 0.1). A. Chanda$^1$ and R. Mahendiran$^1$. 1. Department of Physics, National University of Singapore, Singapore

BR-02. Increased Curie temperature induced by orbital ordering in La$_{0.67}$Sr$_{0.33}$MnO$_3$/BaTiO$_3$ superlattices. Z. Quan$^1$, F. Zhang$^1$, B. Wu$^1$, G. Zhou$^1$ and X. Xu$^1$. 1. Shanxi Normal University, Linfen, China

BR-03. Electrical Conductive Mechanism for Investigation of Charge Ordering in Nd$_{0.5}$Ca$_{0.5}$MnO$_3$. A. Swain$^1$ and V. Gorige$^1$. 1. School of Physics, University of Hyderabad, Hyderabad, India

BR-04. Withdrawn

BR-05. Large Magnetoresistance in Diode Assisted ZnCoO Device. K. Zhang$^{1,2}$, Y. Zhang$^{1,2}$, Z. Zhang$^{1,2}$, Z. Zheng$^{1,2}$, J. Nan$^{1,2}$, G. Wang$^{1,2}$, Y. Wang$^{1,2}$, W. Yun$^{1,2}$ and W. Zhao$^{1,2}$. 1. Fert Beijing Institute, Beihang University, Beijing, China; 2. School of Electronics and Information Engineering, Beihang University, Beijing, China

BR-06. Negative spin Hall magnetoresistance in antiferromagnetic Cr$_2$O$_3$/Ta bilayer at the low temperature region. Y. Ji$^1$, J. Miao$^1$, K. Meng$^1$, J. Chen$^1$, X. Xu$^1$, Y. Wu$^1$ and Y. Jiang$^1$. 1. School of Materials Science and Engineering, University of Science and Technology Beijing, Beijing, China

BR-07. Effect of sputtering conditions on the in plane and out of plane magnetic properties of tetragonal Mn$_2$VGa Heusler alloy films. P. V. Midhunlal$^1$, A. Chelvane$^2$, A. Talapatra$^3$, J. Mohanty$^3$, J. Joseph$^4$, A. Rajani Kanth$^4$ and N. Harish Kumar$^4$. 1. Department of Physics, IIT Madras, Chennai, India; 2. Defense Metallurgical Research Laboratory, Hyderabad, India; 3. Department of Physics, IIT Hyderabad, Hyderabad, India; 4. School of Physics, Univesity of Hyderabad, Hyderabad, India

BR-08. Structural, magnetic and transport properties of half-metallic quaternary Heusler alloy CoRuMnSi: Theory and Experiment. V. Yenugonda$^1$, D. Rani$^1$, S. Samatham$^1$, A. Alam$^1$ and S. K. G. J. 1. Department of Physics, Indian Institute of Technology Bombay, Mumbai, India
BR-09. Possible spin gapless semiconductor type behaviour in CoFeMnSi epitaxial thin films. V.K. Kushwaha¹, J. Rani¹, A. Tulapurkar² and C. Tomy¹ 1. Physics Department, Indian Institute of Technology Bombay, Powai, India; 2. Department of Electrical Engineering, Indian Institute of Technology Bombay, Mumbai, India

BR-10. Interplay between structure and anisotropic magnetoresistance in Ta/NiFe/Ta thin films. H.W. Chang¹, M. Chan², D. Wei², C. Wang³ and C. Ouyang⁴ 1. Department of Physics, National Chung Cheng University, Taichung, Taiwan; 2. National Taipei University of Technology, Taipei, Taiwan; 3. Department of Applied Physics, Tunghai University, Taichung, Taiwan; 4. Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan

BR-11. Different Phase Mn₂Ga films introduced by varying the Cr buffer thickness. Y. Zheng¹, Y. Liu¹, L. Ren¹ and K. Teo¹ 1. Electrical and Computer Department, National University of Singapore, Singapore

BR-12. Generation of Néel field in anti-ferromagnetic nanowire by a sloped electric field. K. Kubota¹, K. Yamada² and Y. Nakatani¹ 1. Graduate school of Informatics and Engineering, University of Electro-Communications, Chofu, Japan; 2. Faculty of Engineering, Gifu University, Gifu, Japan

BR-13. XMCD study of ultra-thin Co₃FeAl film. X. Zhang¹, W. Liu², L. He¹ and Y. Xu² 1. Nanjing University, Nanjing, China; 2. University of York, York, United Kingdom

TUESDAY SIMPOR/ROSELLE BALLROOM
AFTERNOON
1:30

Session BS
PERMANENT MAGNET AND RELUCTANCE MACHINES III
(Poster Session)
Xiao Liu, Co-Chair
Hunan University, Changsha, China
Xiaofeng Ding, Co-Chair
Beihang University, Beijing, China

BS-01. Reliability Comparison of Stator-Permanent Magnet Machine and Rotor Permanent Magnet Machine. W. Li² and M. Cheng¹ 1. School of Electrical Engineering, Southeast University, Nanjing, China

BS-02. Torque Analysis and Improvement of Single-Phase Asymmetric-Stator-Pole Doubly Salient Permanent Magnet Machine. M. He¹, W. Xu¹ and C. Ye¹ 1. School of Electrical and Electronic Engineering, Huazhong University of Science and Technology, Wuhan, China
BS-03. Suppression of Irreversible Demagnetization under Motor Operation by Preliminarily Demagnetizing of Neodymium Bonded Magnet in In-Wheel Axial-Gap Motor. S. Nagano1, M. Takemoto1, S. Ogawara1, K. Orikawa1, W. Hino2 and K. Takezaki2. 1. Graduate School of Information Science and Technology, Hokkaido University, Sapporo, Japan; 2. Dynax Corporation, Chitose, Japan

BS-04. Study of Dual Airgap Stator and Rotor Permanent Magnet Machines with Halbach Array Configurations Using Phase-group Concentrated-coil Windings. D. Chen1, L. Fang1, Z. Feng1 and B. Bai1. 1. School of Electrical Engineering, Shenyang University of Technology, Shenyang, China

BS-05. Unexpected Parasitic Torque Ripple Component Analysis in PMSM according to Parallel Winding Pattern Considering Eccentricity. D. Lee2, C. Jeong2, S. Lee2 and J. Hur2. 2. Electrical Engineering Incheon National University, Incheon, Korea


BS-07. Development of IE4 Class Line-Start Permanent Magnet Motor from a Small Three Phase Induction Motor. S. Rhyu1, S. Khaliq1, K. Lee1 and R. Kim1. 1. Intelligent Mechatronics Research Center, Korea Electronics Technology Institute, Bucheon, The Republic of Korea


BS-09. Comparative Studies of Modular PMSMs with Symmetrical or Asymmetrical Six-Phase Windings. L. Cheng1, Y. Sui1, P. Zheng1, Z. Yin1 and R. Ma1. 1. Harbin Institute of Technology, Harbin, China

BS-10. Reaserch on Flux Density Fluctuation for Brushless Double Rotor Flux-Switching Permanent Magnet Motor Considering Low Magnetic Coupling. Z. Xiang1. 1. School of electrical and information engineering, Jiangsu University, Zhen Jiang, China

BS-11. Development of Differing Extent Mesh Adaptive Direct Search applied for Optimal Design of Spoke-Type PMSM. D. Lee2 and S. Jung1. 1. Sungkyunkwan University, Suwon, The Republic of Korea; 2. Department electrical and computer engineering, University of Illinois at Urbana-Champaign, Champaign, IL, United States
BS-12. Comparative Study of Serial and Parallel PM Axial Field Flux-switching Memory Machines. N. Li1,2, M. Lin1, J. Zhu2, G. Yang1 and Y. Kong1 1. School of Electrical Engineering, Southeast University, Nanjing, China; 2. School of Electrical and Data Engineering, University of Technology Sydney, Sydney, NSW, Australia

BS-13. Magnetic and Mechanical Characteristics of Electric Motor according to the Weld-laminated Core and the Bond-laminated Core. D. Kim1, M. Park1, M. Yoon1, J. Sim1 and J. Hong1 1. Automotive engineering, Hanyang University, Seoul, The Republic of Korea


TUESDAY SIMPOR/ROSELLE BALLROOM
1:30

Session BT
PERMANENT MAGNET AND RELUCTANCE MACHINES IV
(Poster Session)
Zhejie Liu, Chair
ARTC, Singapore, Singapore

BT-01. A novel variable flux permanent magnet synchronous machine with quasi-series magnet configuration and passive flux barrier. S. Zhang1, P. Zheng1, Y. Liu1, M. Wang1, G. Qiao1 and F. Liu1 1. School of Electrical Engineering and Automation, Harbin Institute of Technology, Harbin, China

BT-02. Torque Improvement of External-Rotor Permanent Magnet Machine Using Flux Concentrated Rotor. Q. Li1 and T. Fan1 1. Institute of Electrical Engineering, Chinese Academy of Sciences, BeiJing, China
BT-03. Robust hybrid type permanent magnet traction motor against irreversible demagnetization at high temperature. C. Jeong\textsuperscript{1} and J. Hur\textsuperscript{1} 1. Incheon National University, Incheon, The Republic of Korea

BT-04. Elimination of Sub-harmonic in Stator MMF of 18-slot/10-pole PM Machines by Employing Unequal Slot and Uneven Turns per Coil. H. Sun\textsuperscript{1} and X. Chen\textsuperscript{1} 1. Electrical Engineering, Nanjing University of Aeronautics and Astronautics, Nanjing, China

BT-05. A high continuous torque density external rotor surface permanent magnet machine for in-wheel application. Y. Li\textsuperscript{1}, T. Fan\textsuperscript{1}, Q. Li\textsuperscript{1}, X. Wen\textsuperscript{1} and X. Zhuang\textsuperscript{1} 1. Institute of Electrical Engineering, Chinese Academy of Sciences, Beijing, China; 2. Beijing First-rate New Energyedrive Technology, Beijing, China

BT-06. Design and Analysis a New Wide Speed Range Permanent Magnet Motor Capable of High Efficiency Over Wide Speed Ranges. X. Zhu\textsuperscript{1} and L. Ge\textsuperscript{1} 1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China

BT-07. Design method of permanent magnetic loop return magnetic system and application in vehicle relay. H. Liang\textsuperscript{1}, H. Yu\textsuperscript{1}, X. Ye\textsuperscript{1} and G. Zhai\textsuperscript{1} 1. Harbin Institute of Technology, Harbin, China

BT-08. Analysis on the starting and Synchronization Capabilities for a Novel 6/8 Pole Changing Line-Start Permanent Magnet Synchronous Motor. M. Tian\textsuperscript{1}, X. Wang\textsuperscript{1}, W. Zhao\textsuperscript{1} and C. Li\textsuperscript{1} 1. School of Electrical Engineering, Shandong University, Jin’nan, China

BT-09. Investigation of a Transverse-flux Flux-reversal Motor with Consequent-pole Configuration. B. Kou\textsuperscript{1}, X. Yang\textsuperscript{1}, Y. Zhou\textsuperscript{1}, J. Luo\textsuperscript{1} and H. Zhang\textsuperscript{1} 1. Harbin Institute of Technology, Harbin, China

BT-10. Torque Improvement of Five-Phase Halbach Permanent Magnet Machines Considering Third-Harmonic Flux Density. L. Zhang\textsuperscript{1} and L. Liu\textsuperscript{1} 1. Nanjing University of Aeronautics and Astronautics, Nanjing, China

BT-11. A High Power Factor Vernier Machine with Coil-Pitch of Two Slot Pitches. Y. Liu\textsuperscript{1}, H. Li\textsuperscript{1} and Z. Zhu\textsuperscript{1} 1. The University of Sheffield, Sheffield, United Kingdom

BT-12. A Study on Hall Sensor Fault Signal Compensation Algorithm to Prevent Irreversible Demagnetization of Hall Sensor Faults. D. Lee\textsuperscript{1}, B. Kim\textsuperscript{1}, S. Lee\textsuperscript{1}, J. Lee\textsuperscript{1} and D. Kang\textsuperscript{1} 1. Convergence System Engineering, keimyung university, Daegu, The Republic of Korea

BT-13. Efficiency Optimization for IPMSM Considering Hysteresis Loss. T. Ishikawa\textsuperscript{1} 1. Electronics and Informatics, Gunma University, Kiryu, Japan
D. Thyroff1, C. Hittinger1 and I. Hahn1. Institute of Electrical Machines and Drives, University of Erlangen-Nuremberg, Erlangen, Germany

BT-15. Comparative Parameters Investigation of Composite Solid Rotor Applied to Line-Start Permanent-Magnet Synchronous Motors. B. Yan1, Y. Yang1 and X. Wang1  
1. School of Electrical Engineering, Shandong University, Jinan, China

BT-16. Multi-sensor Fusion Based Permanet Magnet Demagnetization Detection in Permanet Magnet Synchronized Machines. M. Zhu1, W. Hu1, S. Mukundan1 and N. C. Kar1  
1. Electrical and Computer Engineering, University of Windsor, Windsor, ON, Canada

Tuesday Afternoon
1:30

Session BU
RARE EARTH TRANSITION METAL BORIDES II
(Poster Session)
Minggang Zhu, Co-Chair  
Central Iron & Steel Res., Beijing, China
Satoshi Hirosawa, Co-Chair  
National Institute for Materials Science, Tsukuba, Japan

BU-01. PLD-fabricated Nd-Fe-B film magnets on Si substrates with Si oxide layer.  
Y. Yamaguchi1, D. Shimizu1, A. Yamashita1, T. Yanai1, M. Nakano1 and H. Fukunaga1  
1. Nagasaki University, Nagasaki, Japan

BU-02. Increase in nucleation field of nanocrystalline Nd-Fe-B magnets due to strengthening of exchange interaction - computer simulation -.  
T. Harada1, T. Yanai1, M. Nakano1 and H. Fukunaga1  
1. Nagasaki University, Nagasaki, Japan

BU-03. Investigation on texture, magnetic properties and inhomogeneities of hot deformed Nd–Fe–B magnet.  
H. Li3, Q. Wu1, M. Yue1, X. Xu1, J. Liang1 and J. Zhang1  
1. College of Materials Science and Engineering, Beijing University of Technology, Beijing, China

BU-04. The effect of ambient pressure of annealing process on magnetic properties and surface microstructure of sintered Nd-Fe-B magnet.  
X. Yang1,2, S. Guo1, J. Zeng1,2, Q. Zhang1,2, G. Ding1, J. Di1,2 and A. Yan1  
1. Ningbo Institute of Industry Technology, CAS, Ningbo, China; 2. University of Chinese Academy of Sciences, Beijing, China
BU-05. Improved coercivity enhancement of sintered Nd-Fe-B magnets by TbH₂ grain boundary diffusion with Al aiding. J. Ding¹, S. Guo¹, G. Ding¹, L. Cai², X. Yang¹, K. Chen¹, R. Chen¹ and A. Yan¹ 1. Ningbo Institute of Material Technology and Engineering, Chinese Academy of Sciences, Ningbo, China; 2. University of Chinese Academy of Sciences, Beijing, China; 3. Ningbo Jinji Magnetic Material Co., Ltd, Ningbo, China

BU-06. Thermal resistance of hot-deformed Nd-Fe-B magnets doped with Pr-Cu powders. X. Tang¹, C. Jin¹, W. Yin¹, R. Chen¹ and M. Li¹ 1. Ningbo Institute of Industrial Technology, Chinese Academy of Science, Ningbo, China

BU-07. Enhanced coercivity of Nd-Fe-Y-Fe-B sintered magnets by adding (Pr, Nd)-H² powders. B. Peng¹, Y. Liu¹, J. Jin¹ and M. Yan¹ 1. Department of Materials Science and Engineering, Zhejiang University, Hangzhou, China

BU-08. Spin reorientation, magnetic viscosity and exchange coupling effects of the Nd-Fe-Y-Fe-B sintered magnets prepared by single-main-phase and dual-main-phase alloy methods. Z. Jiang¹, Y. Fang¹, R. Han¹, T. Liu¹, M. Zhu¹ and W. Li¹ 1. Functional Materials Research Institute, Central Iron and Steel Research Institute, Beijing, China

BU-09. Effects of Ta doping and Ce reduction on the magnetic properties and thermal stability of Ce-Fe-B alloys. J. Zhang¹, L. Zhao¹, X. Liao¹, H. Zeng¹ and Z. Liu¹ 1. South China University of Technology, Guangzhou, China

BU-10. Coercivity enhancement of hot-deformed NdFeB magnets by doping R₈₀Ga₂₀ (R= Pr, Dy, Tb) alloys. Y. Lee¹, Y. Wong¹, H.W. Chang¹ and W.C. Chang¹ 1. Department of physics, National Chung Cheng University, Chiayi, Taiwan

BU-11. Distinctive diffusion behaviors observed in Dy-Fe-Ga intergranular added sintered Nd-Fe-B. J. Zeng¹, S. Guo¹, X. Yang¹, G. Ding¹ and A. Yan¹ 1. Ningbo Institute of Industrial Technology, CAS, Ningbo, China; 2. University of Chinese Academy of Science, Beijing, China

BU-12. Effects of La substitution on the crystal structure and intrinsic magnetic properties of MM-Fe-B alloy (MM = La, Ce, Pr, Nd). W. Liu¹, Z. Zhang¹, Z. Li¹, D. Zhang¹, H. Zhang¹, M. Yue¹, Q. Lu¹, Q. Wu¹ and Y. Li¹ 1. Beijing University of Technology, Beijing, China

BU-13. Effects of (Nd,Pr)Hₓ intergranular addition on the mechanical properties of Nd-Pr-Ce-Fe-B sintered magnets. J. Jin¹, Z. Qian¹, G. Bai², B. Peng¹, Y. Liu¹ and M. Yan¹ 1. material science and engineering, Zhejiang University, Hangzhou, China

BU-14. Study on recycling technology for waste MQ bonded Nd-Fe-B magnets. M. Liu¹, Y. Zhang¹, W. Liu¹, D. Zhang¹ and M. Yue¹ 1. Beijing University of Technology, Beijing, China
Session BV
SPIN-ORBITRONICS II
(Poster Session)
Pan He, Chair
National University of Singapore, Singapore

BV-01. Negative spin Hall magnetoresistance effect in Pt/GdIG.
H. Zhao1 and D. Wu1 1. Physics, Nanjing University, Nanjing, China

BV-02. Injection locking of constrictive nanoscale spin Hall nano-oscillators. T. Hache1,2, T. Weinhold1,3, S. Arekapudi2, O. Hellwig1,2, J. Fassbender1,3 and H. Schultheiss1,3
1. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden - Rossendorf, Dresden, Germany;
2. Institute of Physics, TU Chemnitz, Chemnitz, Germany;
3. TU Dresden, Dresden, Germany

BV-03. Vectorial Observation of the Spin Seebeck Effect in NiFe2O4 Thin Films. Z. Li1,4, A.V. Singh1, J. Krieft2, A. Rastogi3, T. Mewes1,4, T. Kuschel2, A. Gupta1 1. MINT Center, The University of Alabama, Tuscaloosa, AL, United States;
2. Department of Physics, Bielefeld University, Center for Spin electronic Materials and Devices, Bielefeld, Germany;
3. Materials Science and Technology Division, Oak Ridge National Laboratory, Oak Ridge, TN, United States;
4. Department of Physics & Astronomy, The University of Alabama, Tuscaloosa, AL, United States

BV-04. Amplification of spin waves in ultra-thin Yttrium Iron Garnet microwaveguides by the spin-orbit torque. M. Evelt1, V.E. Demidov1, V. Bessonov2, S.O. Demokritov1, J.L. Prieto3, M. Muñoz4,5, J.B. Youssef6, Y. Naletov2, G. de Loubens6, O. Klein7,8,9, A. Anane8 1. Institut für Angewandte Physik, Westfälische Wilhelms-Universität Münster, Münster, Germany;
2. M.N. Miheev Institute of Metal Physics of Ural Branch of Russian Academy of Sciences, Yekaterinburg, Russian Federation;
3. Instituto de Sistemas Optoelectronicos y Microtecnologia (UPM), Ciudad Universitaria, Madrid, Spain;
4. IMM-Instituto de Microelectrónica de Madrid (CNM-CSIC), Madrid, Spain;
5. Institute of Physics, Kazan Federal University, Kazan, Russian Federation;
6. Service de Physique de l’État Condensé, Université Paris-Saclay, Gif-sur-Yvette, France;
7. INAC-SPIINTEC, CEA/CNRS and Univ. Grenoble Alpes, Grenoble, France;
8. Unité Mixte de Physique CNRS, Univ. Paris-Sud, Université Paris-Saclay, Palaiseau, France;
9. Laboratoire de Magnétisme de Bretagne CNRS, Université de Bretagne Occidentale, Brest, France

BV-05. A precise analytical method of harmonic Hall voltage measurement for spin-orbit torque. S. Yun1, E. Park2, K. Lee1,3 and S. Lim1 1. Materials Science and Engineering, Korea University, Seoul, The Republic of Korea;
2. KU-KIST Graduate School of Converging Science and Technology, Korea University, Seoul, The Republic of Korea
BV-06. Magnon dragged Magnetoresistance and Spin Seebeck Effect in YIG/IRMN bilayer. Y. Cai1, W. Li1, Y. Wu1, K. Meng1, J. Miao1, X. Xu1 and Y. Jiang1 1. University of Science and Technology Beijing, Beijing, China

BV-07. Theory of capping layer effect on spin-orbit torque in multilayers. C. Sun1, Z. Shi1, S. Tan2, H. Yang1 and M.B. Jalil1 1. Department of Electrical and Computer Engineering, National University of Singapore, Singapore; 2. Department of Physics, National Taiwan University, Taipei, Taiwan

BV-08. Spin accumulation in asymmetric topological insulator thin films in out-of-plane magnetic fields. Z. Shi1, D. Chowdhury2, B. Basu1 and M.B. Jalil1 1. National University of Singapore, Singapore; 2. Ben-Gurion University, Beer Sheva, Israel; 3. Indian Statistical Institute, Kolkata, India

BV-09. Tuning the spin orbit torque efficiency and Dzyaloshinskii-Moriya interaction by inserting a Pt spacer in Ta/CoFeB/MgO structures. Y. Chen1, J. Jia1, Y. Zheng1, Y. Wang1 and J. Cao1 1. Lanzhou University, Lanzhou, China

BV-10. Spin-Orbit Torque Induced Magnetization Switching In Co/ Pt Multilayer-based Synthetic Antiferromagnets. L. Zhu1, X. Xu1, K. Meng1, Y. Wu1, J. Miao1 and Y. Jiang1 1. School of Materials Science and Engineering, University of Science and Technology Beijing, Beijing, China

BV-11. Impact of Hydrogen Gas on the Inverse Spin Hall Effect in Palladium-Cobalt Bi-Layer Films. S.I. Watt1, R. Cong1, M. Sushruth1, C. Lueng1, P. Metaxas1 and M. Kostylev1 1. University of Western Australia, Crawley, WA, Australia; 2. University of Science and Technology of China, Hefei, China

BV-12. The effect of inserting a Pt layer in Pt/Co/Ta structure on spin orbit torque. S. Li1, G.J. Lim1 and W. Lew1 1. School of Physics and Physical Science, Nanyang Technological University, Singapore, Singapore

BV-13. Spin current pump-probe effect in Yttrium iron garnet plate with different thickness. Y. Chen1, J.G. Lin1 and S. Huang2 1. Center for Condensed Matter Sciences, National Taiwan University, Taipei, Taiwan; 2. Department of Physics, National Taiwan University, Taipei, Taiwan

BV-14. Anomalous Nernst effect in Ir22Mn78/Co20Fe60B20/MgO layers with perpendicular magnetic anisotropy. S. Tu1, J. Hu1, G. Yu2, H. Yu1, C. Liu1, F. Heimbach1, X. Wang3, J. Zhang1, Y. Zhang1, A. Hamzic1, K. Wang2, W. Zhao1 and J. Ansermet4 1. Beihang University, Beijing, China; 2. University of California, Los Angeles, CA, United States; 3. Hong Kong University Science & Technology, Kowloon, Hong Kong; 4. University of Zagreb, Zagreb, Croatia; 5. Ecole Polytechnique Federale de Lausanne, Lausanne, Switzerland

BV-15. Spin pumping effect via an evanescent state in ferromagnetic insulator. K. Hoshi1 and J. Ohe1 1. Physics, Toho University, Narashino-shi, Japan
Session XA

HOW TO GET A JOB IN INDUSTRY, ACADEMIA OR GOVERNMENT LABORATORY (SPECIAL SESSION)

Albrecht Jander, Co-Chair
Oregon State University, Corvallis, OR, United States

Usha Varshney, Co-Chair
National Science Foundation, Arlington, VA, United States

Dr. Steve Hwang, Vice President of Product Development, Seagate Technology, Freemont, CA, United States

Dr. Liesl Folks, Dean, School of Engineering and Applied Sciences, University at Buffalo, Buffalo, NY, United States

Dr. Lucian Prejbeanu, Executive Director, SPINTEC, CEA, Grenoble, France

This special evening session will focus on jobs in magnetics research. The three panelists, with distinguished leadership positions in industry, academia and government laboratory, will provide perspectives and advice on how to prepare for, and apply to, research positions. An extended question-and-answer period will follow their presentations. Although this session is primarily intended for prospective and recent graduates, all conference attendees are encouraged to participate.

WEDNESDAY ORCHID I-II

MORNING

9:00

Session CA

SYMPOSIUM ON SKYRMIONS FOR THE FUTURE

Wei Han, Chair
Peking University, Beijing, China

9:00

CA-01. Skyrmions in magnetic multilayers at room temperature: electrical creation, detection and manipulation, 3D shaping. (Invited) A. Fert1-2, W. Legrand1-2, D. Maccariello1-2, J. Chauleau1-4, N. Reyren1-2, S. Collin1-2, K. Bouzehouane1-2, K. Garcia1-2, N. Jaouen1 and V. Cros1-2 1. UMP CNRS-Thales, CNRS, Palaiseau, France; 2. UMP CNRS-Thales, Université Paris-Saclay, Orsay, France; 3. Synchrotron SOLEIL, Gif-sur-Yvette, France; 4. SPEC, CEA, Gif-sur-Yvette, France

9:30

CA-02. Atomic-Scale Observation and Manipulation of Individual Nanoscale Skyrmions by Local Spin Currents and Electric Fields. (Invited) R. Wiesendanger1 1. Dept. of Physics, University of Hamburg, Hamburg, Germany

10:00

CA-03. Skyrmion Dynamics – from thermal diffusion to ultra-fast motion. (Invited) M. Kläui1-2 1. Universität Mainz, Mainz, Germany; 2. Materials Science in Mainz, Johannes Gutenberg University, Mainz, Germany
1. Department of Physics, Tsinghua University, Beijing, China; 2. School of Science and Engineering, The Chinese University of Hong Kong at Shenzhen, Shenzhen, China; 3. Department of Electrical Engineering, University of California, Los Angeles, CA, United States; 4. Materials Sciences Division, Argonne National Laboratory, Lemont, IL, United States; 5. Department of Physics, Bryn Mawr College, Bryn Mawr, PA, United States; 6. Department of Physics, University of California, Los Angeles, CA, United States

11:00

1. Physics, Ohio State University, Columbus, OH, United States; 2. CEMAS, Ohio State University, Columbus, OH, United States; 3. Physics, Simon Fraser University, Burnaby, BC, Canada; 4. Materials Science and Engineering, Ohio State University, Columbus, OH, United States; 5. Center for Emergent Materials, Ohio State University, Columbus, OH, United States

11:30

CA-06. Magnetic antiskyrmions above room temperature in tetragonal Heusler materials. (Invited) S. Parkin1
1. NISE, Max Planck Institute for Microstructure Physics, Halle (Saale), Germany

WEDNESDAY ORCHID III
MORNING
9:00

Session CB

SOFT MAGNETIC MATERIALS III: CRYSTALLINE MATERIALS
Nicoleta Lupu, Chair
National Institute of Research and Development for Technical Physics, Iasi, Romania

9:00

CB-01. Magnetic properties and microstructure of newly developed iron-based soft magnetic powders. (Invited) N. Imaoka1, S. Yamamoto1 and K. Ozaki1
1. Magnetic Powder Metallurgy Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Nagoya, Japan
CB-02. XAFS studies of the newly developed iron-based soft magnetic powders. S. Yamamoto1, N. Imaoka1 and K. Ozaki1
1. National Institute of Advanced Industrial Science and Technology (AIST), Nagoya, Japan

CB-03. Irreversible permeability of Fe and Ni based soft magnetic powder compacts. P. Kollar1, Z. Bircakova1, J. Fuzer1, D. Oleksakova1, R. Bures2 and M. Faberova2 1. Department of Condensed Matter Physics, Institute of Physics, Faculty of Science, P. J. Safarik University, Kosice, Slovakia; 2. Department of Sciences and Humanities, Institute of Manufacturing Management, Faculty of Manufacturing Technologies, Technical University of Kosice, Presov, Slovakia; 3. Institute of Material Research, Slovak Academy of Science, Kosice, Slovakia

CB-04. Effect of ordering on the antiferromagnetic properties of near-equimolar FeCr-based magnetic alloys. Z. Leong1, S. Baco1 and N. Morley1 1. University of Sheffield, Sheffield, United Kingdom

CB-05. Anisotropy and demagnetizing effects on the magnetic behavior of polycrystalline gadolinium across the spin-reorientation revealed by a magneto-thermal protocol. V. Provenzano2, R. Witte1, H. ElBidweihy1, A. Arrott3, C. Radu4 and H. Hahn1 1. Department of Electrical and Computer Engineering, United States Naval Academy, Annapolis, MD, United States; 2. National Institute of Standards and Technology (NIST), Gaithersburg, MD, United States; 3. Simon Fraser University, Burnaby, BC, Canada; 4. Institute of Nanotechnology, Eggenstein-Leopoldshafen, Germany; 5. Lake Shore Cryotronics Inc., Westerville, OH, United States


CB-07. The influence of cobalt content on structure and magnetic properties of Fe-Si soft magnetic composites. C. Zhou1, C. Wu1 and M. Yan1 1. Zhejiang University, Hangzhou, China

CB-08. The effect of mechanical stress on the static hysteresis loop shape in NO electrical steel. B. Schauerte1, S. Steentjes1, N. Leuning1 and K. Hameyer1 1. Institute of electrical machines (IEM), RWTH Aachen University, Aachen, Germany
CB-09. Improvement of Grain-Oriented Electrical Steel Sheet by Hyperfine Processing Magnetic Domain Structure on Vector Magnetic Characteristics. M. Enokizono\textsuperscript{1}, D. Wakabayashi\textsuperscript{3}, T. Sato\textsuperscript{2} and Y. Mamiduka\textsuperscript{1}. 1. Vector Magnetic Characteristic Technical Laboratory, Usa-city, Japan; 2. Faculty of Science and Technology, Oita University, Oita, Japan; 3. Mechanical and Electrical Engineering, Nippon Bunri University, Oita, Japan

CB-10. Improvement of Grain-oriented Electrical Steel Sheet by Hyperfine Technique on Two-dimensional Magnetostriction. D. Wakabayashi\textsuperscript{1} and M. Enokizono\textsuperscript{1}. Nippon Bunri University, Oita, Japan

CB-11. Evolution of Residual Magnetic Field of U75V Steel Induced by Uniaxial Tensile Load with Increasing Amplitudes. M. Fu\textsuperscript{1}, S. Bao\textsuperscript{1} and Z. Zhao\textsuperscript{1}. 1. College of Civil Engineering and Architecture, Zhejiang University, Hangzhou, China

Wednesday ORCHID IV

Session CC
MICROSCOPY, IMAGING AND CHARACTERIZATION II
Yaohua Liu, Chair
Oak Ridge National Laboratory, Oak Ridge, TN, United States

9:00 CC-01. Nanoscale Magnetic Imaging using Circularly Polarized High-Harmonic Radiation. (Invited) O. Kfir\textsuperscript{1,2}, S. Zayko\textsuperscript{1}, C. Nolte\textsuperscript{1}, M. Sivis\textsuperscript{1}, M. Möller\textsuperscript{2}, B. Hebler\textsuperscript{1}, S. Arekapudi\textsuperscript{4}, D. Steil\textsuperscript{1}, S. Schäfer\textsuperscript{1}, M. Albrecht\textsuperscript{4}, O. Cohen\textsuperscript{2}, S. Mathias\textsuperscript{3,5} and C. Ropers\textsuperscript{3,5}. 1. IV. Physical Institute, University of Göttingen, Göttingen, Germany; 2. Department of Physics and Solid State Institute, Technion - Israel Institute of Technology, Haifa, Germany; 3. I. Physical Institute, University of Göttingen, Göttingen, Germany; 4. Institute of Physics, University of Augsburg, Augsburg, Germany; 5. International Center for Advanced Studies of Energy Conversion (ICASEC), University of Göttingen, Göttingen, Germany

9:30 CC-02. Exploring magnetism at the nanoscale with a single spin microscope. (Invited) V. Jacques\textsuperscript{1}. 1. Laboratoire Charles Coulomb, UMR5221, CNRS and Université de Montpellier, Montpellier, France
CC-03. Atomic scale magnetic and structural imaging by achromatic electron microscopy. X. Zhong1, Z. Wang1, L. Jin2, J. Rusz2, H. Jiang1, Y. Moritomo4, J. Mayer2,5, R. Dunin-Borkowski2, R. Yu1 and J. Zhu1 1. National Center for Electron Microscopy in Beijing, School of Materials Science and Engineering, Tsinghua University, Beijing, China; 2. Ernst Ruska-Centre for Microscopy and Spectroscopy with Electroons and Peter Grünberg Institute, Forschungszentrum Jülich GmbH, Jülich, Germany; 3. Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden; 4. Graduate School of Pure & Applied Science and Faculty of Pure & Applied Science, University of Tsukuba, Ibaraki, Japan; 5. Central Facility for Electron Microscopy, RWTH Aachen University, Aachen, Germany

10:15

CC-04. Smart Magnetic Probes with Controllable States for Quantitative MFM. O. Kazakova1, V. Panchal1, H. Corteleón1, R. Puttock1, L. Rodríguez2 and V. Neu3 1. National Physical Laboratory, Teddington, United Kingdom; 2. Universidad del Valle, Cali, Colombia; 3. IFW Dresden, Germany

CC-05. Single Atom Magnets at Surfaces – State-of-the-art and Future Perspectives. (Invited) H. Brune1 1. Physics, Swiss Federal Institute of Technology Lausanne (EPFL), Lausanne, Switzerland

10:30

CC-06. Investigation of anisotropic quadratic magneto-optic Kerr ellipticity of Fe(100) grown on Ir(100). A.V. Pradeep1,2, K.G. Ajesh1, S. Ghosh1,2 and P. Kumar1 1. Department of Physics, Indian Institute of Science, Bangalore, India; 2. Dept. of Collegiate Education Kerala, RWPC, Kannur, India; 3. Department of Physics, Cornell University, Ithaca, NY, United States

11:00

CC-07. Spatially-resolved electric-field manipulation of magnetism in multiferroic heterostructures. Y. Bu1, Y. Zhao1, Y. Liu1, P. Li1, L. Wu2, J. Unguris3, D. Pierce3, D. Yang1, C. Feng1, Y. Zhang1, H. Wu1, D. Li1, Y. Chang1, J. Zhang1, X. Han5, J. Cai3 and C. Nan2 1. Department of Physics and State Key Laboratory of Low-Dimensional Quantum Physics, Tsinghua University, Beijing, China; 2. School of Materials Science and Engineering, Tsinghua University, Beijing, China; 3. National Institute of Standards and Technology, Gaithersburg, MD, United States; 4. Beijing Normal University, Beijing, China; 5. Beijing National Laboratory for Condensed Matter Physics, Chinese Academy of Sciences, Beijing, China

11:15

CC-09. A Sensitive AC Magnetometer using A Resonant Excitation Coil for Characterization of Magnetic Fluid in Nonlinear Magnetization Region. M. Saari1, N. Suhaimi1, N. Che Labi2, K. Sakai3, T. Kiwa3 and K. Tsukada3 1. Faculty of Electrical & Electronic Engineering, Universiti Malaysia Pahang, Pekan, Malaysia; 2. Faculty of Manufacturing Engineering, Universiti Malaysia Pahang, Pekan, Malaysia; 3. Graduate School of Natural Science and Technology, Okayama University, Okayama, Japan

WEDNESDAY MORNING

9:00

Session CD

DOMAIN WALL DYNAMICS

Tiejun Zhou, Co-Chair
HangZhou Dianzi University, Hangzhou, China
Dunhui Wang, Co-Chair
Nanjing University, Nanjing, China

9:00

CD-01. Domain wall properties and spin transfer torque in perpendicularly magnetized Mn$_3$N ferrimagnet thin films. T. Gushi1, L. Vila2, J. Attané2, O. Fruchart2, A. Marty2, S. Pizzini1, J. Vogel3, F. Takata1, A. Anzai1 and T. Suemasu1 1. Institute of Applied Physics, University of Tsukuba, Tsukuba, Japan; 2. INAC/SPINTEC, CEA, Grenoble, France; 3. Institut Néel, CNRS, Grenoble, France

9:15

CD-02. Anomalous Nernst effect related to magnetic domains in a microfabricated thermoelectric element made of noncollinear antiferromagnet Mn$_3$Sn. H. Narita1, M. Ikhlas1, M. Kimata2, A.A. Nugroho3, S. Nakatsuji1,4 and Y. Otani1,4 1. Institute for Solid State Physics, The University of Tokyo, Kashiwa, Japan; 2. Tohoku University, Sendai, Japan; 3. Faculty of Mathematics and Natural Sciences, Institut Teknologi Bandung, Bandung, Indonesia; 4. JST CREST, Tokyo, Japan

9:30

CD-03. Direct observation of domain wall surface tension by deflating or inflating a magnetic bubble. X. Zhang1,2*, N. Vernier2, W. Zhao1, L. Vila3 and D. Ravelosona3 1. Fert Beijing Institute, School of Electronic and Information Engineering, Beihang University, Beijing, China; 2. Center for Nanoscience and Nanotechnology, Université Paris-Sud, Orsay, France; 3. Université Grenoble Alpes, Grenoble, France

CD-05. Magnetic domain wall dynamics and its application. (Invited) T. Ono2,3 1. CSRN, Osaka University, Toyonaka, Japan; 2. ICR, Kyoto University, Uji, Japan.


CD-07. Inertial and Supermagnonic Dynamics of Domain Walls driven by Spin-Orbit Fields in an Antiferromagnet. R. Otxoa1,2, P. Roy1 and J. Wunderlich1,3. 1. Hitachi, Ltd., Cambridge, United Kingdom; 2. Donostia International Physics Center, Donostia, Spain; 3. Institute of Physics ASCR, Prague, Czechia.

CD-08. Current-induced domain-wall motion in pinned magnetic wires. M. Samiepour1, J. Kim1, I. Polenciué1, T. Hayward2, D. Allwood2, G. Vallejo-Fernandez1, K. O’Grady1 and A. Hirohata1. 1. University of York, York, United Kingdom; 2. University of Sheffield, Sheffield, United Kingdom.

CD-09. Action of current on ferrimagnetic domain wall: 2 propagation regimes in creep and influence of domain wall structure. E. Haltz1, J. Sampao1, R. Weil1, Y. Dumont2 and A. Mougin1. 1. CNRS, Univ. Paris-Sud, Université Paris-Saclay, Laboratoire de Physique des Solides, Orsay, France; 2. Université de Versailles St-Quentin-en-Yvelines, Versailles, France.

CD-10. Asymmetric domain wall motion in Pt/Co/Pt induced by electric current. M. Nsibi1, J. Nath1, I. Journard1, S. Auffret1, I. Miron1 and G. Gaudin1. 1. SPINTEC, CEA-INAC/CNRS/Université Grenoble Alpes, Grenoble, France.
Influence of the Tb layer on current driven domain wall motion in Pt / Co / Tb magnetic wire. H. Awano, W.C. Ying, R. Yoshimura, S. Sumi and P.V. Thach. Graduate School, Toyota Technological Institute, Nagoya, Japan

Wednesday Roselle II

9:00

Session CE
HIGH FREQUENCY MAGNETIC MATERIALS AND DEVICES II
Jianbo Wang, Co-Chair
Lanzhou University, Lanzhou, China
Masahiro Yamaguchi, Co-Chair
Tohoku University, Sendai, Japan

9:00
CE-01. Dispersion Engineering of Nonreciprocal Composite Right/Left Handed Metamaterials Using Ferrite Materials in Microwave Region. (Invited) T. Ueda and T. Itoh
1. Electrical Engineering and Electronics, Kyoto Institute of Technology, Kyoto, Japan; 2. Electrical Engineering Department, University of California, Los Angeles, CA, United States

9:30
CE-02. AlN Interlayers Allow Robust Hexagonal Barium Ferrite Heteroepitaxy on 6H-SiC. A.S. Sokolov, C. Yu, E. Beam, X. Gu, Y. Obi and V. Harris
1. ECE, Northeastern University, Burlington, MA, United States; 2. Qorvo, Richardson, TX, United States; 3. Metamagnetics, Inc., Westborough, MA, United States

9:45
1. Electrical Engineering, Stanford University, Stanford, CA, United States; 2. Electrical Engineering and Computer Science, University of California Berkeley, CA, United States; 3. Materials Science and Engineering, Stanford University, Stanford, CA, United States

10:00
1. Winchester Technologies, Burlington, MA, United States; 2. Northeastern University, Boston, MA, United States
CE-05. In-site measurement of permeability and magnetostriction constant of magnetic films deposited on Si wafers. O. Mori1, Y. Endo2,3, Y. Shimada4, S. Yabukami4 and R. Utsumi1. 1. Toei Scientific Industrial Co., LTD, Natori, Japan; 2. Graduate School of Engineering, Tohoku University, 6-6-04 Aoba, Aramaki, Aoba-ku, Sendai, Japan; 3. Center for Spintronics Research Networks, Tohoku University, Sendai, Japan; 4. Tohoku Gakuin University, 1-13-1 Chuo, Tagajo, Japan


CE-07. Angular dependence of single sideband generation in spin torque nano-oscillators. R. Sharma1, N. Sisodia1 and P.K. Muduli1. 1. Physics, Indian Institute of Technology Delhi, Delhi, India

CE-08. Broadband antenna using strain-mediated spin Hall nano-oscillator. (Invited) Q. Wang1, J. Domann2, J. Hu1 and G.P. Carman1. 1. Department of Mechanical and Aerospace Engineering, University of California, Los Angeles, Los Angeles, CA, United States; 2. Department of Biomedical Engineering and Mechanics, Virginia Tech, Blacksburg, VA, United States

CE-09. Experimental demonstration of broadband spintronic diodes for harvesting of sub-µWatt microwave energy. B. Fang1, M. Carpentieri2, A.N. Slavin3, P. Khalili Amiri3, G. Finocchio4 and Z. Zeng1. 1. Key Laboratory of Nanodevices and Applications, Suzhou Institute of Nano-tech and Nano-bionics, CAS, Suzhou, China; 2. Department of Electrical and Information Engineering, Politecnico di Bari, Bari, Italy; 3. Northwestern University, Evanston, IL, United States; 4. University of Messina, Messina, Italy; 5. Oakland University, Rochester, MI, United States

CE-10. Intrinsic permeability of composites filled with nickel powders. S.N. Starostenko1, K.N. Rozanov1 and A.O. Shiryaev1. 1. Theoretical, Institute for Theoretical and Applied Electromagnetics, Moscow, Russian Federation

CF-02. Enhanced magnetostatic and dynamic properties in Fe/Co substituted Ni-Mn-In alloy films. R. Modak and A. Srinivasan.


CF-05. Tetragonally Distorted Ultrathin Fe$_{50}$Co$_{50}$ Epitaxial Film with High Magnetic Anisotropy and Gilbert Damping. R. Mandal, J. Jung, Y. Takahashi, Y. Sakuraba, S. Kasaï, T. Ohkubo and K. Hono.


Session CF
MAGNETISATION DYNAMICS I
Zongzhi Zhang, Chair
Fudan University, Shanghai, China

9:00

9:15

9:30

9:45

10:00

10:15

Wednesday 71
CF-07. Spin orbit torque switching process with nonuniform micromagnetic states in three terminal devices. J. Zhang\textsuperscript{1,2}, C. Garg\textsuperscript{3,4}, T. Phung\textsuperscript{2}, C. Retten\textsuperscript{2}, B. Hughes\textsuperscript{2}, S. Yang\textsuperscript{2}, Y. Jiang\textsuperscript{1} and S. Parkin\textsuperscript{2,3,4}. \textsuperscript{1}University of Science and Technology Beijing, Beijing, China; \textsuperscript{2}IBM Almaden Research Center, San Jose, CA, United States; \textsuperscript{3}Max Planck Institute for Microstructure Physics, Halle, Germany

CF-08. Tuning interfacial Dzyaloshinskii-Moriya interaction and Gilbert damping parameter with Py/Cu\textsubscript{1-x}Pt\textsubscript{x} layers. H. Bouloussa\textsuperscript{1}, R. Ramaswamy\textsuperscript{2}, Y. Roussigné\textsuperscript{4}, M. Belmeguenai\textsuperscript{1}, A. Stashkevich\textsuperscript{1}, H. Yang\textsuperscript{5} and S. Chérif\textsuperscript{4}. \textsuperscript{1}LSPM (CNRS-UPR 3407), Université Paris 13, Sorbonne Paris Cité, Villetaneuse, France; \textsuperscript{2}Department of Electrical and Computer Engineering, National University of Singapore, Singapore

CF-09. Microresonator-ferromagnetic resonance investigation of thermal spin-transfer torque in Co\textsubscript{2}FeAl/MgO/CoFeB magnetic tunnel junctions. H. Cansever\textsuperscript{1,2}, R. Narkowicz\textsuperscript{1}, K. Lenz\textsuperscript{1}, C. Fowley\textsuperscript{1}, L. Ramasubramanian\textsuperscript{1}, O. Yildirim\textsuperscript{1,4}, A. Niesen\textsuperscript{1}, T. Huebner\textsuperscript{1}, J. Lindner\textsuperscript{1}, J. Fassbender\textsuperscript{1,2} and A. Deac\textsuperscript{1}. \textsuperscript{1}Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden Rossendorf, Dresden, Germany; \textsuperscript{2}Institute of Solid State Physics, Technical University of Dresden, Dresden, Germany; \textsuperscript{3}Center for Spin electronic Materials and Devices, Bielefeld University, Bielefeld, Germany; \textsuperscript{4}EMPASwiss Federal Laboratories for Materials Science and Technology, Dübendorf, Switzerland

CF-10. Gilbert Damping Enhancement in Ion-Beam Sputtered Co\textsubscript{2}FeAl/Mo Bilayer thin films. S. Husain\textsuperscript{1}, A. Kumar\textsuperscript{2}, V. Barwal\textsuperscript{3}, N. Behera\textsuperscript{2}, S. Akansel\textsuperscript{2}, P. Svedlindh\textsuperscript{2} and S. Chaudhary\textsuperscript{4}. \textsuperscript{1}Physics, Indian Institute of Technology, New Delhi, India; \textsuperscript{2}Material Science and Engineering, Uppsala University, Uppsala, Sweden

CF-11. Study of Static and Dynamic Properties of Dumbbell Shaped Structures. P.N. Sherpa\textsuperscript{1}, S. Khanal\textsuperscript{1} and L. Spinu\textsuperscript{1}. \textsuperscript{1}Physics/Advanced Materials Science Institute, University of New Orleans, New Orleans, LA, United States

CF-12. Magnetization and FMR studies of Si/Ni multilayers with varying Ni layer thickness. D. Singh\textsuperscript{1}, R. Roy\textsuperscript{1} and M. Senthil Kumar\textsuperscript{1}. \textsuperscript{1}Department of Physics, Indian Institute of Technology Bombay, Mumbai, India
Session CG
MODELLING OF MACHINES I
Ping Zheng, Chair
Harbin Institute of Technology, Harbin, China

9:00
CG-01. An Improved Core-Loss Calculation Method with Variable Coefficients Based on Equivalent Frequency. W. Jia¹ and X. Lan¹ 1. Nanjing University of Aeronautics and Astronautics, Nanjing, China

9:15

9:30
CG-03. High Frequency Characterization of Magnetic Rod Cores with Anisotropic Power Loss. B.A. Reese¹ and C.R. Sullivan¹ 1. Dartmouth College, Lebanon, NH, United States

9:45
CG-04. Freeze-Cast Magnetic Composites for High Frequency Power Conversion. B.A. Reese¹, C.R. Sullivan¹ and U.G. Wegst¹ 1. Dartmouth College, Lebanon, NH, United States

10:00
CG-05. Electromagnetic Torque Analysis for All-Harmonic-Torque Permanent Magnet Synchronous Motor. J.W. Zhang¹ 1. Changsha University, Changsha, China

10:15
CG-06. Performance Optimization of a Novel DC Fault Current Limiter Combining Different Magnetic Materials and Topologies. H. Zhou¹, J. Yuan¹, L. Wei¹,², P. Gan¹, F. Chen¹, Y. Zhong¹, C. Tian¹, B. Chen¹, Y. Gao³ and K. Muramatsu³ 1. School of Electrical and Engineering, Wuhan University, Wuhan, China; 2. Department of Electrical Engineering, Graduate School of Engineering, Kyoto University, Kyoto, Japan; 3. Department of Electrical and Electronic Engineering, Saga University, Saga, Japan

10:30
CG-07. Dynamic Modeling and Control of Three-Degree-of-Freedom Electromagnetic Actuator for Image Stabilization. A. Heya¹, K. Hirata¹ and N. Niguchi¹ 1. Department of Adaptive Machine Systems, Osaka University, Suita, Japan
CG-08. Investigation of a High Corner-Power Modular Fault-Tolerant Permanent-Magnet In-Wheel Motor. Y. Tang\textsuperscript{1}, F. Chai\textsuperscript{1}, Z. Song\textsuperscript{1} and P. Liang\textsuperscript{1} 1. Department of Electrical Engineering, Harbin Institute of Technology, Harbin, China

CG-09. An Effective Method with Copper Ring for Vibration Reduction in Permanent Magnet Brush DC Motors. J. Hong\textsuperscript{1}, S. Wang\textsuperscript{1}, Y. Sun\textsuperscript{1} and J. Li\textsuperscript{1} 1. Tsinghua University, Beijing, China

CG-10. High Transmission Capacity P.U.A. Wireless Power Transfer for AUV Using an Optimized Magnetic Coupler. C. Cai\textsuperscript{1}, Z. Yang\textsuperscript{1}, M. Qin\textsuperscript{1} and S. Wu\textsuperscript{1} 1. School of Information and Electrical Engineering, Harbin Institute of Technology at Weihai, Weihai, China

CG-11. An Economical Three-Phase Fault Current Limiter Considering Different Types of Fault. J. Yuan\textsuperscript{1}, P. Gan\textsuperscript{1}, L. Wei\textsuperscript{1,2}, H. Zhou\textsuperscript{1}, Y. Zhong\textsuperscript{1}, Z. Zhang\textsuperscript{1}, C. Tian\textsuperscript{1}, Y. Guo\textsuperscript{1}, K. Muramatsu\textsuperscript{1} and B. Chen\textsuperscript{1} 1. Electrical and Engineering, Wuhan University, Wuhan, China; 2. Department of Electrical Engineering, Graduate School of Engineering, Kyoto University, Kyoto, Japan; 3. Department of Electrical and Electronic Engineering, Saga University, Saga, Japan

CG-12. Electromagnetic Vibration Analysis of Surface-Mounted Permanent Magnet Synchronous Machine. Z. Xing\textsuperscript{1}, X. Wang\textsuperscript{1} and W. Zhao\textsuperscript{1} 1. School of Electrical Engineering, Shandong University, Ji’nan, China

WEDNESDAY PEONY II MORNING 9:00

Session CH
TRANSFORMERS AND INDUCTORS
Yasushi Endo, Chair
Tohoku University, Sendai, Japan

9:00

CH-01. Reduced EMI Noise with the Consideration of Magnetic Material Design in the Grid-Connected Inverter for More Electric Aircraft. Y. Liu\textsuperscript{1}, Y. Liu\textsuperscript{2}, H. Wang\textsuperscript{1}, G. Wang\textsuperscript{1} and J. Peng\textsuperscript{1} 1. Shenzhen University, Shenzhen, China; 2. Nanyang Technological University, Singapore, Singapore
CH-02. All-Metal Domestic Induction Heating Using Single-Frequency Double-Layer Coils. W. Han¹, K. Chau¹, C. Jiang¹ and W. Liu¹. 1. Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong

9:30

CH-03. Analytic Computation of Power-Line Voltage Drop Produced by Magnetic Energy Harvesting Device. K. Kim¹, B. Park¹, J. Kim¹, J. Koo² and S. Ahn¹. 1. Korea Advanced Institute of Science and Technology (KAIST), Daejeon, The Republic of Korea; 2. Ferrarispower, Seongnam, The Republic of Korea

9:45


10:00

CH-05. Design of Rotary Transformer Based on Transient Field-Circuit Coupled Model. H. Zhong¹, Y. Wang¹, B. Peng¹ and Y. Yang¹. 1. Electrical Engineering School, Shandong University, Jinan, China

10:15

CH-06. Benefits of Synthetic Polymer Bonded Soft Magnetic Composites for Inductive Wireless Power Transfer Receivers in Electric Vehicles. D. Barth¹, B. Klaus¹ and T. Leibfried¹. 1. Institute of Electric Energy Systems and High-Voltage Technology (IEH), Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany

10:30

CH-07. Winding Losses Analysis of a 4 KVA High Frequency Coaxial Transformer Used in the Bi-Directional DC-DC Converter. W. Water¹ and J. Lu¹. 1. Griffith University, South Brisbane, QLD, Australia

10:45

CH-08. Leakage Flux based turn-to-turn Fault Detection for Shunt Inductor. B. Chen¹, J. Dong¹, C. Tian¹ and Q. Chen¹. 1. Wuhan University, Wuhan, China

11:00

CH-09. Auto-transformer and Magnetic Control Soft Start Method of Super Large Capacity and High Voltage Motor Considering the Cost and Performance Optimization. J. Yuan¹, C. Wang¹, Y. Zhu¹, H. Zhou¹, L. Wei², C. Tian¹, Y. Gao¹, K. Muramatsu³ and B. Chen¹. 1. Electrical and Engineering, Wuhan University, Wuhan, China; 2. Department of Electrical Engineering, Graduate School of Engineering, Kyoto University, Kyoto, Japan; 3. Department of Electrical and Electronic Engineering, Saga University, Saga, Japan

Wednesday 75

WEDNESDAY SIMPOR/ROSELLE BALLROOM
MORNING
8:30

Session CP
MAGNETIC THERAPIES AND NANOMEDICINE I
(Poster Session)
Yuko Ichiyanagi, Chair
Yokohama National University, Yokohama, Japan

CP-01. Alteration in motor cortical excitability induced by peripheral stimulation with magnetic stimulation. A. Sato, T. Torii, M. Iwahashi and K. Iramina. 1. Medical Care and Welfare Engineering, Tokai University, Kumamoto, Japan; 2. Graduate School of Systems Life Sciences, Kyushu University, Fukuoka, Japan.

CP-02. Transcranial magnetic stimulation: design of a high current magnetic pulse generator with custom coil for the application on small animals. J. Selvaraj, P. Rastogi, N. Prabhu Gaunkar, R.L. Hadimani and M. Mina. 1. Department of Electrical and Computer Engineering, Iowa State University, Ames, IA, United States; 2. Department of Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA, United States; 3. Department of Industrial Design, Iowa State University, Ames, IA, United States.


CP-06. High Focality Stimulation on Primary Auditory Cortex.
J.R. Germick, Y. Alkheder, P. Rastogi, A. Pandurangi, D.C. Jiles and R.L. Hadimani. 1. Dept. of Electrical and Nuclear Engineering, Iowa State University, Ames, IA, United States; 2. Dept. of Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA, United States; 3. Dept. of Psychiatry, School of Medicine, Virginia Commonwealth University, Richmond, VA, United States

J.R. Germick, E. Cheng, P. Rastogi, R.L. Hadimani, U. Mehta, A. Pandurangi and D.C. Jiles. 1. Dept. of Electrical and Nuclear Engineering, Iowa State University, Ames, IA, United States; 2. Dept. of Biomedical Engineering, Virginia Commonwealth University, Richmond, VA, United States; 3. Dept. of Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA, United States; 4. Department of Psychiatry, National Institute of Mental Health and Neurosciences, Bangalore, India; 5. Dept. of Psychiatry, School of Medicine, Virginia Commonwealth University, Richmond, VA, United States

CP-08. Simulation study of Magnetic Response of Magnetic Nanoparticles for different temperature under different selection gradient field.

CP-09. Gradient/ELF magnetic Field Affects Metamorphic Behaviors in T.A.-Administered Axolotls: Regulation of Amphibian Metamorphosis Depending on Field Strength and Exposure Timing.
H. Nakagawa and M. Ohuchi. 1. Department of Electrical and Electronic Engineering, Tokyo Denki University, Adachi-ku, Japan

S. Jiang. 1. Tianjin Polytechnic University, Tianjin, China

CP-11. Biogenic micro-mirrors of aquatic species display enhanced light reflection upon exposure to a magnetic field.
H. Kashiwagi, H. Asada and M. Iwasaka. 1. Graduate School of AdSM, Hiroshima University, Higashihiroshima, Japan; 2. Graduate School of Science and Technology for Innovation, Yamaguchi University, Ube, Japan; 3. RNBS, Hiroshima University, Higashihiroshima, Japan

Y. Wu and Z. Liu. 1. School of Materials Science and Engineering, South China University of Technology, Guangzhou, China

H. Yu, W. Zheng, W. Xia, W. Ding, G. Xu and L. Guo. 1. Hebei University of Technology, Tianjin, China, Tianjin, China; 2. Tianjin Beichen District Chinese Medicine Hospital, Tianjin, China
Effects of Magnetic Stimulation on the Proliferation of Dopaminergic Neuronal Cells Grown in Extracellular Matrix. X. Zhong1, J.C. Boldrey1, I.C. Schneider1, L. Que1 and D.C. Jiles1 1. Electrical and Computer Engineering, Iowa State University, Ames, IA, United States; 2. Chemical and Biological Engineering, Iowa State University, Ames, IA, United States

Computational Safety Study of Combination Treatment: Deep Brain Stimulation and Transcranial Magnetic Stimulation. F. Syeda1, C.H. Serrate1, H. Magsood1, K. Holloway2,3 and R.L. Hadimani1 1. Mechanical and Nuclear Engineering, Virginia Commonwealth University, Glen Allen, VA, United States; 2. McGuire Research Institute, Hunter Holmes McGuire Veterans Affairs Medical Center, Richmond, VA, United States; 3. Department of Neurosurgery, Virginia Commonwealth University Health System, Richmond, VA, United States

Study on the Effects of Magnetic Stimulation on K-Ras-Driven Lung Cancer in Mice. N. Zhang1,2, S. Ning3, S. Wang1, C. Zhang2, S. Wang1 and P. Hao1 1. State Key Laboratory of Electrical Insulation and Power Equipment, Faculty of Electrical Engineering, Xi’an Jiaotong University, Xi’an, China; 2. Department of Oncology, Johns Hopkins University School of Medicine, Baltimore, MD, United States; 3. College of Electrical and Information Engineering, Shaanxi University of Science and Technology, Xi’an, China

WEDNESDAY SIMPOR/ROSELLE BALLROOM
MORNING
8:30

Session CQ
DOMAIN WALLS AND SKYRMIONS
(Poster Session)
Yan Zhou, Chair
The Chinese University of Hong Kong, Shatin, Hong Kong

CQ-01. Measurement of tilted magnetic anisotropy of quasi-perpendicularly magnetized Ta/Pt/CoFeB/Pt multilayers. S. Guddeti1 and P. Kumar2 1. Department of Physics, Indian Institute of Science, Bangalore, India

CQ-02. Pinning sites with tilted magnetization for domain wall motion control in racetrack memory. T. Jin1, F. Tan4, C.C. Ang1, W. Gan1, J. Cao2, W. Lew1 and S. Piramanayagam1 1. Nanyang University, Division of Physics and Applied Physics, School of Physical and Mathematical Sciences, Singapore, Singapore; 2. Lanzhou University, Lanzhou, China

CQ-03. Role of Effective Anisotropy in Temperature Gradient-induced Skyrmion Motion. X. Wang1, W. Gan2, T. Jin2 and W. Lew2 1. School of Science, Lanzhou University of Technology, Lanzhou, China; 2. School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore, Singapore
CQ-04. Multilevel Storage Based on Magnetic Skyrmion. S. Luo1 and L. You1 1. School of Optical and Electronic Information, Huazhong University of Science & Technology, Wuhan, China

CQ-05. Spin-hall effect-driven motion of chiral skyrmions in an anisotropy gradient. R. Tomassello1, S. Komineas2, G. Siracusano3, M. Carpentieri4 and G. Finocchio5 1. Department of Engineering, University of Perugia, Terni, Italy; 2. Department of Mathematics and Applied Mathematics, University of Crete, Heraklion, Greece; 3. Department of Electric, Electronic and Computer Engineering, University of Catania, Catania, Italy; 4. Department of Electrical and Information Engineering, Politecnico di Bari, Bari, Italy; 5. Department of Mathematical and Computer Sciences, Physical Sciences and Earth Sciences, University of Messina, Messina, Italy

CQ-06. Spectroscopic Evaluation of Non-Adiabatic Spin Transfer Torque Using Coupled Oscillation of Magnetic Vortices. T. Horaguchi1, T. Tanazawa1 and Y. Nozaki1,2 1. Department of Physics, Keio University, Yokohama, Japan; 2. Center for Spintronics Research Network, Keio University, Yokohama, Japan

CQ-07. Over 100,000-times variation of domain-wall speed with respect to ferromagnetic layer thickness. D. Kim1, M. Park1, Y. Park1,2, J. Yu1, J. Kim1, D. Kim1,3, B. Min2 and S. Choe1 1. Physics, Seoul National University, Seoul, The Republic of Korea; 2. Korea Institute of Science and Technology, Seoul, The Republic of Korea; 3. Kyoto University, Kyoto, Japan

CQ-08. Coherent terahertz spin-wave emission associated with ferrimagnetic domain wall dynamics. S. Oh1, S. Kim2, D. Lee3, G. Go1, K. Kim4,5, T. Ono5, Y. Tserkovnyak2 and K. Lee1,3 1. Department of Nano-Semiconductor and Engineering, Korea University, Seoul, The Republic of Korea; 2. Department of Physics and Astronomy, University of California, Los Angeles, CA, United States; 3. Department of Materials Science and Engineering, Korea University, Seoul, The Republic of Korea; 4. Department of Physics, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, The Republic of Korea; 5. Institute for Chemical Research, Kyoto University, Kyoto, Japan

CQ-09. Domain wall configurations in amorphous ferromagnetic nanowires with cylindrical symmetry. C. Rotarescu1, H. Chiriac1, N. Lupu1 and T.A. Ovari1 1. National Institute of Research and Development for Technical Physics, Iasi, Romania

CQ-10. Thermally assisted domain wall motion in the presence of spin torque. J. Chureemart1 and P. Chureemart1 1. Physics department, Mahasarakham University, Kantarawichai, Thailand; 2. Physics department, Mahasarakham University, Kantarawichai, Thailand

CQ-11. Magnetic skyrmion motion in the presence of defect. I. Hong1 and K. Lee1,2 1. KU-KIST graduate school of converging science and technology, Korea University, Seoul, The Republic of Korea; 2. Department of materials science and engineering, Korea University, Seoul, The Republic of Korea
CQ-12. Mechanism of skyrmionium nucleation by local spin-orbit torque. A. Kolesnikov1, M. Stebliy1, A. Ognev1, A.S. Samardak1 and L. Chebotkevich1 1. School of Natural Science, Far Eastern Federal University, Vladivostok, Russian Federation

CQ-13. Controllable transport of a skyrmion in a ferromagnetic narrow channel with voltage-controlled magnetic anisotropy. J. Wang1, J. Xia2, X. Zhang3, G. Zhao3, J. Wu3, Y. Xu4, L. Ye4, Z. Zou4 and Y. Zhou4 1. Department of Electronic Engineering, University of York, York, United Kingdom; 2. School of Science and Engineering, The Chinese University of Hong Kong, Shenzhen, Shenzhen, China; 3. College of Physics and Electronic Engineering, Sichuan Normal University, Chengdu, China; 4. Department of Physics, University of York, York, United Kingdom; 5. College of Communication Engineering, Chongqing University, Chongqing, China; 6. Department of Physics, Nanjing University, Nanjing, China

CQ-14. Current-induced skyrmion dynamics in a frustrated magnetic film. X. Zhang1,2, J. Xia1, Y. Zhou1, X. Liu2, H. Zhang3 and M. Ezawa4 1. School of Science and Engineering, The Chinese University of Hong Kong, Shenzhen, Shenzhen, China; 2. Department of Electrical and Computer Engineering, Shinshu University, Nagano, Japan; 3. College of Optoelectronic Engineering, Shenzhen University, Shenzhen, China; 4. Department of Applied Physics, The University of Tokyo, Tokyo, Japan

CQ-15. Bidirectional propagation of tilting domain wall due to the interfacial Dzyaloshinskii-Moriya interaction in perpendicularly magnetized T-junction. J. Kwon1, H. Hwang1, J. Hong1 and C. You1 1. Department of Emerging Materials Science, Daegu Gyeongbuk Institute of Science and Technology, Daegu, The Republic of Korea

WEDNESDAY SIMPOR/ROSELLE BALLROOM
MORNING 8:30

Session CR
FUNDAMENTAL PROPERTIES AND COOPERATIVE PHENOMENA I
(Poster Session)
Baomin Wang, Chair
Ningbo Institute of Materials Technology and Engineering, Ningbo, China

CR-01. Mechanism of spin re-orientation phase transition in SmCrO₃. M. Tripathi1, T. Chatterji2, R.J. Choudhary1, D.M. Phase1 and H.E. Fischer2 1. Thin film magnetization, UGC DAE Consortium for Scientific research, Indore, India; 2. Institut Laue-Langevin, Grenoble, France
CR-02. Unusual Critical Behaviors in La$_{1.2}$Sr$_{1.8}$Mn$_2$O$_7$ Single Crystal. D. Tran$^{1,2}$, X. Kieu$^1$, D. Pham$^1$, V. Tien$^1$, S. Yu$^1$, T. Phan$^1$, A. Telegin$^4$ and S. Naumov$^4$. 1. Chungbuk National University, Cheongju, The Republic of Korea; 2. Institute of Materials Science, Vietnam Academy of Science and Technology, Hanoi, Vietnam; 3. Hankuk University of Foreign Studies, Yongin, The Republic of Korea; 4. Institute of Metal Physics, RAS, Russian Federation

CR-03. Critical behavior in La$_{0.75}$Ca$_{0.2}$Ag$_{0.05}$MnO$_3$ Exhibiting the Griffiths Phase. D. Tran$^{1,2}$, D. Pham$^1$, X. Kieu$^1$ and S. Yu$^1$. 1. Chungbuk National University, Cheongju, The Republic of Korea; 2. Vietnam Academy of Science and Technology, Hanoi, Vietnam

CR-04. Observation of Griffiths like phase above room temperature in antiferromagnetic double perovskite Pr$_2$CoFeO$_6$. A. Pal$^1$, V. Gangwar$^1$ and S. Chatterjee$^1$. 1. Physics, Indian Institute of Technology BHU, Varanasi, India

CR-05. Low Temperature Magnetic Properties of Pyrochlore Nd$_2$Ru$_2$O$_7$. D. Kumar$^1$, S.T. Ku$^1$, M.R. Lees$^2$, W.T. Lee$^3$, R.J. Aldus$^1$, A. Studer$^1$, I. Paolo$^1$, S. Asai$^4$, T. Masuda$^4$, S.W. Chen$^5$, J.M. Chen$^5$ and L.J. Chang$^1$. 1. Department of Physics, National Cheng Kung University, Tainan, Taiwan; 2. Department of Physics, University of Warwick, Coventry, United Kingdom; 3. Australian Nuclear Science and Technology Organization, Kirrawee, NSW, Australia; 4. Institute of Solid State Physics, The University of Tokyo, Chiba, Japan; 5. National Synchrotron Radiation Research Center, Hsinchu, Taiwan; 6. Advanced Science Research Center, Japan Atomic Energy Agency, Ibaraki, Japan

CR-06. Magnetic excitation, partial gap opening and chemical pressure effect in CeNiGe$_2$. K. Singh$^1$ and K. Mukherjee$^1$. 1. School of Basic Sciences, Indian Institute of Technology Mandi, India

CR-07. Orthorhombic Ti$_3$O$_5$: A Polymorph-Dependent Narrow-Bandgap Ferromagnetic Oxide. Y. Li$^2,^1$, Y. Weng$^1$, X. Yin$^1$, X. Yu$^1$, S. Kumar$^2$, N. Wehbe$^5$, H. Wu$^1$, H. Alshareef$^2$, S.J. Pennycook$^1$, M.B. Breese$^4$, J. Chen$^1$, S. Dong$^3$ and T. Wu$^2$. 1. Material Science and Engineering, National University of Singapore, Singapore; 2. Material Science and Engineering, King Abdullah University of Science and Technology (KAUST), Jeddah, Saudi Arabia; 3. Department of Physics, Southeast University, Nanjing, China; 4. Singapore Synchrotron Light Source (SSLS), National University of Singapore, Singapore; 5. Imaging&Characterization Core Lab, King Abdullah University of Science and Technology (KAUST), Jeddah, Saudi Arabia

CR-08. Inverted magnetic hysteresis loop and strong magnetoelectric coupling in mixed ferrimagnetic-multiferroic phases of a double perovskite. D. Oh$^1$, M. Kim$^1$, J. Moon$^1$, S. Oh$^1$, Y. Choi$^1$ and N. Lee$^1$. 1. Yonsei University, Seoul, The Republic of Korea
CR-09. Study of Spin Polarized Tunneling in Magnetoresistance and Low Temperature Anomaly in Nanoparticles of La$_{0.5}$Ca$_{0.5}$MnO$_3$. A.K. Saw$^1$, G. Channagoudra$^1$, H. Fu$^3$, R.L. Hadimani$^2$ and V. Dayal$^1$. 1. Department of Physics, Maharaja Institute of Technology-Mysore, Mysuru, India; 2. University of Electronic Science and Technology of China, Chengdu, China; 3. Department of Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA, United States

CR-10. Non-collinear spin structure at ultrathin magnetic interfaces and its evolution by the oxygen adsorption. T. Chuang$^1$, C. Huang$^2$, C. Lu$^1$ and D. Wei$^{1,2}$. 1. National Synchrotron Radiation Research Center, Hsinchu, Taiwan; 2. National Sun Yat-sen University, Program for Synchrotron Radiation and Neutron Beam Applications, Kaohsiung, Taiwan

CR-11. Role of Fe-doped effect in two-dimensional MoS$_2$ magnetic semiconductor. C. Kao$^2$, C. Yang$^2$, H. Kao$^3$, Y. Tung$^2$, T. Hsu$^2$, W. Wu$^2$ and K. Lin$^1$. 1. Chemical Engineering and Material Science, Yuan Ze University, Taoyuan City, Taiwan; 2. Physics, Chung Yuan Christian University, Taoyuan City, Taiwan

CR-12. Reversible 90-Degree Rotation of Fe Magnetic Moment Using Hydrogen. W. Lin$^1$, C. Hsu$^1$, P. Chang$^1$, Y. Chen$^1$ and C. Liu$^1$. 1. Department of Physics, National Taiwan Normal University, Taipei, Taiwan

CR-13. The Role of Graphene Oxide Precursor on Magnetic and Microwave Properties of Nitrogen-doped Graphene. L. Quan$^1$, F. Qin$^1$, H. Wang$^1$ and H. Peng$^1$. 1. Zhejiang University, Hangzhou, China

WEDNESDAY SIMPOR/ROSELLE BALLROOM
MORNING
8:30

Session CS
HARD MAGNETS I
(Poster Session)
Aru Yan, Chair
Ningbo Institute of Materials Technology & Engineering, Ningbo, China

CS-01. Magnetic properties of Fe-Pt thick-film magnets electroplated on Cu substrates. Y. Omagari$^1$, J. Honda$^1$, R. Hamamura$^1$, H. Yamada$^2$, N. Fujita$^1$, K. Takashima$^1$, T. Yanai$^1$, M. Nakano$^1$ and H. Fukunaga$^1$. 1. Nagasaki University, Nagasaki, Japan; 2. National Institute of Technology, Nara College, Nara, Japan
CS-02. Mossbauer studies and magnetic properties of Fe-doped MnAl(C) alloys. V. Nguyen¹,², F. Calvayrac¹ and N. Randrianantoandro¹. 1. Institut des Molécules et Matériaux du Mans – UMR CNRS n°6283, Le Mans Université, Le Mans, France; 2. Advanced Materials Science and Nanotechnology, University of Science and Technology of Hanoi, Vietnam Academy of Science and Technology, Hanoi, Vietnam

CS-03. Magnetic properties and morphologies of synthesized strontium ferrite powders by the molten salt method. M. Kim¹, K. Lee¹, M. Choi³ and J. Kim¹. 1. Materials Science and Chemical Engineering, Hanyang University, Ansan, The Republic of Korea

CS-04. Synthesis of high-purity spherical core-shell α'-Fe₁₆N₂/SiO₂ magnetic nanoparticles. J. Li¹, L. Guo¹, X. Peng¹, Y. Yang¹, X. Wang¹ and H. Ge¹. 1. Department of Materials Science & Engineering, China Jiliang University, Hangzhou, China

CS-05. Coercivity and phase evolution in mechanically milled (FeCo)₂B-type hard magnetic alloy. K. Kim¹, H. Kwon¹, M. Kang², C. Yang³, J. Lee³ and J. Yu². 1. Pukyong National University, Pusan, The Republic of Korea; 2. Korea Institute of Materials Science, Changwon, The Republic of Korea; 3. Sungkyunkwan University, Suwon, The Republic of Korea

CS-06. Hard magnetic property improvement of melt spun PrCo₅ ribbons by Fe and C doping. H.W. Chang¹, H. Wang¹, Y. Lee¹, C. Shih¹, W.C. Chang², C. Shaw² and C. Yang³. 1. Department of Physics, National Chung Cheng University, Chia-Yi, Taiwan; 2. Superrite Electronics Co. Ltd., Taipei, Taiwan; 3. Chung-Yuan Christian University, Chungli, Taiwan

CS-07. First-principles study of spin-wave dispersion in Sm(FeCo)₁₂. T. Fukazawa¹,², H. Akai¹,², Y. Harashima¹,² and T. Miyake¹,². 1. National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan; 2. ESICMM, National Institute for Materials Science (NIMS), Tsukuba, Japan; 3. ISSP, The University of Tokyo, Kashiwa, Japan

CS-08. Site probability of substituted Titanium in 1:12 phase structures SmFe₁₂, NdFe₁₂, and SmCo₁₂. C. Skelland¹, G. Hrkac¹,², T. Schrefl³, T. Ostler⁴, S. Westmoreland⁴, R.W. Chantrell⁵, R.F. Evans⁵, M. Yano², T. Shoji², A. Kato² and A. Manabe². 1. University of Exeter, Exeter, United Kingdom; 2. Toyota Motor Corporation, Toyota City, Japan; 3. Danube University Krems, Austria; 4. Sheffield Hallam University, Sheffield, United Kingdom; 5. University of York, York, United Kingdom; 6. TU Vienna, Vienna, Austria

CS-09. Magnetic properties of (Sm,Zr)₃(Fe,Co)₁₋ₓTiₓ melt-spun ribbons. T. Saito¹, T. Horigi¹ and D. Nishio-Hamane². 1. Chiba Institute of Technology, Chiba, Japan; 2. Institute for Solid State Physics, The University of Tokyo, Kashiwa, Japan

CS-10. Coercivity Mechanism of SrO*6Fe₂O₃ Ferrite Magnets. Y. Matsuura¹. 1. Research Institute for Applied Sciences, Kyoto, Japan

Wednesday 83
CS-11. Electronic structure and magnetic property of Ba$_{1-x}$Sr$_x$CoFe$_{11}$O$_{19}$ hexaferrites. N. Tran, D. Kim, H. Kim, S. Lee, T. Phan and B. Lee. 1. Department of Physics and Oxide Research Center, Hankuk University of Foreign Studies, Yongsi-si, The Republic of Korea

WEDNESDAY SIMPOR/ROSELLE BALLROOM
MORNING
8:30

Session CT
LINEAR MOTORS II
(Poster Session)
Fei Zhao, Chair
Harbin Institute of Technology (Shenzhen), Shenzhen, China


CT-02. Power Factor Improvement of Linear Permanent-Magnet Vernier Motor by Using Dual-Inverter. D. Xu, W. Zhao and P. Zhao. 1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China

CT-03. Detent Force Investigation in Long-stator PM Linear Machines with Non-ideal Mechanical Airgap Condition. M. Ma. 1. School of Electrical Engineering and Automation, Hefei University of Technology, Hefei, China


CT-07. Design and Reduction of Thrust Ripple in Transverse Flux Permanent Magnet Linear Machine. M. Zhao1,2, K. Liu3, H. Yang1, N. Feng1, D. Hou1, P. Zhang1 and M. Xu1 1. Ludong University, Yantai, China; 2. Harbin Institute of Technology, Harbin, China; 3. Southeast University, Nanjing, China

CT-08. Design and Implementation of Amorphous Magnetic Material-Based Common Magnetic-Bus for the Replacement of Common DC-Bus. M. Islam1, K. Muttaqi1, D. Sutanto1 and J. Zhu2 1. Faculty of Engineering and Information Sciences, University of Wollongong, Wollongong, NSW, Australia; 2. Faculty of Engineering and Information Technologies, University of Technology Sydney, NSW, Australia

CT-09. Research on Detent Force for Tubular Permanent Magnet Linear Motor with Skewed Core End. G. Zhao1, Y. Wang1, B. Bai1 and X. Gao1 1. Shenyang University of Technology, Shenyang, China

CT-10. Thermal Design of a Toroidally Wound Mover Linear Switched Reluctance Machine using 3D Equivalent Thermal Network. D. Zhang1, X. Du1, D. Wang1 and C. Peng1 1. Shandong University, Jinan, China

CT-11. A New Decoupled RotLin Motor with Fuzzy Sliding Mode Control. Y. Zou1 and E. Cheng1 1. Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong, Hong Kong

CT-12. Design of VCM actuator with optical zoom for smartphone cameras. Y. Chang1, C. Hu1, C. Hsieh1 and C. Liu1 1. National Chung Cheng University, Chiayi County, Taiwan

CT-13. Design and Analysis of a Tubular Hybrid-Excited Flux-Modulated PM Motor with Improved Power Factor. H. Zhou1, J. Zhang1, W. Tao1 and G. Liu1 1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China

CT-14. Design a Spherical Motor and Its Drive. Y. Zou1 and N. Cheung1 1. Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong, China

Improvement of the self-propelled rotary actuator in consideration of shape and rolling direction of steel sheets.
N. Soda¹, T. Kawano¹ and M. Enokizono². ¹. College of Engineering, Ibaraki University, Hitachi, Japan; ². Vector Magnetic Characteristic Technical Laboratory, Usa, Japan

Session CU
LINEAR MOTORS III
(Poster Session)
Wei Xu, Co-Chair
Huazhong University of Science and Technology, Wuhan, China
Feng Chai, Co-Chair
Harbin Institute of Technology, Harbin, China

CU-01. Design and Analysis of a Novel Modular Linear Double Stator Biased Flux Machine. Y. Mao¹ and S. Niu¹ ¹. Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong, Hong Kong

CU-02. Experimental investigation of a new type of oscillation based linear capsule actuator. L. Wu¹, K. Lu¹ and Y. Xia¹ ¹. Department of Energy Technology, Aalborg University, Aalborg, Denmark

CU-03. Dry Run Test of the In-vessel CEDM. J. Park¹, M. Back², W. Lee¹, M. Lee¹, Y. Cho¹, H. Kim¹, C. Maeng¹ and C. Chung¹ ¹. KEPCO E&C, Daejeon, The Republic of Korea; ². Woojin Inc., Hwaseong, The Republic of Korea

CU-04. Design and Analysis of Linear Hybrid-Excited Slot Permanent Magnet Machines. Y. Shen¹ and Q. Lu¹ ¹. College of Electrical Engineering, Zhejiang University, Hangzhou, China

CU-05. Investigation of Novel Linear Multi-tooth Variable Flux Reluctance Machines. Y. Shen¹ and Q. Lu¹ ¹. College of Electrical Engineering, Zhejiang University, Hangzhou, China


CU-07. Design and analysis of a novel rotary-linear motor with voice coil structure. F. Xing¹ and B. Kwon¹ ¹. Hanyang University, Ansan, The Republic of Korea
CU-08. Design and Experimental Analysis of a 3kW Single-Phase Linear Permanent Magnet Generator for Stirling Engines.
K. Lee1,2, S. Lee1, J. Park1, J. Choi1 and K. Sim1 1. Korea Institute of Industrial Technology, Gwangju, The Republic of Korea; 2. Electrical engineering, Chungnam National University, Daejeon, The Republic of Korea; 3. Seoul National University of Science and Technology, Seoul, The Republic of Korea

CU-09. Cost and detent force reduction in a permanent magnet linear motor by using different PM materials. X. Liu1,2, D. Gerada2,3, Z. Xu2,3, C. Gerada2,3 and H. Yu4 1. Department of Electrical Engineering, Southeast University, Nanjing, JiangSu, China; 2. Power Electronics, Machines and Control Group, The University of Nottingham, Nottingham, United Kingdom; 3. Department of Electrical and Electronic Engineering, University of Nottingham, Ningbo, China

CU-10. Torque Analysis and Optimal Design of a Three-Degrees-of-Freedom Maglev Permanent Magnet Linear Motor. F. Xing1, B. Kou1, T. Wang1, C. Zhang1 and Y. Zhou1 1. Harbin Institute of Technology, Harbin, China


CU-14. Electromagnetic optimization and minimization of detent force for linear permanent magnet vernier motor. Y. Shao1, H. Zhang1 and B. Kou1 1. Harbin Institute of Technology, Harbin, China


CU-16. Design of 2-Phase Slotless Actuator with New Winding Structure for Position Control of Multi-DOF Motor. H. Hong1, H. Kim1, S. Oh1 and J. Lee1 1. Hanyang University, Seoul, The Republic of Korea
CV-01. Nondestructive Testing for Shallow Defect of Ferromagnetic Objects Based on Magnetic Probe Structure. S. Pan¹, D. Zhang¹ and E. Zhang¹. 1. Power Electronic and Motion Control Research Center, Harbin Institute of Technology, Harbin, China

CV-02. DC-arcing detection by noise measurement with magnetic sensing by TMR sensors. W. Miao¹, X. Liu¹, S.K. Lam¹ and P. Pong¹. 1. The University of Hong Kong, Hong Kong

CV-03. Structural Health Monitoring using magnetostrictive sensors. Z. Leong¹, L. Chan¹, W. Holmes¹, J. Clarke¹, N. Walters¹, S. Hayes¹ and N. Morley¹. 1. Materials Science and Engineering, University of Sheffield, Sheffield, United Kingdom

CV-04. Serial MTJ sensors for detection back-side defects by eddy current testing. Z. Jin¹, M. Oogane¹, M.B. Mohd Noor Sam¹, K. Fujiwara¹ and Y. Ando¹. 1. Applied Physics, Tohoku University, Sendai, Japan

CV-05. Detection of Slit Defects on Backside of Steel Plate Using Low-Frequency Eddy-Current-Testing. W. Yoshimura¹, R. Tanaka¹, T. Sasayama¹ and K. Empuku¹. 1. Kyushu University, Fukuoka, Japan

CV-06. Detection and identification of object based on a magnetostrictive tactile sensing system. B. Zhang¹, B. Wang¹, Y. Li¹, W. Huang¹ and L. Weng¹. 1. Hebei University of Technology, Tianjin, China

CV-07. Strategy for determining a magnet position in a 2D space using 1D sensors. P.M. Ribeiro¹, M. Neto¹ and S. Cardoso de Freitas¹. 1. INESC - Microssistemas e Nanotecnologias and IN, Lisbon, Portugal


CV-09. Fault Line Identification of HVDC Transmission Line by Frequency Spectrum Correlation Based on Capacitive-Coupling and Magnetic-Field-Sensing. K. Zhu¹, W. Lee¹ and P. Pong¹. 1. Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong
CV-10. Searching an avalanche victim using a transmitter with a rotating magnetic dipole. A. Chiba\textsuperscript{1} and T. Nara\textsuperscript{1}  
\textsuperscript{1}. The University of Tokyo, Tokyo, Japan

CV-11. Determination Scheme for Accurate Defect Depth in Underground Pipeline Inspection by Using Magnetic Flux Leakage Sensors. H. Kim\textsuperscript{1}, C. Heo\textsuperscript{1}, S. Cho\textsuperscript{3} and G. Park\textsuperscript{2}  
\textsuperscript{1}. Electrical and Computer Engineering, Pusan National University, Busan, The Republic of Korea; \textsuperscript{2}. Electrical Engineering, Pusan National University, Busan, The Republic of Korea; \textsuperscript{3}. Korea Gas Corporation, Incheon, The Republic of Korea

CV-12. Detecting method of hardened depth in surface hardened steel by magnetic field on steel. Y. Gotoh\textsuperscript{1}, S. Onita\textsuperscript{2}, T. Horino\textsuperscript{2} and Y. Misaka\textsuperscript{3}  
\textsuperscript{1}. Innovative Engineering, Faculty of Science and Technology, Oita University, Oita, Japan; \textsuperscript{2}. Research and Development Center, Neturen Co., Ltd., Hiratsuka, Japan

CV-13. Electromagnetic inspection for detecting defect of underground part in road sign pillar. Y. Gotoh\textsuperscript{1}, M. Tohara\textsuperscript{2} and R. Nakamura\textsuperscript{3}  
\textsuperscript{1}. Innovative Engineering, Faculty of Science and Technology, Oita University, Oita, Japan; \textsuperscript{2}. Mechanical and Energy Systems Engineering, Oita University, Oita, Japan; \textsuperscript{3}. Division of Technical administration, Japan Non-Destructive Inspection Inc., Kurashiki, Japan

CV-14. Investigation of Magnetic Tunnel Junction Sensor for Magnetic Flux Leakage Testing of Reinforced Concrete. M.B. Mohd Noor Sam\textsuperscript{1}, Z. Jin\textsuperscript{1}, M. Oogane\textsuperscript{1}, K. Fujiwara\textsuperscript{1} and Y. Ando\textsuperscript{1}  
\textsuperscript{1}. Applied Physics, Tohoku University, Sendai, Japan

CV-15. A New Design of MFL Sensors for Self-Driving NDT Robot to Avoid Getting Stuck in Curved Underground Pipelines. H. Kim\textsuperscript{1}, H. Yoo\textsuperscript{2} and G. Park\textsuperscript{3}  
\textsuperscript{1}. Electrical and Computer Engineering, Pusan National University, Busan, The Republic of Korea; \textsuperscript{2}. Korea Gas Corporation, Incheon, The Republic of Korea; \textsuperscript{3}. Electrical Engineering, Pusan National University, Busan, The Republic of Korea

CV-16. A High-Field Tunneling Magnetoresistive Angle Sensor. J. Deak\textsuperscript{1} and I. Jin\textsuperscript{2}  
\textsuperscript{1}. R&D, MultiDimension Technology Co., Ltd, Zhangjiagang, China; \textsuperscript{2}. Wafer Front End, MultiDimension Technology Co., Ltd, San Jose, CA, United States
CW-01. Frequency Characteristics of an Optical Current Sensor Based on Rare Earth Materials. W. Sima1, Y. Wang1, M. Yang1 and R. Zheng1 1. State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University, Chongqing, China

CW-02. Current annealing of glass-coated amorphous wire for noise reduction of low-offset fundamental mode orthogonal fluxgate. N. Murata1,2 and R. Nomura1 1. Environmental Test Technology Unit, Japan Aerospace Exploration Agency (JAXA), Tsukuba, Japan; 2. Department of Space and Astronautical Science, The Graduate University for Advanced Studies, Sagamihara, Japan

CW-03. High frequency and sensitivity magnetic core with amorphous HB1-M operate at electromagnetic interface characteristic. C. Hsu1, C. Chang3 and C. Tseng2 1. Department of Mechanical Engineering, Oriental Institute of Technology, New Taipei city, Taiwan; 2. Division of Physics, Institute of Nuclear Energy Research, Taoyuan, Taiwan; 3. Department of Information and Telecommunications Engineering, Ming Chuan University, Taoyuan, Taiwan

CW-04. Noise suppression and sensitivity manipulation of magnetic tunnel junction sensors with soft magnetic Co90.5Fe4.5Si15B10 layer. L. Huang1, Z. Yuan1, B. Tao1, C. Wan1, P. Guo1, Q. Zhang1, L. Yin1, J. Feng1, T. Nakano2, H. Naganuma2, H. Liu1, Y. Yan1 and X. Han1 1. State Key Lab of Magnetism, Institute of Physics, Beijing, China; 2. Tohoku University, Sendai, Japan; 3. Jilin University, Changchun, China

CW-05. Tuning antiparallel pinned spin valves with modified artificial antiferromagnetic layer for full-bridge magnetic sensors. V. Luong1, A. Nguyen1 and H. Tran Thi1 1. International Training Institute for Materials Science, Hanoi University of Science and Technology, Ha Noi, Vietnam

CW-06. Hybrid planar hall effect and giant magnetoresistance sensors based on ferromagnetic/nonmagnetic/ferromagnetic multi-domain structures. A. Elzewawy1,2, A. Talantsev1,3 and C. Kim1 1. Emerging materials science, Daegu Gyeongbuk Institute of Science & Technology (DGIST), Daegu, The Republic of Korea; 2. Ceramics Department, National Research Centre, Cairo, Egypt; 3. Institute of Problems of Chemical Physics, Moscow, Russian Federation
CW-07. Anisotropy control of magnetostrictive film using thermal stress ant its application for sensor device. S. Hashi1, D. Sora1, Y. Kubo1, K. Arai1 and K. Ishiyama1. Research Institute of Electrical Communication, Tohoku University, Sendai, Japan

CW-08. A Self-biased Anisotropic Magnetoresistive (AMR) Magnetic Field Sensor on Flexible Kapton. C. Wang1, W. Su1, J. Pu1, Z. Hu1 and M. Liu1. Electronic Materials Research Laboratory, Key Laboratory of the Ministry of Education & International Center for Dielectric Research, Xi’an Jiaotong University, Xi’an, China

CW-09. A flexible magnetostrictive transducer based on FeCuNbSiB/poly (vinylidene fluoride) (PVDF) laminate composites for wearable magnetic sensors. X. He1, J. Qiu1, Y. Long1, Q. Chang1, Z. Hu1 and H. Liu1. College of Optoelectronic Engineering, Chongqing University, Chongqing, China

CW-10. Flat bandwidth expansion for spin-valve GMR magnetic field sensors. Y. Chiang1, X. Trinh1 and J. Jeng1. Mechanical Engineering, National Kaohsiung University of Applied Sciences, Kaohsiung, Taiwan

CW-11. High isotropic magnetic sensor based on ring Terfenol-D / PZT composites. W. Wang1, J. Ouyang1, X. Wu1, Y. Ren1, J. Liang1, S. Chen1 and X. Yang1. School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, China

CW-12. Incident power dependence on magnetoimpedance element with domain wall resonance. C. Sumida1 and H. Kikuchi1. Iwate University, Morioka, Japan

CW-13. Influence of substrate material and geometry on giant magnetoimpedance of NiFe composite wires. K. Roy1 and V. Srinivas1. Department of Physics, Indian Institute of Technology Madras, Chennai, India

CW-14. Fabrication of ferromagnetic Co-MgF2 granular film with high transmittance and large Faraday-effect for optical magnetic field sensor. M. Miyamoto1,2, T. Kubo2, Y. Fujishiro1, K. Shiota1, M. Sonehara1 and T. Sato1. Shinshu University, Nagano, Japan; 2. Citizen Finedevice Co., Ltd., Kitasaku-gun, Japan

CW-15. Effect of Annealing Temperature on GMI in NiFe Thin Films. L. Zhu1, F. Jin1, K. Dong1, W. Mo1 and J. Song1. China University of Geosciences, Wuhan, China

CW-16. Effect of amorphous wire core diameter on the noise of an orthogonal fluxgate. M. Butta1, M. Janosek1, B. Schutte1, M. Vázquez2, R. Perez del Real2, E. Calle2 and A. Jimenez2. Faculty of Electrical Engineering, Czech Technical University in Prague, Prague, Czechia; 2. Institute of Materials Science of Madrid (ICMM-CSIC), Madrid, Spain
Session DA
SYMPOSIUM ON MAGNETISM IN BIOMEDICINE: WHERE NEXT?
Montserrat Rivas, Chair
Universidad de Oviedo, Gijón, Spain

2:00
D. Cabrera1,2, N. Telling1, A. Coene3, J. Leliaert4, E. Artés-Ibáñez2, L. Dupré3 and F. Teran2
1. Institute for Science and Technology in Medicine, Keele University, Stoke-on-Trent, United Kingdom; 2. Campus Universitario de Cantoblanco, iMdea Nanociencia, Madrid, Spain; 3. Department of Electrical Energy, Metals, Mechanical Constructions and Systems, Ghent University, Zwijnaarde, Belgium; 4. Department of Solid State Sciences, Ghent University, Ghent, Belgium

2:30
DA-02. Design and Medical Applications of a Platform for Image-Guided Non-Invasive Brain Delivery of Magnetic Particles. *(Invited)*
J. Benlloch1, I. Weinberg1
1. I3M, Valencia, Spain

3:00
DA-03. Magnetoelectric biomaterials for advanced tissue engineering applications. *(Invited)*
S. Lanceros-Mendez1, C. Ribeiro2, S. Ribeiro2, M. Fernandes2, N. Castro1 and V. Correia2
1. BCMaterials, Leioa, Spain; 2. Universidade do Minho, Braga, Portugal

3:30
DA-04. In Vivo Magnetic Recording of Neuronal Activity. *(Invited)*
M. Pannetier-Lecoeur1, V. Trauchessec1, T. Wunderle2, L. Caruso1, J. Trejo-Rosillo2, C.M. Lewis2, J. Valadeiro3, J. Ni2, P. Jendritza2, C. Fermon1, S. Cardoso de Freitas1, P. Freitas3 and P. Fries2
1. SPEC, CEA Saclay, Gif sur Yvette, France; 2. Ernst Strüngmann Institute (ESI) for Neuroscience in Cooperation with Max Planck Society, Frankfurt, Germany; 3. Instituto de Engenharia de Sistemas e Computadores – Microsistemas e Nanotecnologias, Lisbon, Portugal
SESSION DB
MAGNETIC FLUIDS AND ORGANIC MAGNETIC
MATERIALS I
Guoqiang Yu, Chair
Institute of physics, Chinese Academy of Sciences, Beijing, China

2:00
DB-01. Organic Ligand Induced Ferromagnetism in Ni doped ZnO films. S. Nallusamy1 and G. Nammalvar1. 1. Physics, National Institute of Technology, Tiruchirappalli, India

2:15
DB-02. Uniaxial 2D Superlattice of Fe4 Molecular Magnets on Graphene. M. Fonin1, F. Paschke1, L. Gragnaniello1, P. Erlé1, H. Brune2 and S. Rusponi2. 1. University of Konstanz, Konstanz, Germany; 2. EPFL, Lausanne, Switzerland

2:30
DB-03. Spin dependent charge trapping in a MnO2/C60 heterojunction. T. Moorsom1, M. Rogers1, G. Teobaldi2, M. Valvidaes1, S. Lee4, R. Stewart4, T. Prokscha4, H. Leutkens5, P. Gargiani3, D. Bromley1, M. Ali1, F. Al Ma’Mari1, G. Burnett1, B. Hickey1 and O. Csepedes1. 1. University of Leeds, Leeds, United Kingdom; 2. Stephenson Institute of Renewable Energy, University of Liverpool, Liverpool, United Kingdom; 3. ALBA Synchrotron, Barcelona, Spain; 4. University of St Andrews, St Andrews, United Kingdom; 5. Paul Scherrer Institut, Villigen, Switzerland; 6. Sultan Qaboos University, Muscat, Oman

2:45
DB-04. Carbon-coated nanoparticles of zinc-doped iron oxides for magnetic separation of organic pollutants: structure, magnetism and separation performance. L. Kabickova1,2, J. Koktan1, T. Korkinova1, M. Klementova1, T. Kmiec2, J. Kohout2, P. Rezanka2 and O. Kaman1. 1. Department of Magnetics and Superconductors, Academy of Sciences of the Czech Republic, Prague, Czechia; 2. Department of Low-Temperature Physics, Charles University, Prague, Czechia; 3. Department of Analytical Chemistry, University of Chemistry and Technology, Prague, Czechia

3:00
DB-05. Singlet ground state in the spin-1/2 weakly coupled dimer compound NH4[(V2O3)2(4,4'-bpy)2(H2PO4)(PO4)2]0.5H2O. A. Unnikrishnan1, V. Kumar4, P. Anjana2, A. Thirumurugan2, J. Sichelschmidt1, A. Mahajan4 and R. Nath1. 1. School of Physics, Indian Institute of Science Education and Research, Thiruvananthapuram, India; 2. School of Chemistry, Indian Institute of Science Education and Research, Thiruvananthapuram, India; 3. Max Planck Institute for Chemical Physics of Solids, Dresden, Germany; 4. Department of Physics, Indian Institute of Technology Bombay, Mumbai, India
3:15

DB-06. Spifinterface induced magnetic properties in Fe or Co thin films. S. Mallik1, S. Mattauch2, M.K. Dalai3, T. Brückel2 and S. Bedanta1. 1. Physics, National Institute of Science Education and Research (NISER), Bhubaneswar, India; 2. Jülich Centre for Neutron Science (JCNS), Munich, Germany; 3. CSIR—National Physical Laboratory, New Delhi, India

3:30

DB-07. Evaluation of Local Anisotropy of Magnetic Response from Non-oriented Electrical Steel by Magnetic Barkhausen Noise. Y. He2, M. Mehdi1,2, E. J. Hilinski3, A. Edrisy1, S. Mukundan1, A. Mollaeian1 and N. C. Kar4. 1. Mechanical, Automotive, and Materials Engineering, University of Windsor, Windsor, ON, Canada; 2. CanmetMATERIALS, Hamilton, ON, Canada; 3. Tempel Steel Co, Chicago, IL, United States; 4. Electrical and computer engineering, University of Windsor, Windsor, ON, Canada

3:45

DB-08. 5% Superelasticity in Ferromagnetic FeNiCoAl Cold-Drawn Rapidly Quenched Microwires for Medical Applications. F. Borza1, V. Dobrea1, L. Bujoreanu2, M. Grigoras1, G. Ababei1 and N. Lupu1. 1. National Institute of Research and Development for Technical Physics, Iasi, Romania; 2. Faculty of Materials Science and Engineering, “Gheorghe Asachi” Technical University of Iasi, Iasi, Romania

WEDNESDAY ORCHID IV
AFTERNOON

2:00

Session DC

SPIN-TRANSPORT WITH TOPOLOGICAL MATERIALS

Kyung-Jin Lee, Chair
Korea University, Seoul, The Republic of Korea

2:00

DC-01. Bilinear magnetoelectric resistance for spin texture detection in topological insulators. P. He1, S. Zhang2,3, D. Zhu4, Y. Liu4, Y. Wang1, G. Vignale2 and H. Yang1. 1. National University of Singapore, Singapore; 2. Department of Physics and Astronomy, University of Missouri, Columbia, MO, United States; 3. Materials Science Division, Argonne National Laboratory, Lemont, IL, United States

2:15

DC-02. Ultra-low-power spin-orbit-torque switching using the colossal spin Hall effect in BiSb topological insulator. K.H. Nguyen1, Y. Ueda1 and N. Pham1,2. 1. Electronic and Electrical Engineering, Tokyo Institute of Technology, Tokyo, Japan; 2. Center for Spintronics Research Network (CSRN), The University of Tokyo, Tokyo, Japan
2:30

DC-03. Role of surface states in the generation of the colossal spin Hall effect in BiSb topological insulator. K. Yao¹, T. Shirokura¹ and N. Pham¹². ¹. Electrical&Electronic Engineering course, Tokyo Institute of Technology, Tokyo, Japan; ². Center for Spintronics Research Network, The University of Tokyo, Tokyo, Japan

2:45

DC-04. High spin-orbit torque efficiency of in-situ fabricated Bi₂Se₃/Fe heterostructures. D. Zhu¹, Y. Wang¹, S. Shi¹, K. Teo¹, Y. Wu¹ and H. Yang¹. ¹. Department of Electrical and Computer Engineering, National University of Singapore, Singapore

3:00

DC-05. Spin and charge conversion in topological surface states and oxide interface states. (Invited) W. Han¹. ¹. International Center for Quantum Materials, Peking University, Beijing, China

3:30

DC-06. Highly efficient spin-to-charge current conversion at room temperature in strained HgTe surface states. (Invited) P. Noel¹, C. Thomas²³, L. Vila¹, T. Meunier³, P. Ballet² and J. Attané¹. ¹. INAC, Spintec, Université Grenoble Alpes, Grenoble, France; ². Leti/Dopt, CEA, Grenoble, France; ³. Institut Néel, C.N.R.S. and Université Grenoble Alpes, Grenoble, France

WEDNESDAY PEONY IV

AFTERNOON

2:00

Session DD
NEUROMORPHIC COMPUTING

Susana Cardoso de Freitas, Co-Chair INESC-MN, Lisbon, Portugal
Myriam Pannetier-Lecoeur, Co-Chair CEA Saclay, Gif sur Yvette, France

2:00

DD-01. Neuromorphic computing with spintronic devices. (Invited) J. Grollier¹. ¹. Unité Mixte CNRS/Thales, Palaiseau, France

2:30

DD-02. Low energy implementation of feedforward neural network with backpropagation algorithm using a spin orbit torque driven skyrmionic device. U. Saxena¹, D. Kaushik¹, M. Bansal¹, H. Chandel¹, U. Sahu¹ and D. Bhownik¹. ¹. Electrical Engineering, Indian Institute of Technology Delhi, New Delhi, India
DD-03. Circuit-level Design and Evaluation of STT-MRAM based Binary Winner-Takes-All Network for Image Recognition. C. Wang1,2, D. Zhang1,2, Y. Hou1,2, L. Zeng1,2, J. Klein1 and W. Zhao1,2 1. Fert Beijing Institute, DBDC, Beihang University, Beijing, China; 2. School of Electrical and Information Engineering, Beihang University, Beijing, China; 3. Centre de Nanoscience et de Nanotechnologies (C2N-Orsay), University of Paris-Sud, Orsay, France

3:00

DD-04. AFM-based artificial neurons for ultrafast neuromorphic computing. (Invited) O. Sulymenko3, R. Khymyn2, V.S. Tiberkevich1, J. Åkerman2 and A.N. Slavin1 1. Physics, Oakland University, Rochester Hills, MI, United States; 2. Physics, University of Gothenburg, Gothenburg, Sweden; 3. Radiophysics, Taras Shevchenko National University of Kyiv, Kyiv, Ukraine

3:30

DD-05. Domain wall based Mackey-Glass oscillator for neuromorphic applications. J. William1 and J. Kim1 1. Centre de Nanosciences et de Nanotechnologies, CNRS, Université Paris-Sud, Université Paris-Saclay, Orsay, France

3:45

DD-06. Neuromorphic computing using spin-transfer torque magnetic random access memory (STT-MRAM). J. Moon1 and K. Lee1,2 1. Department of Materials Science and Engineering, Korea University, Seoul, The Republic of Korea; 2. KU-KIST Graduate School of Converging Science and Technology, Korea University, Seoul, The Republic of Korea

WEDNESDAY ROSELLE II AFTERNOON

2:00

Session DE

ANTIFERROMAGNETIC SPINTRONICS

Young Sun, Chair
Institute of Physics, Chinese Academy of Sciences, Beijing, China

2:00

DE-01. Role of thermal activation in the electrical switching of antiferromagnetic Mn2Au and CuMnAs. T. Matalla-Wagner1, D. Graulich1, M. Rath1 and M. Meinert1 1. Faculty of Physics, Bielefeld University, Bielefeld, Germany

2:15

DE-02. Spin transport thru antiferromagnetic NiO in Bi2Se3/NiO/Py heterostructures. Y. Wang1, D. Zhu1, J. Lee1, Y. Yang1, R. Ramaswamy1, K. Teo1, Y. Wu1 and H. Yang1 1. Department of Electrical and Computer Engineering, National University of Singapore, Singapore
DE-03. Giant Spin-Hall Angle in Epitaxial L1₀-IrMn. J. Zhou¹, X. Wang¹, J. Yu¹, Q. Qin¹, L. Liu¹, S. Chen¹, J. Deng¹, H. Yoong¹, P. Yang², X. Han³ and J. Chen¹ 1. Material Science & Engineering, National University of Singapore, Singapore; 2. Singapore Synchrotron Light Source, National University of Singapore, Singapore; 3. Institute of Physics and Beijing National Laboratory for Condensed Matter Physics, Chinese Academy of Sciences, Beijing, China

DE-04. Spin-Hall and Anisotropic Magnetoresistance effects in Layered Structures with Ferrimagnetic Co-Gd alloys. T. Seki¹, W. Zhou¹, T. Kubota¹ and K. Takanashi¹ 1. Tohoku University, Sendai, Japan

DE-05. Spin-orbit torque in antiferromagnets. C. Song¹, X. Zhou¹, X. Chen¹, P. Zhang¹, G. Shi¹ and F. Pan¹ 1. Department of Materials Science and Engineering, Tsinghua University, Beijing, China

DE-06. Micromagnetic simulations of spin-Hall driven dynamics in an antiferromagnet. V. Puliafito¹, M. Carpentieri², B. Azzerboni¹, V.S. Tiberkevich³, A.N. Slavin³ and G. Finocchio³ 1. Department of Engineering, University of Messina, Messina, Italy; 2. Department of Electrical and Information Engineering, Politecnico di Bari, Bari, Italy; 3. Department of Physics, Oakland University, Rochester, MI, United States; 4. Department of Mathematical and Computer Science, Physical Sciences and Earth Sciences, University of Messina, Messina, Italy

DE-07. Terahertz-frequency AC signal source based on antiferromagnetic tunnel junction. O. Sulymenko¹, O. Prokopenko¹, A.N. Slavin² and V.S. Tiberkevich² 1. Faculty of Radio Physics, Electronics and Computer Systems, Taras Shevchenko National University of Kyiv, Kiev, Ukraine; 2. Department of Physics, Oakland University, Rochester, MI, United States

DE-08. Injection-locking of a nonlinear sub-THz antiferromagnetic spin-Hall oscillator. R. Khymyn¹, V.S. Tiberkevich¹, A.N. Slavin² and J. Åkerman¹,³ 1. Department of Physics, University of Gothenburg, Gothenburg, Sweden; 2. Department of Physics, Oakland University, Rochester, MI, United States; 3. Department of Applied Physics, KTH Royal Institute Technology, Stockholm, Sweden
2:00

Session DF
HEAT ASSISTED RECORDING PHYSICS
Kaizhong Gao, Chair
Argonne National Laboratory, North Oaks, MN, United States

2:00
DF-01. Thermally induced magnetisation switching: basic physics and potential for a new storage technology. (Invited)
R.F. Evans1, T. Ostler2, O. Chubykalo-Fesenko2 and R.W. Chantrell1. 1. Physics, The University of York, York, United Kingdom; 2. Institute of Materials Science of Madrid (ICMM-CSIC), Madrid, Spain; 3. Faculty of Arts, Computing, Engineering and Sciences, Sheffield Hallam University, Sheffield, United Kingdom

2:30
DF-02. Micromagnetics at Finite Temperature. (Invited) D. Wei1
1. School of Materials Science and Engineering, Tsinghua University, Beijing, China

3:00
DF-03. Impact of intergrain spin transfer torques due to huge thermal gradients on the performance of heat assisted magnetic recording. (Invited) B. Dieny1, M. Chshiev1, B. Charles1, N. Strelkov1-2, A. Truong1, O. Fruchart1, A. Hallal1, J. Wang1, Y. Takahashi1, T. Mizuno1 and K. Hono1
1. SPINTEC, Grenoble Alpes Univ/CEA/CNRS, Grenoble, France; 2. Physics Department, Lomonosov Moscow State University, Moscow, Russian Federation; 3. National Institute for Materials Science, Tsukuba, Japan; 4. Headway Technologies, Milpitas, CA, United States

3:30
S. Hernandez1, Z. Liu1, S.D. Granz1, P. Huang2, I. Gilbert1, D. Mader1, M. Blaber1, C.J. Rea1, G. Ju1, T. Rausch1 and E. Gage1. 1. Seagate Research Group, Seagate Technology, Shakopee, MN, United States; 2. Recording Media Operations, Seagate Technology, Fremont, CA, United States; 3. Recording Head Operations, Seagate Technology, Bloomington, MN, United States

3:45
DF-05. Understanding of Different Noises in HAMR. Y. Jiao1 and R.H. Victora1. 1. Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN, United States
Session DG
ENERGY HARVESTERS AND GENERATORS I
Christopher H. T. Lee, Chair
Massachusetts Institute of Technology, Cambridge, MA, United States

2:00
DG-01. Design and analysis of an integrated electromagnetic energy harvester from water flow. T. Wang¹, Y. Zhang¹ and S. Zhu¹
1. Zhejiang University, Zhoushan, China

2:15
DG-02. Investigation of a Novel Dual-PM Partitioned-primary Hybrid-excited Flux-switching Linear Machine. Z. Zeng¹ and Q. Lu¹ 1. College of Electrical Engineering, Zhejiang University, Hangzhou, China

2:30
DG-03. A novel two-degree-of-freedom electromagnetic vibration energy harvester: design, modeling and experiments. Z. Wang¹, S. Wu¹, T. Yao², D. Lv¹ and H. Zhang¹ 1. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin Municipality, China; 2. School of Mechanical Engineering, Hebei University of Technology, Tianjin Municipality, China

2:45
DG-04. A planar translational permanent magnet generator for an inertial wave energy converter. M. Trapanese¹ 1. DEIM, Palermo University, Palermo, Italy

3:00
DG-05. Ultra small and thin energy-harvesting device based on electromagnetic induction. K. Morii¹ and S. Koganezawa² 1. Kansai University Graduate School, Suita-shi, Japan; 2. Kansai University, Suita-shi, Japan

3:15
DG-06. Performance Analysis of a Novel Fall-Back Transverse-Flux Permanent-Magnet Generator with Outer Rotor Design Suitable for Direct-Coupling Wind Turbine. M.A. Patel¹ and S.C. Vora¹ 1. Department of Electrical Engineering, Institute of Technology, Nirma University, Ahmedabad, India

3:30
DG-07. Magnetic field modelling of an Ironless Wind Power Microgenerator. V. Verdum¹, R.P. Homrich¹, A.F. Flores Filho¹, M.A. Silveira² and D.G. Dorrell³ 1. Engenharia Elétrica, Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil; 2. Engenharia Elétrica, Universidade Luterana do Brasil, Canoas, Brazil; 3. University of KwaZulu-Natal, Durban, South Africa

Wednesday
DG-08. Multiple-Objective-Based Optimal Energy Distribution for Wireless Power Transfer. Z. Zhang\textsuperscript{1}, H. Pang\textsuperscript{1}, R. Tong\textsuperscript{1}, W. Ai\textsuperscript{1}, S. Chang\textsuperscript{1} and J. Wang\textsuperscript{1}. School of Electrical and Information Engineering, Tianjin University, Tianjin, China

WEDNESDAY PEONY II
AFTERNOON
2:00

Session DH
PERMANENT MAGNET AND RELUCTANCE MACHINES V
E.A. Lomonova, Chair
Technische Universiteit Eindhoven, Eindhoven, Netherlands

2:00
DH-01. Design and Analysis for Torque Ripple Reduction in Synchronous Reluctance Machine. D. Yan\textsuperscript{1}, C. Xia\textsuperscript{1,2}, L. Guo\textsuperscript{1}, H. Wang\textsuperscript{2} and T. Shi\textsuperscript{1}. School of Electrical and Information Engineering, Tianjin University, Tianjin, China; 2. Tianjin Engineering Center of Electric Machine System Design and Control, Tianjin, China

2:15
DH-02. Printed Circuit Axial-Flux Permanent Magnet Machines: A Comparative Analysis of Their PCB Topologies and Performance Characteristics. S. Paul\textsuperscript{2,1}, M. Farshadnia\textsuperscript{1}, A. Pouramin\textsuperscript{1}, J. Fletcher\textsuperscript{1} and J. Chang\textsuperscript{2}. 1. Electrical Engineering and Telecommunications, University of New South Wales, Kensington, NSW, Australia; 2. Electrical Engineering, Dong-A University, Busan, The Republic of Korea

2:30
DH-03. Electromagnetic Performance Analysis of a New Hybrid Excitation Synchronous Machine for Electric Vehicle Applications. Y. Liu\textsuperscript{1}, Z. Zhang\textsuperscript{1}, C. Wang\textsuperscript{1} and W. Geng\textsuperscript{1}. Nanjing University of Aeronautics and Astronautics, Nanjing, China

2:45
DH-04. A New Variable Step Skew Approach for Minimizing Torque Pulsations in Permanent Magnet Synchronous Motors. O. Ocak\textsuperscript{1,2} and M. Aydin\textsuperscript{2}. 1, R&D, Akim Metal A.S., Kocaeli, Turkey; 2. Department of Mechatronics Engineering, Kocaeli University, Kocaeli, Turkey

3:00
DH-05. Suppression of Even-Order Harmonics and Torque Ripple in Outer Rotor Consequent-Pole PM Machine with Multilayer Windings. F. Li\textsuperscript{1} and H. Zhang\textsuperscript{1}. Institute of automation, Nanjing University of Aeronautics and Astronautics, Nanjing, China
DH-06. A Unified Design Approach of a Direct Drive External-Rotor Switched Reluctance Motor (Ex-R SRM) and its Implementation for a Low-Speed Domestic Appliance with R-dump Converter. R. Azhagar and A. Kavitha. Electrical and Electronics Engineering, College of Engineering, Anna University, Chennai, India

DH-07. Characteristic Analysis of Turn-to-turn Short Circuit Current Mitigation Method for Concentrated Winding Permanent Magnet Machines. Y. Jiang, Z. Zhang, W. Jiang, J. Huang and Y. Xu. Nanjing University of Aeronautics and Astronautics, Nanjing, China

DH-08. Design and Performance Assessments of a Surface-mounted Permanent-magnet Vernier Motor for Exoskeleton System Application. C. Liu, K. Yang, Z. Cai, P. Shih and C. Hwang. Department of Electrical Engineering, National Sun Yat-Sen University, Kaohsiung, Taiwan; Department of Electrical Engineering, Feng Chia University, Taichung, Taiwan

WEDNESDAY ORCHID I-II
AFTERNOON
4:00

Session PL
PLENARY
Sara Majetich, Chair
Carnegie Mellon University, Pittsburgh, PA, United States

4:00
Awards Ceremony

5:00

PL-01. Spintronics Nanodevices. (Invited) H. Ohno. Laboratory for Nanoelectronics and Spintronics, Research Institute of Electrical Communication, Tohoku University, Sendai, Japan; Center for Spintronics Integrated Systems, Tohoku University, Sendai, Japan

Wednesday
Session EA
SYMPOSIUM ON NOVEL HARD MAGNETIC MATERIALS AND THEIR APPLICATIONS
Jinbo Yang, Chair
Peking University, Beijing, China

9:00

EA-01. Heavy rare earth free, free rare earth and rare earth free magnets - vision and reality. (Invited) O. Gutfleisch1
and K. Skokov1  1. Material Science, TU Darmstadt, Darmstadt, Germany

9:30

EA-02. Fe₁₆N₂: from a 40-year mystery of magnetic materials to one of promises for rare-earth-free magnets. (Invited) J. Wang¹,², Y. Jiang¹, M.A. Mehediy, J. Liu¹, Y. Wu¹ and B. Ma¹
1. Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN, United States; 2. Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, MN, United States; 3. Niron Magnetics, Minneapolis, MN, United States

10:00

EA-03. Rare earth permanent magnets with ultimate hard magnetic properties. (Invited) K. Hono¹,²  1. Elements Strategy Initiative Center for Magnetic Materials, National Institute for Materials Science (NIMS), Tsukuba, Japan; 2. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science (NIMS), Tsukuba, Japan

10:30

EA-04. Recent developments in melt-spun Nd-Fe-B bonded magnets for automotive applications. (Invited) Z. Chen¹, W. Zhao¹, N.K. Sheth¹, A. Meerani¹ and J. Herchenroeder¹
1. Magnequench Technology Center, Neo Performance Materials (S) Pte Ltd, Singapore, Singapore

11:00

EA-05. Effects of Cerium on Magnetic Properties of Sintered R-Fe-B Permanent Magnets. (Invited) X. Rao¹, E. Niu¹, F. Du¹ and B. Hu¹  1. Zhong Ke San Huan Research, Beijing, China

11:30

EA-06. The advances of high-performance permanent magnets by microstructure designing. (Invited) W. Cui¹  1. Northeastern University, Shenyang, China
Session EB
MAGNETO-ELASTIC AND MAGNETO-OPTIC MATERIALS
Victorino Franco, Chair
University of Sevilla, Sevilla, Spain

9:00
EB-01. Polymer-based magnetoelectric materials: from fundamentals to applications. P. Martins1 and S. Lanceros-Mendez2,3. 1. Physics, University of Minho, Braga, Portugal; 2. BCMaterials, Leioa, Spain; 3. Ikerbasque, Basque Foundation for Science, Bilbao, Spain

9:15
EB-02. MR Elastomers for Energy Harvesting System. G. Diguet1, G. Sebald1, M. Nakano2,3 and M. Lallart3. 1. ELyTMaX UMI 3757, International Joint Unit, Tohoku University, CNRS, Université de Lyon, Tohoku University, Sendai, Japan; 2. Intelligent Fluid Control Systems Laboratory, Institute of Fluid Science, Tohoku University, Sendai, Japan; 3. LGEF EA682, Université de Lyon, INSA-Lyon, Lyon Villeurbanne, France

9:30
EB-03. Dynamic Characterization of a Magnetostrictive-based Sensor for Fast Force Profile Detection. V. Apicella1, C.S. Clemente1, D. Davino1, D. Leone1 and C. Visone1. 1. Department of Engineering, University of Sannio, Benevento, Italy

9:45
EB-04. Effect of substrate temperature driven magnetic anisotropies on the magnetostrictive behaviour of Tb-Fe-Co thin films. U. K1,2, A. Talapatra1, A. Chelvane1, J. Mohanty3 and J. V2. 1. Defence Metallurgical Research Laboratory, Hyderabad, India; 2. Physics, National Institute of Technology Warangal, Warangal, India; 3. Physics, Indian Institute of Technology Hyderabad, Kandi, Sangareddy, India

10:00
EB-05. Investigating the magnetization process of Ni-Mn-Ga films with different types of microstructure. F. Casoli1, S. Fabbrici1, M. Takhsha Ghaifarahoki1, L. Nasi1, R. Cabass1, G. Varvaro2, F. Celegato3, P. Tiberto3 and F. Albertini3. 1. IMEM-CNR, Parma, Italy; 2. ISM-CNR, Roma, Italy; 3. INRIM, Torino, Italy

10:15
EB-06. Magnetostrictive Behaviors of fcc-Co Single-Crystal Films under Rotating Magnetic Fields. T. Kawai1, K. Serizawa1, M. Ohtake2 and M. Futamoto2. 1. Chuo Univ., Tokyo, Japan; 2. Kogakuin University, Tokyo, Japan
Microstructure and elastocaloric effect in as-undercooled Pd$_{59.3}$In$_{23.2}$Fe$_{17.5}$ magnetic shape memory alloys. Q. Shen$^1$ and J. Liu$^1$. 1. Key laboratory of Magnetic Materials and Devices, Ningbo Institute of Material Technology and Engineering, Ningbo, China

FDTD simulation of enhanced Faraday effect in plasmonic composite structures with rectangularly arranged Au particles. J. Schlipf$^{1,2}$, Y. Itabashi$^1$, T. Goto$^1$, H. Takagi$^1$, P.B. Lim$^1$, Y. Nakamura$^2$, I.A. Fischer$^2$, J. Schulze$^2$, H. Uchida$^1$ and M. Inoue$^1$. 1. Toyohashi University of Technology, Toyohashi, Japan; 2. Institut für Halbleitertchnik, University of Stuttgart, Stuttgart, Germany

Helicity dependent photovoltaic conversion at nonmagnetic interface with inversion asymmetry. F.V. Auvray$^1$, J. Puebla$^2$, M. Xu$^1$ and Y. Otani$^{1,2}$. 1. Advanced Materials Science, The University of Tokyo, Kashiwa, Japan; 2. CEMS, RIKEN, Wako, Japan

Broadband Magneto-Optical Response of Magnetoplasmonic Quasicrystals. A. Kalish$^{2,1}$, R. Komarov$^2$, M. Kozhaev$^{1,3}$, V. Achanta$^1$, S. Dagesyan$^2$, A. Shaposhnikov$^3$, V. Berzhansky$^3$, A. Zvezdin$^{1,3}$ and V. Belotelov$^{1,2}$. 1. Russian Quantum Center, Skolkovo, Russian Federation; 2. Faculty of Physics, Lomonosov Moscow State University, Moscow, Russian Federation; 3. Prokhorov General Physics Institute of Russian Academy of Sciences, Moscow, Russian Federation; 4. Tata Institute of Fundamental Research, Mumbai, India; 5. V.I. Vernadsky Crimean Federal University, Simferopol, Russian Federation

Investigation of amorphous SmFe$_2$ thin films with giant negative magnetostriction and perpendicular magnetic anisotropy. M. Tomita$^1$, Y. Ishitani$^1$, S. Ishiyama$^1$, Y. Takamura$^1$ and S. Nakagawa$^1$. 1. Electrical and Electronic Engineering, Tokyo Institute of Technology, Tokyo, Japan

Session EC
GMR, TMR, AND MULTIFERROIC MATERIALS
Liang Liu, Co-Chair
National University of Singapore, Singapore
Hao Wu, Co-Chair
University of California, Los Angeles, CA, United States

9:00
EC-01. Very large voltage-controlled magnetic anisotropy and extremely reliable voltage-induced switching. (Invited)
T. Nozaki¹, A. Koziol-Rachwal¹,², M. Tsujikawa¹, Y. Shiota¹, T. Yamamoto¹, T. Ikeura¹, X. Xu¹, T. Ohkubo¹, T. Tsukahara³, S. Miwa³, M. Suzuki³, H. Imamura¹, S. Tamaru¹, H. Kubota¹, A. Fukushima¹, K. Hono¹, M. Shirai¹, Y. Suzuki¹,² and S. Yuasa¹ ¹. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan; 2. Faculty of Physics and Applied Computer Science, AGH University of Science and Technology, Al. Mickiewicza 30, 30-059, Poland; 3. Research Institute of Electrical Communication, Tohoku University, Sendai, Japan; 4. Graduate School of Engineering Science, Osaka University, Toyonaka, Japan; 5. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science (NIMS), Tsukuba, Japan; 6. Japan Synchrotron Radiation Research Institute (JASRI), Sayo, Japan

9:30
EC-02. Flexible MgO-based Magnetic Tunnel Junctions on Silicon Substrates. S. Amara¹, G. A. Torres Sevilla¹, I. Ivanov¹, J. Gerhard², S. Jaiswal²,³, H. Muhammad Mustafa¹, M. Kläui² and J. Kosel¹ ¹. CEMSE, King Abdullah University of Science and Technology (KAUST), Thuwal, Saudi Arabia; 2. Institut für Physik, Johannes Gutenberg Universität Mainz, Mainz, Germany; 3. Singulus Technologies AG, Kahl am Main, Germany

9:45
EC-03. Tunneling anisotropic magnetoresistance driven by magnetic phase transition. X. Chen¹, C. Song¹, J. Feng², X. Zhong¹ and F. Pan¹ ¹. Tsinghua University, Beijing, China; 2. Institute of Physics, Chinese Academy of Sciences, Beijing, China

10:00
EC-04. Ionic liquid gating control of magnetism in ultrathin magnetic multilayers. (Invited) M. Liu¹ and Z. Zhou¹ ¹. Electronic Materials Research Laboratory, Key Laboratory of the Ministry of Education & International Center for Dielectric Research, Xi’an Jiaotong University, Xi’an, China
10:30

EC-05. Tailoring magnetic properties of giant magnetoresistance spin-valves by inserting ultrathin noble metals between pinned and pinning layers. S. Kim¹, J. Choi² and S. Lim¹
¹. Materials Science and Engineering, Korea University, Seoul, The Republic of Korea; ². Center for Spintronics Research, Korea Institute of Science and Technology, Seoul, The Republic of Korea

10:45

EC-06. Giant magnetoresistance effects in interface-tailored current-perpendicular-to-plane type junctions using Heusler alloy electrodes. T. Kubota¹,², Y. Ina¹, Z. Wen¹,² and K. Takanashi¹,² ¹. Institute for Materials Research, Tohoku University, Sendai, Japan; ². Center for Spintronics Research Network, Tohoku University, Sendai, Japan

11:00

EC-07. Perpendicular Anistropy in Co₂FeAl₀.₅Si₀.₅ for CPP-GMR devices. W.J. Frost¹, M. Samiepour¹ and A. Hirohata³
¹. Department of Electronic Engineering, University of York, York, United Kingdom

11:15

EC-08. Mn-composition dependence of strength of bi-quadratic interlayer exchange coupling in Co₂MnSi-based pseudo spin-valves. M. Inoue¹, D. Mouri¹, K. Inubushi², K. Nakada², M. Yamamoto¹ and T. Uemura¹ ¹. Division of Electronics for Informatics, Hokkaido University, Sapporo, Japan; ². Technical Center, TDK Corporation, Ichikawa, Japan

11:30

EC-09. Control ferromagnets all electrically at room temperature without external magnetic field. (Invited) K. Wang¹
¹. Institute of Semiconductors, Chinese Academy of Sciences, Beijing, China
Session ED

**SPIN-OBJECTRONICS III**

Shunsuke Fukami, Co-Chair
Tohoku University, Sendai, Japan

Xuepeng Qiu, Co-Chair
Tongji University, Shanghai, China

9:00

**ED-01. Hybrid strain-mediated spin-orbit torque switching for magnetic memory.** Q. Wang, J. Domann, G. Yu, H. Wu, A. Barra, K. Wang and G.P. Carman. 1. Department of Biomedical Engineering and Mechanics, Virginia Tech, Blacksburg, VA, United States; 2. Institute of Physics, Chinese Academy of Sciences, Beijing, China; 3. Department of Electrical and Computer Engineering, University of California, Los Angeles, CA, United States; 4. Department of Mechanical and Aerospace Engineering, University of California, Los Angeles, CA, United States

9:15

**ED-02. Switching of exchange-coupled perpendicular magnetized layers driven by spin orbital torque with low power consumption.** S. Wang and J. Luo. 1. Institute of Microelectronics, UCAS, Beijing, China

9:30

**ED-03. Spin orbit torque via interfacial oxidation in magnetic heterostructures. (Invited)** X. Qiu and H. Yang. 1. Department of Physics Science and Engineering, Tongji University, Shanghai, China; 2. Department of Electrical and Computer Engineering, National University of Singapore, Singapore

10:00

**ED-04. Spin Hall magnetoresistance in Co / transparent-conductive-oxide bilayers.** S. Isogami and M. Hayashi. 1. The University of Tokyo, Tokyo, Japan; 2. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science (NIMS), Tsukuba, Japan

10:15

**ED-05. Direct optical observation of spin accumulation at nonmagnetic metal / oxide interface.** J. Puebla, F.V. Auvray, M. Xu, B. Rana, K. Kondou and Y. Otani. 1. CEMS, RIKEN, Wako, Japan; 2. The University of Tokyo, Kashiwa, Japan

10:30

**ED-06. Enhancement of Spin Orbit Torques by Oxygen Implantation.** J. Nath, A.V. Trifu, S. Auffret, G. Gaudin and I. Miron. 1. SPINTEC/CEA/CNRS, Grenoble, France; 2. Université Grenoble Alpes, Grenoble, France

Thursday 107
ED-07. Reliable Estimation of TaB Spin Hall Angle by Incorporating the Interfacial Transparency and Isolating Inverse Spin Hall Effect in ST-FMR Analysis. A. Tiwari¹, H. Yoda¹, Y. Kato¹, K. Koi¹, M. Ishikawa¹, S. Oikawa¹, Y. Saito², T. Inokuchi¹, N. Shimomura¹, M. Shimizu¹, S. Shirotori¹, A. Buyandalai¹, H. Sugiyama¹, Y. Ohsawa¹ and A. Kurobe¹. ¹. Corporate Research and Development, Toshiba Corporation, Kawasaki, Japan; 2. Center for Innovative Integrated Electronic System, Tohoku University, Sendai, Japan

11:00

ED-08. Spin-orbit-torque switching in an exchange-biased ferromagnetic system. P. Lin¹, M. Tsai¹, K. Huang¹, H. Lin² and C. Lai¹. ¹. Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan; 2. Department of Physics, National Tsing Hua University, Hsinchu, Taiwan

11:15

ED-09. Enhanced spin orbit torques in Pt/Co/Pt films with inserting Ru layers. Y. Wu¹, K. Meng¹, Y. Wu¹, J. Chen¹, J. Miao¹, X. Xu¹ and Y. Jiang¹. ¹. Materials Science and Engineering institute, University of Science and Technology Beijing, Beijing, China

11:30

ED-10. Harmonic measurement of current induced spin-orbit torques in high-resistivity-W/CoFeB/MgO. Y. Takeuchi¹, C. Zhang¹, A. Okada¹, H. Sato¹, S. Fukami¹ and H. Ohno¹. ¹. Tohoku University, Sendai, Japan

11:45

ED-11. Enhancement of Spin-Orbit Torques through Material Engineering: The Role of Boron. Y. Du¹, P. Chen¹, B. Yang¹, P. Lin¹, G. Guo² and C. Lai¹. ¹. Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan; 2. Department of Physics, National Taiwan University, Taipei, Taiwan

THURSDAY ROSELLE II MORNING 9:00

Session EE
SYMPOSIUM ON RECENT ADVANCES AND FUTURE CHALLENGES OF COMPUTATIONAL MAGNETICS
Jan Sykulski, Chair
University of Southampton, Southampton, United Kingdom

9:00

EE-01. Steady state solution of periodically excited nonlinear eddy current problems. (Invited) O. Biro¹ and G. Koczka². ¹. TU Graz, Graz, Austria; 2. Siemens AG Österreich – Transformers Weiz, Weiz, Austria
9:30
EE-02. Advanced soft- and hard-magnetic material models for the numerical simulation of electrical machines. (Invited) K. Hameyer1, S. Steentjes1, N. Leuning1, G. Bravendiek1 and S. Elfgen1 1. IEM, RWTH Aachen University, Aachen, Germany

10:00
EE-03. Modern Finite-Element Discretization Techniques for Electromagnetic Field Simulation. (Invited) H. De Gersem1 and S. Schöps1 1. Technische Universität Darmstadt, Darmstadt, Germany

10:30
EE-04. Advanced constitutive laws for computational magnetics: The case of magneto-mechanical behaviour. (Invited) L. Daniel1 1. GeePs-CentraleSupelec, Gif sur Yvette, France

11:00
EE-05. High Resolution Modeling of Magnetic Field Exposure Scenarios in the Vicinity of Inductive Wireless Power Transfer Systems. (Invited) M. Clemens1, M. Zang1, M. Alsayegh2 and B. Schmuelling1 1. Chair of Electromagnetic Theory, University of Wuppertal, Wuppertal, Germany; 2. E-Mobility Research Group, University of Wuppertal, Wuppertal, Germany

11:30
EE-06. Design and Optimisation of Magnetic Devices. (Invited) D. Lowther1 1. Elec and Comp Eng, McGill University, Montreal, QC, Canada

THURSDAY MORNING
9:00
Session EF
ENERGY ASSISTED RECORDING
Yuepeng Zhang, Chair
Argonne National Laboratory, Argonne, WI, United States

9:00
EF-01. Micromagnetics of FePt-L1₀ Media with Thermally Insulating Magnetic Grain Boundaries. J. Zhu1 and Y. Qin1 1. Data Storage Systems Center, Carnegie Mellon University, Pittsburgh, PA, United States

9:15
EF-02. Sources and Impact of Media Thermal Fluctuations in Heat Assisted Magnetic Recording. P. Jubert1 and C. Papusoi1 1. Western Digital, San Jose, CA, United States
EF-03. A Split Pole and Gap-NFT Write Head Design for Transition Curvature Reduction in Heat Assisted Magnetic Recording. C. Chow¹ and J.A. Bain¹ 1. Electrical and Computer Engineering, Carnegie Mellon University, Pittsburgh, PA, United States

EF-04. Design of field generating layer in all-in-plane spin-torque-oscillator. H. Sepehri-Amin¹, C. Abert², D. Suess² and K. Honoi¹ 1. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science, Tsukuba, Japan; 2. Christian Doppler Laboratory, Advanced Magnetic Sensing and Materials, University of Vienna, 1090, Vienna, Austria

EF-05. Magnetization Switching of a Co/Pt-Multilayer Perpendicular Nanomagnet Assisted by a Microwave Field with Time-Varying Frequency. (Invited) H. Suto¹, T. Kanao¹, T. Nagasawa¹, K. Mizushima¹ and R. Sato¹ 1. Corporate Research & Development Center, Toshiba Corporation, Kawasaki, Japan

EF-06. Heat Assisted Magnetic Recording – Next Generation Mass Storage Technology. (Invited) G. Ju¹, J. Thiele¹, Y. Peng¹, T. Klemmer¹, Y. Ding¹, Y. Kubota¹, A.Q. Wu¹, X. Zhu¹, E.K. Chang¹, L. Gao¹, F. Zavaliche¹, P. Huang¹, H. Amini¹, S.D. Granz², C.J. Rea³, J. Qiu¹, H. Yin¹, M.A. Seigler³, T. Rausch², Y. Chen², E. Gage², S. Hwang¹ and M.E. Re¹ 1. Seagate Technology, Fremont, CA, United States; 2. Seagate Technology, Shakopee, MN, United States; 3. Seagate Technology, Bloomington, MN, United States

EF-07. Spin torque oscillator with in-plane magnetized spin-injection layer for microwave assisted magnetic recording. W. Zhou¹, H. Sepehri-Amin¹, Y. Sakuraba¹, S. Kasai¹, S. Bosu¹ and K. Honoi¹ 1. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science (NIMS), Tsukuba, Japan

EF-08. Systemic Evaluation of Microwave Assisted Magnetic Recording. Z. Liu¹, P. Huang², S. Hernandez³, G. Ju², T. Rausch¹ and E. Gage¹ 1. Seagate Technology, Shakopee, MN, United States; 2. Seagate Technology, Fremont, CA, United States
Session EG
SHIELDING, ELECTROMAGNETIC COMPATIBILITY, MOTORS AND GENERATORS I
Shunsuke Ohashi, Chair
Kansai University, Osaka, Japan

9:00
EG-01. Withdrawn

9:15
EG-02. Fast Surrogate-Assisted Design of Multilayered Magnetic Shields, H. Chen1,2, Y. Du2 and Q. Cheng1 1. Department of Electrical and Electronic Engineering, Southern University of Science and Technology, Shenzhen, China; 2. Department of Building Service Engineering, The Hong Kong Polytechnic University, Hong Kong, Hong Kong

9:30
EG-03. Research on Common Mode Current and Electromagnetic Radiation in PWM Motor System. F. Niu1,2, S. Cao1, X. Huang2, J. Zhang2, J. Ma2, K. Li2 and Y. Fang2 1. School of Electrical Engineering, Hebei University of Technology, Tianjin, China; 2. College of Electrical Engineering, Zhejiang University, Hangzhou, China

9:45
EG-04. Dual Mode Dual Stator Wound Rotor Synchronous Machine for Variable Speed Applications. A. Hussain1, M. Ayub1, T. Yazdan1 and B. Kwon1 1. Electronic Systems Engineering, Hanyang University, South Korea, Ansan, The Republic of Korea

10:00
EG-05. Radial Force and Vibration Calculation for Modular Permanent Magnet Synchronous Machine with Symmetrical and Asymmetrical Open-circuit Faults. Y. Pei1, Z. Song1, F. Chai1 and Y. Li1 1. Harbin Institute of Technology, Harbin, China

10:15
EG-06. Weighted Average Efficiency Optimization for Permanent Magnet Synchronous Generators Used in Hybrid Electric Special Vehicles. J. Gao1, L. Dai1 and W. Zhang2 1. College of Electrical and Information Engineering, Hunan University, Changsha, China; 2. Department of Electronic and Electrical Engineering, Changsha University, Changsha, China

10:30
10:45

EG-08. PM Vernier Machine with Multiple Working Harmonics and Enhanced Flux Modulation Effect. T. Zou¹, D. Li¹ and R. Qu¹ ¹. School of Electrical and Electronic Engineering, Huazhong University of Science & Technology, Wuhan, China

11:00

EG-09. Design and Analysis of A Novel PMSM with Single Stator and Contra-rotating Rotors. D. Luo¹, X. Su¹, J. Gao¹, R. He¹ and S. Huang¹ ¹. College of Electrical and Information Engineering, Hunan University, Changsha, China

11:15

EG-10. Characteristics Verification of a Novel Motor with Two Controllable Rotors. H. Suzuki¹, K. Hirata¹, N. Niguchi¹ and A. Kohara¹ ¹. Graduate School of Engineering, Osaka University, Suita, Japan

11:30

EG-11. A New Structure of Stator Pole to Reduce Torque Ripple and Acoustic Noise in Switched Reluctance Motor. M. Babaei¹ and A. Ahmarinejad¹ ¹. Electrical Engineering Department, Yadegare Imam Khomeini (RAH) Shahr-e-Rey Branch, Islamic Azad University, Tehran, The Islamic Republic of Iran

THURSDAY PEONY II MORNING

9:00

Session EH

MAGNETIC SEMICONDUCTORS AND OXIDES

Chen Ge, Chair
Institute of Physics, Chinese Academy of Sciences, Beijing, China

9:00

EH-01. Giant Magnetoelectric Effects in Multiferroic Hexaferrites. (Invited) Y. Sun¹, K. Zhai¹, J. Shen¹, D. Shang¹ and Y. Chai¹ ¹. Institute of Physics, Chinese Academy of Sciences, Beijing, China

9:30

EH-02. The atomic-scale magnetism of Cr-doped Bi2Se3 topological insulators. W. Liu², D. West², L. He², S. Zhang², Y. Xu², R. Zhang² and K. Wang² ². Department of Electronics Engineering, Royal Holloway University of London, Egham, United Kingdom; ¹. Institute of Physics, Chinese Academy of Sciences, Beijing, China

112 Thursday
9:45

EH-03. Role of $R^{3+}$ ion on structural and magnetic properties of $R_2NiMnO_6$ double perovskites. M. Nasir$^1$, S. Ayaz$^2$ and S. Sen$^{1,2}$ 1. Physics, IIT Indore, INDORE, India; 2. MEMS, IIT Indore, Indore, India

10:00

EH-04. Enhancing the low-field magnetoresistance by ac current excitation in La$_{0.5}$Sr$_{0.5}$MnO$_3$. P. Kumar$^1$, U. Chadhuri$^1$ and R. Mahendiran$^1$ 1. Physics Department, 2 Science Drive 3, National University of Singapore, Singapore

10:15

EH-05. Suppression of charge and antiferromagnetic ordering in Ru substituted Bi$_{0.5}$Ca$_{0.5}$MnO$_3$ probed by electrical, magnetic and thermoelectric transport. M. Kumari$^1$, A. Chanda$^1$ and R. Mahendiran$^1$ 1. Physics, National University of Singapore, Singapore

10:30

EH-06. Anisotropic Electronic Transport Properties in Low-Temperature Phase Fe$_3$O$_4$ Epitaxial Films. X. Liu$^1$, W. Mi$^1$, Q. Zhang$^2$ and X. Zhang$^2$ 1. Department of Applied Physics, Tianjin University, Tianjin, China; 2. PSE Division, King Abdullah University of Science and Technology (KAUST), Thuwal, Saudi Arabia

10:45

EH-07. Effect of CaCO$_3$ and V$_2$O$_5$ on the microstructure and magnetic property of MnZn ferrites. G. Wu$^1$, Z. Yu$^1$, Z. Tang$^2$, K. Sun$^1$, R. Guo$^1$, X. Zou$^1$, X. Jiang$^1$ and Z. Lan$^1$ 1. University of Electronic Science and Technology of China, Chengdu, China; 2. China Aerospace Components Engineering Center, Beijing, China

11:00

EH-08. Magnetically driven insulating behavior in monoclinic antiferromagnetic Ni-Mn-In Heusler alloys. H. Yang$^{1,2}$, B. Wang$^{1,2}$ and R. Li$^{1,2}$ 1. Key Laboratory of Magnetic Materials and Devices, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, Ningbo, China; 2. Laboratory of Magnetic Materials and Application Technology, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, Ningbo, China

11:15

EH-09. Valley polarized tunneling through magnetic and electrical barriers in Weyl semimetals. C. Yesilyurt$^1$, Z. Siu$^1$, S. Tan$^1$, G. Liang$^1$ and M.B. Jalil$^1$ 1. Electrical and Computer Engineering, National University of Singapore, Singapore
11:30

EH-10. Nucleation and annihilation of skyrmions in spin gapless semiconductor Mn$_2$CoAl. S. Granville$^{1,2}$, B. Ludbrook$^{1,2}$, G. Dubuis$^{1,2}$, A. Puichaud$^{1,2}$ and B.J. Ruck$^{1,2}$ $^{1}$Victoria University of Wellington, Lower Hutt, New Zealand; $^{2}$MacDiarmid Institute for Advanced Materials and Nanotechnology, Wellington, New Zealand

11:45

EH-11. Anomalous Hall effect in a wide range of conductivity in Co$_x$FeSi Heusler-alloy thin films. B.K. Hazra$^1$, S.N. Kaul$^1$, S. Srinath$^1$, M. Raja$^2$, R. Rawat$^3$ and A. Lakhani$^3$ $^1$School of Physics, University of Hyderabad, Hyderabad, India; $^2$Defence Metallurgical Research Laboratory, Hyderabad, India; $^3$UGC-DAE Consortium for Scientific Research, Indore, India

THURSDAY ORCHID II
MORNING
09:00

Session EI
MAGNETIC THERAPIES AND NANOMEDICINE II
Irving Weinberg, Chair
Weinberg Medical Physics, Bethesda, MD, United States

09:00

EI-01. Magnetic Nanoparticles for Theranostics. (Invited)
Y. Ichiyanagi$^1$, H. Takeuchi$^1$, K. Fujiwara$^1$, T. Ide$^1$ and A. Oshima$^1$ $^1$Yokohama National University, Yokohama, Japan

09:30

EI-02. Magneto-photothermal effects of pegylated superparamagnetic iron-oxide nanoparticles for multimodal cancer therapy. S.A. Shah$^{1,2}$, M. Hashmi$^2$, K. Javed$^2$, N. Ahmad$^4$ and M. Arshad$^4$ $^1$Materials Science & Engineering, University of Washington, Seattle WA, USA, $^2$Seattle, WA, United States; $^3$Physics, Forman Christian College (University), Lahore, Pakistan; $^4$Superior University, Lahore, Pakistan; $^5$Physics, International Islamic University, Lahore, Pakistan; $^6$National Center for Physics, Islamabad, Pakistan
EI-03. Properties of Permalloy nanodiscs in magnetic vortex state and magneto-mechanical treatment of cancer cells.
M. Goiriena-Goikoetxea1,2, I. Orue3, K. Guslienko4, E. Berganza5, M. Jafar6, A. Asenjo5, D. Muñoz6, A. Muela6,7 and A. García-Arribas2,7 1. Electrical Engineering and Computer Science, University of California, Berkeley, CA, United States; 2. Departamento de Electricidad y Electrónica, Universidad del País Vasco, UPV/EHU, Leioa, Spain; 3. SGiker Medidas Magnéticas, Universidad del País Vasco, UPV/EHU, Leioa, Spain; 4. IKERBASQUE and Depto. de Física de Materiales, Universidad del País Vasco, UPV/EHU, San Sebastián, Spain; 5. Instituto de Ciencia de Materiales de Madrid, CSIC, Cantoblanco, Spain; 6. Depto. de Inmunología, Microbiología y Parasitología, Universidad del País Vasco, UPV/EHU, Leioa, Spain; 7. Basque Center for Materials, Applications and Nanostructures, BCMaterials, Leioa, Spain

10:00

EI-04. In silico testing of clinical magnetic hyperthermia: progresses and future directions. (Invited) I. Rubia-Rodríguez1, H. Verdaguer2, T. Macarulla2 and D. Ortega Ponce1 1. IMDEA Nanoscience, Madrid, Spain; 2. Medical Oncology, Vall d’Hebron University Hospital, Barcelona, Spain

10:30

EI-05. Magnetic hysteresis, cellular uptake and cytotoxicity of sub-micron magnetic nanodisks for biomedical applications. P. Tiberto1, G. Barrera1, F. Celegato1, M. Coisson1, C. Divieto1 and M. Sassi1 1. INRIM, Torino, Italy

10:45

EI-06. Fe-Cr-Nb-B magnetic nanoparticles - a good solution for cancer cell destruction by magneto-mechanical effect. H. Chiriac1, E. Radu1,2, M. Tibu1, D. Herea1, L. Labusca1 and N. Lupu1 1. National Institute of Research and Development for Technical Physics, 47 Mangeron Boulevard, 700050 Iasi, Romania, Iasi, Romania; 2. Physics, Alexandru Ioan Cuza University of Iasi, Iasi, Romania

11:00

EI-07. Twin Coil Design Considerations for Depth and Focality in Transcranial Magnetic Stimulation. S. Chang1, X. Wei1, Z. Zhang1, S. Li1, J. Wang1 and G. Yi1 1. School of Electrical and Information Engineering, Tianjin University, Tianjin, China

11:15

EI-08. Development of Angular Coil for Transcranial Magnetic Stimulation. M.A. Yedeas1, Y. Kawasaki2, S. Liu1, J. Gu1, Y. Saitoh3 and M. Sekino1 1. Department of Electrical Engineering and Information Systems, Graduate School of Engineering, The University of Tokyo, Tokyo, Japan; 2. Department of Bioengineering, Graduate School of Engineering, The University of Tokyo, Tokyo, Japan; 3. Department of Neuromodulation and Neurosurgery, Graduate School of Medicine, Osaka University, Osaka, Japan

Thursday 115
EI-09. Flexibility of Micro-magnetic Flagella in the Presence of an Oscillating Field. Y. Li1 and C. Yen1. Department of Mechanical and Aerospace Engineering, National Defense University, Taoyuan, Taiwan

EI-10. Novel Electromagnetic Targeting System for Navigating Surgery in Endobronchoscopy. C. Chen1, C. Lin1,2, Y. Cheng3, T. Chung4, C. Chang5, S. Tsai5, J. Chen5 and X. Lin6. 1. National Chiao Tung University, Hsinchu, Taiwan; 2. National Taiwan University Hospital, Taipei, Taiwan

THURSDAY MORNING

SIMPOR/ROSELLE BALLROOM

Session EP

EXCHANGE COUPLING, SUPERCONDUCTIVITY AND ELECTRONIC STRUCTURE I (Poster Session)

Xiaolin Wang, Chair
University of Wollongong, Wollongong, NSW, Australia

EP-01. Thickness dependence of spin polarization in Co2FeAl thin films. X. Zhang1, L. He1, Y. Xu1,2 and W. Liu1. Nanjing University, Nanjing, China; 2. University of York, York, United Kingdom


EP-03. Key features of the magnetic and magnetoelastic properties of rare-earth langasite Ho0.09La2.91Ga5SiO14. N. Kostyuchenko1,2, A. Mukhin3, A. Pimenov2, L. Weymann2 and A. Zvezdin1,3. 1. Moscow Institute of Physics and Technology (State University), Moscow, Russian Federation; 2. Institut für Festkörperphysik, Technische Universität Wien, Vienna, Austria; 3. A. M. Prokhorov General Physics Institute of Russian Academy of Sciences, Moscow, Russia, Moscow, Russian Federation

EP-04. Anomalous magnetic and Electrical properties of Fe2V2-xAlx (x=0-1) alloys. S. Hari1 and V. Srinivas1. Department of Physics, IIT Madras, Chennai, India

EP-05. Spinterface Properties and Magnetic Coupling of Tris(8-hydroxyquinoline)iron(III) on Cobalt Surface. L. Yu1, J. Lin1,2, Y. Lai1, H. Shiu1 and Y. Hsu1. 1. National Synchrotron Radiation Research Center, Hsinchu, Taiwan; 2. Program for Science and Technology of Accelerator Light Source, National Chiao Tung University, Hsinchu, Taiwan
EP-06. Observation of superconductivity in LaNiO3/La0.7Sr0.3MnO3 superlattice. G. Zhou1, Z. Quan1 and X. Xu1, 1. Shanxi Normal University, Linfen, China

EP-07. Enhanced Spin Ordering Temperature in Ultrathin FeTe Films Grown on a Topological Insulator. J. Warmuth1, U. Singh1, L. Cornils1, A. Kamlapure1, P. Hofmann2, J. Wiebe1 and R. Wiesendanger1 1. Institute of Applied Physics, University of Hamburg, Hamburg, Germany; 2. Department of Physics and Astronomy, Aarhus University, Aarhus, Denmark

EP-08. The long-range exchange bias in ultrathin paramagnetic LaNiO3-based heterostructure. X. Xu1, G. Zhou1 and Z. Quan1 1. Shanxi Normal University, Linfen, China

EP-09. Comparative magnetic properties of Ag/Fe bilayer and nano-dot arrays. B. Alkadour1, W. Chuang1, S. Ciou1, J. Wu1, P. Manna1, K. Lin1 and J. van Lierop1 1. National Chung Hsing University, Taichung, Taiwan; 2. University of Manitoba, Winnipeg, MB, Canada; 3. National Changhua University of Education, Changhua, Taiwan

EP-10. Exchange bias induced asymmetry in the magnetization reversal process of Fe/GaAs/GaMnAs hybrid structure. S. Lee1,2, S. Choi1, S. Bac1, K. Lee1, J. Chang2, S. Choi1, P. Chongthanaphisut1, S. Lee2, M. Dobrowolska1, X. Liu1 and J. Furdyna1 1. Korea Institute of Science and Technology, Seoul, The Republic of Korea; 2. Physics, Korea University, SEOUL, The Republic of Korea; 3. Physics, University of Notre Dame, Notre Dame, IN, United States

EP-11. Giant perpendicular exchange bias in a sub-nanometer inverted (Co/Pt)n/Co/IrMn structure. J. Feng1, H. Wei1, H. Liu1, X. Zhang1, Y. Ren1, X. Li1, J. Wang1 and X. Han1 1. Institute of Physics, Chinese Academy of Sciences, Beijing, China; 2. Department of Physics and Quantum Theory Project, University of Florida, Gainesville, FL 32611, American Samoa; 3. Institute of Nuclear Physics and Chemistry, China Academy of Engineering Physics, Mianyang, 621999, China; 4. The Center for Micromagnetics and Information Technologies (MINT) and Department of Electrical and Computer Engineering, University of Minnesota, 200 Union St SE, Minneapolis, Minnesota 55455, MN, United States

EP-12. Tunable exchange bias field, damping, and misalignment anisotropies of FeCo/IrMn multilayers tailored by MgO-dilution in antiferromagnets. Z. Zhang1, Z. Xu1, F. Hu1, E. Liu1 and F. Xu1 1. Nanjing University of Science and Technology, School of Materials Science and Engineering, Nanjing, China

EP-13. Exchange Bias in LaMnO3 film Induced by Electron Beam Irradiation. M. Xue1, X. Chen2, H. Chen3, S. Ding1, Y. Lai1, L. Zha1, Y. Men4, Z. Xu1, X. Kong1, L. Han1, K. Li1, Z. Shao1, G. Qiao1, X. Li1, Y. Zhang1, H. Zhao1, X. Wen1, W. Yang1, H. Du1, J. Han1, Y. Yang1, S. Liu1, C. Wang1 and J. Yang1 1. Peking University, Beijing, China; 2. University of Nebraska-Lincoln, Lincoln, GA, United States; 3. University of International Business and Economics, Beijing, China; 4. Chinese Academy of Sciences, Beijing, China
EP-14. Perpendicular exchange bias effect in CoFeB/Pt/MnIr multilayers. W. Li1, J. Yan1, Y. Lu1, S. Lou1, Z. Zhang2, X. Zhang1 and Q. Jin1,2 1. State Key Laboratory of Precision Spectroscopy, East China Normal University, Shanghai, China; 2. Department of Optical Science and Engineering, Fudan University, Shanghai, China

EP-15. Vectorial mapping of exchange anisotropy in [NiFe/FeMn] bilayers through angular resonant absorption curves. D. Adams1,2, P. Kern3 and L. Spinu1,2 1. Advanced Materials Research Institute, University of New Orleans, New Orleans, LA, United States; 2. Physics, University of New Orleans, New Orleans, LA, United States; 3. Física, Universidade Federal de Santa Maria, Santa Maria, Brazil

EP-16. Extraordinary Optical Transmission of sub-wavelegth metallic grating with mirror symmetric cavities. Y. Qi1, H. Gong1 and X. Zhang1 1. College of Physics and Electronic Engineering, Northwest Normal University, Lanzhou, China

THURSDAY SIMPOR/ROSELLE BALLROOM
MORNING
8:30

Session EQ
FERRITE MATERIALS AND APPLICATIONS
(Poster Session)
Haizhong Guo, Chair
Zhengzhou University, Zhengzhou City, China

EQ-01. Ferromagnetic resonance linewidth and magnetic property of cobalt-substituted NiCuZn ferrites. K. Li1, K. Sun1, C. Chen2, X. Liu2, R. Guo1, H. Liu1, Z. Yu1, X. Jiang1 and Z. Lan1 1. University of Electronic Science and Technology of China, Chendu, China; 2. Global Energy Interconnection Research Institute, Beijing, China

EQ-02. Fabrication of Magnetic Ultrafine Particles-Insulator Composite Film Using the LbL Assisted Composite Plating Method. N. Fujita1, M. Takeuchi1, Y. Watanabe1, N. Matsumoto2 and H. Muto3 1. Electrical Engineering, National Institute of Technology, Nara College, Yamatokoriyama, Japan; 2. Electrical and Electronic Information Engineering, Toyohashi University of Technology, Toyohashi, Japan

EQ-03. A Rotational Hysteresis Model of the Soft Magnetic Composite Material. N. Duan1, W. Xu2, Y. Li3, S. Wang1 and J. Zhu4 1. Xi an Jiaotong University, Xi an, China; 2. State Grid Shaanxi Electric Power Company Economic Research Institute, Xi’an, China; 3. Hebei University of Technology, Tianjin, China; 4. University of Technology Sydney, Sydney, NSW, Australia

EQ-04. Influence of Al doping on the magnetic and magnetodielectric properties of GaFeO3 nanoparticles. T. Han1, Z. Tu1, Y. Huang1 and Y. Su1 1. Department of Applied Physics, National University of Kaohsiung, Kaohsiung, Taiwan
1. Harbin Institute of Technology, Harbin, China

1. Naval University of Engineering, Wuhan, China

Voltage Control of Two-Magnon Scattering in MnZn Ferrite thin film. W. Hou, Z. Zhou and M. Liu.
1. Xi’an Jiaotong University, Xi’an, China

1. School of Electrical Engineering, Wuhan University, Wuhan, China; 2. Department of Electrical and Electronic Engineering, Saga University, Saga, Japan

1. Fujitsu Laboratories Ltd., Atsugi, Japan; 2. Fujitsu Limited, Kawasaki, Japan; 3. FDK Corporation, Kofu, Japan

Gel-casting Hexagonal Ferrites for High Density and Low Loss Microwave Devices. J. Adams, A.S. Sokolov and V. Harris.
1. Electrical & Computer Engineering, Northeastern University, Medway, MA, United States

1. University of Electronic Science and Technology of China, Chengdu, China

Mn-Zn ferrite thin films with anomalously large magnetic moments. P. Rajagiri, B. Sahu, N. Venkataraman, S. Prasad and R. Krishnan.
1. Physics, Indian Institute of Technology Bombay, Mumbai, India; 2. Department of Metallurgical Engineering and Materials Science, Indian Institute of Technology Bombay, Mumbai, India; 3. Retired scientists, CNRS/Universite de Versailles-St-Quentin, Versailles, France

1. State Key Laboratory of Electronic Thin Films and Integrated Devices, University of Electronic Science and Technology of China, Chengdu, China; 2. Global Energy Interconnection Research Institute, Beijing, China

Fingerprinting the intra-wire interactions within the arrays of NiFe/Cu multisegmented nanowires using FORC analysis. S. Shojaie Mehr, A. Ramezani and M. Almasi Kashi.
1. Nanoscience and Nanotechnology Research Center, University of Kashan, Kashan, The Islamic Republic of Iran; 2. Department of Physics, University of Kashan, Kashan, The Islamic Republic of Iran
EQ-15. Fabrication of Fe-Ga Alloy Particle based Magnetorheological Fluid and Its Viscoelastic Characteristics. H. Choi¹, S. Kwon¹, S. Na² and A.B. Flatau²  
¹ Dept. of Polymer Science and Engineering, Inha University, Incheon, The Republic of Korea; ² Department of Aerospace Engineering, University of Maryland, College Park, MD, United States

THURSDAY SIMPOR/ROSELLE BALLROOM
MORNING
8:30

Session ER

MAGNETIC BEARINGS, AND LEVITATION  
(Poster Session)

Jang-Young Choi, Co-Chair  
Chungnam National University, Daejeon, The Republic of Korea

Myounggyu Noh, Co-Chair  
Chungnam National University, Daejeon, The Republic of Korea

ER-01. Study of characteristics on stability of the yoke equipped magnetic rotor in the HTS Magnetic Bearing. T. Arai¹, T. Minami¹, S. Hiraoka¹ and S. Ohashi¹  
¹ Electrical and Electronic Engineering, Kansai University, Suita, Japan

ER-02. A Proposal of Noncontact Baton-pass System for a Thin Steel Plate Based on Magnetic Levitation Technique.  
Y. Sudo¹, Y. Arita¹, M. Yamada¹ and T. Nakagawa¹  
¹ Electrical and Electronic Engineering, Tokyo City University, Setagaya, Japan

ER-03. A study on Optimal Operating Point of Linear Induction Motor considering Normal Force and Efficiency in MAGLEV Vehicle. J. Lim¹, J. Jeong¹ and D. Park²  
¹ Electrical Engineering, Chung Nam National University, Daejeon, The Republic of Korea; ² Magnetic Levitation and Linear Drive, Korea Institute of Machinery & Materials (KIMM), Daejeon, The Republic of Korea

ER-04. Improvement of damping factor on the lateral guideway displacement by using weight-reduced damper coil on superconducting magnetically levitation bogie. R. Nakakita³, E. Shin¹, T. Takeuchi¹ and S. Ohashi¹  
¹ Electrical and Electronic Engineering, Kansai University, Suita, Japan

ER-05. A Novel Bearingless Switched Reluctance Machine with Axial Split Phase Inner Stator Permanent Magnet Structure. Z. Zhu¹,², Y. Jiang² and Y. Sun³  
¹ School of Electric Power Engineering, Nanjing Institute of Technology, NANJING, China; ² School of Electrical and Engineering, Southeast University, NANJING, China

ER-06. Analysis of a Multi-Phase Bearingless PMSM With Double-Winding Based on MMF. Y. Qin³ and H. Zhu¹  
³ Jiangsu University, Zhenjiang, China

ER-08. Study on propulsion force characteristics by improving distance between the coils and excitation method in permanent magnet-HTS hybrid magnetically levitated conveyance system. T. Inui¹, Y. Takaki¹, H. Sasaki¹ and S. Ohashi¹. Electrical and Electronic Engineering, Kansai University, Suita, Japan

ER-09. Novel Heteropolar Hybrid Radial Magnetic Bearing with Double-Layer Stator for Flywheel Energy Storage System. W. Xu¹, R. Zhu¹, C. Ye¹ and J. Zhu². School of Electrical and Electronic Engineering, Huazhong University of Science and Technology, Wuhan, China; 2. Faculty of Engineering and Information Technology, University of Technology Sydney, Sydney, NSW, Australia

ER-10. Exploration of a floating magnet rotor in diamagnetic levitation system. K. Zhang¹, Y. Su¹, J. Gao¹, Z. Duan² and J. Ding¹. School of Mechanical Engineering, Zhengzhou University, Zhengzhou, China; 2. School of Physical Engineering, Zhengzhou University, Zhengzhou, China

ER-11. Design and analysis of a centripetal force type-magnetic bearing for a flywheel battery system. W. Zhang¹, L. Cheng¹ and H. Yang¹. Jiangsu University, Zhenjiang, China

ER-12. Proposal of New Superconducting Magnetic Bearing Using High Tc Superconducting Bulk and Coil. M. Komori¹, K. Yamanaka¹, K. Asami¹ and N. Sakai¹. Kyushu Institute of Technology, Kitakyushu, Japan

ER-13. Design and Analysis of a Magnetic Levitation Voice Coil Actuator for Multi-Degree-of-Freedom High-Precision Positioning System. Y. Zhou¹, B. Kou¹, H. Zhang¹, F. Xing¹ and X. Yang¹. School of Electrical Engineering and Automation, Harbin Institute of Technology, Harbin, China

ER-14. Radial Suspension Forces Modeling for Bearingless Flus-Switching Permanent Magnet Motor. C. Zhao¹ and H. Zhu¹. Jiangsu University, Zhenjiang, China

ER-15. Multi-Optimal Design of Novel Bearingless Switched Reluctance Motor Based on Artificial Bee Colony Particle Swarm Optimizer. Y. Sun¹ and Z. Binbin². School of Automation, Nanjing University of Science and Technology, Nanjing, China; 2. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China
Session ES
MAGNETIC GEARS
(Poster Session)
Byungtaek Kim, Chair
Kunsan National University, Gunsan, The Republic of Korea

ES-01. Comparison of the Magnetic Field and Torque Characteristics for Axial Magnetic Gears with Various Permanent Magnet arrays. X. Liu¹, Y. Zhou¹, D. Wan¹ and Z. Chen² 1. College of Electrical and Information Engineering, Hunan University, Changsha, China; 2. Department of Energy Technology, Aalborg University, Aalborg, Denmark

ES-02. Investigation of the Torsion and Vibration Characteristics of a Dual-Flux-Modulator Coaxial Magnetic Gear. X. Liu¹, Y. Zhao¹, Z. Chen², D. Luo¹ and S. Huang¹ 1. College of Electrical and Information Engineering, Hunan University, Changsha, China; 2. Department of Energy Technology, Aalborg University, Aalborg, Denmark


ES-05. Modeling and Transmission Characteristics Analysis of Dual-Mechanical-Port Magnet-Geared Machine Using Control Block Diagrams. C. Chen¹ and M. Tsai¹ 1. Mechanical Engineering Department, National Cheng Kung University, Tainan, Taiwan


ES-09. Efficiency Improvement of Magnetic-Geared Motor by Open-Slot and Interior Permanent Magnet Structure. K. Nakamura1, T. Kadomatsu1 and Y. Hane1. 1. Graduate School of Engineering, Tohoku University, Sendai, Japan


ES-11. Comparative Study and Analysis of Two Different Types of Coaxial Magnetic Gears Considering Magnetic Losses and Magnet Volume. J. Lee1, T. Bang1, K. Shin1, S. Cho1 and J. Choi1. 1. Dept. of Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea


ES-13. Design of Marine Current Power Generation System Based on a Magnetic Gear. N. Feng2,1, H. Yu1, X. Liu1 and R. Guo1. 1. School of Electrical Engineering, Southeast University, Nanjing, China; 2. School of Information and Electrical Engineering, Ludong University, Yantai, China


ET-01. Unravelling the effects associated with ferromagnetic dynamics in non-magnet/ferromagnet metallic multilayers. O. Gladilii, L. Frangou1, G. Forestier1, S. Auffret1, U. Ebels1, S. Gambarelli2 and V. Baltz1. 1. SPINTEC (Univ. Grenoble Alpes / CNRS / INAC-CEA / GINP), Grenoble, France; 2. SYMMES (Univ. Grenoble Alpes / CNRS / INAC-CEA), Grenoble, France

ET-02. Temperature dependence of spin-torque driven ferromagnetic resonance in MgO-based magnetic tunnel junction with a perpendicularly free layer. X. Wang1, J. Feng1, P. Guo1, H. Wei1, B. Fang2, Z. Zeng2 and X. Han1. 1. State Key Lab of Magnetism, Institute of Physics, Beijing, China; 2. Institute of Nano-tech and Nano-bionics, Chinese Academy of Sciences, Suzhou, China

ET-03. Role of intersublattice coupling in current-induced spin torque in Rashba antiferromagnet. C. Ho1 and M.B. Jalil1. 1. Department of Electrical and Computer Engineering, National University of Singapore, Singapore

ET-04. Quasi-oscillating transition between magnetic states in Pt/Co/Ir/Co/Pt/GaAs spin valves. G. L’vova1,2, R. Morgunov1,2, T. Fache3 and S. Mangin1. 1. Institute of Problems of Chemical Physics, Chernogolovka, Russian Federation; 2. Tambov State Technical University, Tambov, Russian Federation; 3. Institut Jean Lamour, Nancy, France

ET-05. Exchange coupling induced giant damping enhancement in Y12FeO15/CoFeAl15xSi0.5x bilayers. M. Li1, L. Jin1, Y. Rao1, H. Zhang1, C. Hong1, Z. Zhong1 and Q. Yang1. 1. University of Electronic Science and Technology of China, Chengdu, China

ET-06. Threshold field of Resonance Frequency in Permalloy Films with stripe domains. L. Pan1, C. Zhao1, X. Cheng1, D. Cao2, J. Wang1,2 and Q. Liu1. 1. Key Laboratory for Magnetic and Magnetic Materials of the Ministry of Education, Lanzhou University, Lanzhou, China; 2. College of Physics, Qingdao University, Qingdao, China; 3. Key Laboratory of Special Function Materials and Structure Design of the Ministry of Education, Lanzhou University, Lanzhou, China

ET-07. Effect of absorption of hydrogen on the linewidth of the ferromagnetic resonance response of Co/Pd bilayer films. T. Scherfer1,2 and M. Kostylev1. 1. University of Western Australia, Perth, WA, Australia; 2. University of Basel, Basel, Switzerland
ET-08. Angle-dependent static and dynamic magnetic properties of B2 ordered Co2FeSi film. Z. Xu1, Z. Zhang1, X. Li1, J. Tang1, F. Hu1, E. Liu1 and F. Xu1. School of Materials Science and Engineering, Nanjing University of Science and Technology, Nanjing, China

ET-09. Voltage control of two magnon scattering and an enhanced ME coupling in multiferroic heterostructures. X. Xue1, Z. Zhou1 and M. Liu1. Xi’an Jiaotong University, Xi’an, China

ET-10. Magnetic anisotropy and damping constant in CoFeB/Ir and CoFeB/Ru systems. M. Belmeguenai1, D. Apalkov2, M. Gabor3, F. Zighem1, G. Feng2 and X. Tang1. LSPM, Université Paris 13, Villetaneuse, France; 2. New Memory Technology Lab, Samsung Semiconductor Inc, San Jose, CA, United States; 3. Center for Superconductivity, Spintronics and Surface Science, Technical University of Cluj-Napoca, Cluj-Napoca, Romania

ET-11. Detection sensitivity exceeding 10^5 mV/mW in spin-torque diode. B. Fang1, J.L. Cai1, P. Khalili Amirii2, G. Finocchio3 and Z. Zeng1. Suzhou Institute of Nano-tech and Nano-bionics, Chinese Academy of Sciences, Suzhou, China; 2. Department of Physics and Astronomy, University of California, Los Angeles, CA, United States; 3. Department of Mathematical and Computer Sciences, Physical Sciences and Earth Sciences, University of Messina, Messina, Italy

ET-12. Proximity effect induced enhanced spin pumping in Py/Gd at room temperature. R. Bansal1, N. Chowdhury1 and P.K. Muduli1. 1. Physics, Indian Institute of Technology, New Delhi, Delhi, India

ET-13. Bias Field Tunable Spin Configuration and Spin Dynamics in Arrays of Ni8Fe28 Nano-Cross Structures. K. Adhikari1, S. Choudhury1, S. Barman2, Y. Otani3 and A. Barman1. 1. S. N. Bose National Centre for Basic Sciences, Kolkata, India; 2. Institute of Engineering & Management, Management House, Kolkata, India; 3. Institute for Solid State Physics, University of Tokyo, Riken, Japan

ET-14. Losses Modeling Based on Domain Wall Processes and Validation Considering Rotational Excitation of Electrical Steel Sheets. J. Li1, Q. Yang2, S. Wang1 and Y. Li2. 1. State Key Laboratory of Control and Simulation of Power System and Generation Equipments, Tsinghua University, Beijing, China; 2. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin, China; 3. Municipal Key Laboratory of Advanced Technology of Electrical Engineering and Energy, Tianjin Polytechnic University, Tianjin, China

ET-15. Withdrawn

ET-16. Switching of Skyrmion chirality by local heating. Y. Nakatani1, K. Yamada2 and A. Hirohata1. 1. University of Electro-Communications, Chofu, Japan; 2. Gifu University, Gifu, Japan; 3. University of York, York, United Kingdom
EU-01. Magnetic properties of $L_1$, FePt thin film influenced by strains stemmed from the polarization of PMN-PT substrate. L. Liu$^1$, C. Hu$^2$, Y. Xu$^1$ and W. Rao$^1$. 1. Department of Materials Physics, and IEMM, Nanjing University of Information Science and Technology, Nanjing, China; 2. College of Materials Science and Engineering, Liaocheng University, Liaocheng, China

EU-02. Voltage controlled spin torque nano-oscillator based on magnetic skyrmion. C. Song$^1$, C. Jin$^1$, H. Xia$^1$, J. Wang$^1$, J. Wang$^{1,2}$ and Q. Liu$^1$. 1. Key Laboratory for Magnetism and Magnetic Materials of the Ministry of Education, Lanzhou University, Lanzhou, China; 2. Key Laboratory for Special Function Materials and Structural Design of the Ministry of Education, Lanzhou University, Lanzhou, China

EU-03. Effects of Anisotropy Field and easy axis dispersions on squareness ratio for HDDR-processed NdFeB powders. F. Akagi$^1$, T. Shirai$^1$ and R. Kariya$^1$. 1. Kogakuin Uniu., Shinjuku-ku, Japan

EU-04. Numerical analysis of write current reduction in magnetic tri-layer structure with low-Tc interlayer for MRAM. Y. Kayama$^1$, K. Machida$^1$, S. Greaves$^2$, Y. Sonobe$^1$ and Y. Nakatani$^1$. 1. University of Electro-Communications, Chofu, Japan; 2. RIEC, Tohoku University, Sendai, Japan; 3. Samsung Research Institute of Japan, Yokohama, Japan

EU-05. Multiscale Modeling of Magnetic Distribution in a Magnetic Core of high-frequency transformer. H. Li$^1$, S. Wang$^1$ and J. Zhu$^2$. 1. Xi’an Jiaotong University, Xi’an, China; 2. The University of Technology, Sydney, Sydney, NSW, Australia

EU-06. The effect of easy axis deviations on the magnetic property of Co nanowire. Y. Peng$^1$, M. Yue$^1$, H. Li$^1$, Y. Li$^1$, C. Li$^1$, H. Xu$^1$ and Q. Wu$^1$. 1. College of Materials Science and Engineering, Beijing University of Technology, Beijing, China

EU-08. An optimal design of an electromagnetic actuator for targeting magnetic micro/nano-carriers in a desired region. T. Le$^1$ and J. Yoon$^1$. 1. School of Integrated technology, Gwangju Institute of Science and Technology, Gwangju, The Republic of Korea

EU-09. AC Loss Database Built with Numerical Multi-scale Model and Status Prediction of a 150 kJ SMES. Z. Zhang$^1$. 1. State Key Laboratory of Advanced Electromagnetic Engineering and Technology, School of Electrical and Electronic Engineering, Huazhong University of Science and Technology, Wuhan, China
EU-10. Analytical functions of magnetization curves for high magnetic permeability materials. M. Mirzaei and P. Ripka
1. Czech Technical University, Prague, Czechia

EU-11. Size effect on the magnetic behavior of rapidly solidified cylindrical amorphous nanowires. C. Rotarescu, H. Chiriac, N. Lupu and T.A. Ovari
1. National Institute of Research and Development for Technical Physics, Iasi, Romania

THURSDAY SIMPOR/ROSELLE BALLROOM
MORNING
8:30

Session EV
MICROSCOPY, IMAGING AND CHARACTERIZATION III
(Poster Session)
Haifeng Du, Co-Chair
High Magnetic Field Laboratory of Chinese Academy of Sciences, Hefei, China
Yonggang Zhao, Co-Chair
Tsinghua University, Beijing, China

EV-01. High resolution magnetic field energy imaging of the magnetic recording head by A-MFM with superparamagnetic tip. P. Kumar, Y. Suzuki, Y. Cao, S. Yoshimura and H. Saito
1. Graduate School of Engineering Science, Akita University, Akita City, Japan; 2. Regional Innovation Center, Akita University, Akita City, Japan

1. INRIM, Torino, Italy; 2. Chemistry, Università di Torino, Torino, Italy

EV-03. Observation of superconducting vortices and vortex clusters in S/F hybrids. C. Di Giorgio, F. Bobba, D. D’Agostino, S.A. Moore, I. Maria, G. Karapetrov, N. Valentyn, V. Yefremenko and A. Cuocolo
1. Physics, Università degli studi di Salerno, Fisciano, Italy; 2. Physics, Temple University, Philadelphia, PA, United States; 3. Physics, Drexel University, Philadelphia, PA, United States; 4. Material Science Division, Argonne National Laboratory, Chicago, IL, United States

EV-04. Resolution enhancement of magneto-optical Kerr images using modern image processing algorithms. N. Gorn, I. Soldatov, R. Schäfer and D. Berkov
T. Ueno1, H. Hino2 and K. Ono3 1. Quantum Beam Science Research Directorate, National Institutes for Quantum and Radiological Science and Technology, Sayo, Japan; 2. Department of Computer Science, University of Tsukuba, Tsukuba, Japan; 3. Institute of Materials Structure Science, High Energy Accelerator Research Organization, Tsukuba, Japan

EV-06. Revealing complex magnetic order in nanostructure patterns via nuclear X-ray scattering. K. Schlag1, D. Erb1,2, L. Bocklage1,3, H. Wille1, L. Dzemiantsova1,3, G. Meier3,4, R. Rüffer5 and R. Roehlsberger1,1 1. Deutsches Elektronen-Synchrotron (DESY), Hamburg, Germany; 2. Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 3. The Hamburg Centre for Ultrafast Imaging, Hamburg, Germany; 4. Max Planck Institute for the Structure and Dynamics of Matter, Hamburg, Germany; 5. European Synchrotron Radiation Facility, Grenoble, France

EV-07. Spin-orbit torque magnetometry by wide-field magneto-optical Kerr effect. T. Tsai1 and C. Pai1 1. Materials Science and Engineering, National Taiwan University, Taoyuan City, Taiwan


EV-09. Improvement of the measurement method of rock magnetic properties based on the scanning SQUID microscope with an in-situ magnetization/demagnetization field. J. Du1,2, Q. Wang1 and T. Song1,2 1. Institute of Electrical Engineering, Chinese Academy of Science, Beijing, China; 2. University of the Chinese Academy of Sciences, Beijing, China

EV-10. Implementation of 16-channel AMR sensor array for quantitative mapping of two-dimension current distribution. G. Huang1 and J. Jeng1 1. Mechanical Engineering, National Kaohsiung University of Applied Sciences, KAOSHIUNG, Taiwan

EV-11. Magnetic control of guanine-vesicle hybrid and its possible application in live cell imaging. A. Mootha1, K. Suzuki3 and M. Iwasaka1 1. Research institute of Nanodevice ad Biosystems, Hiroshima University, Higashihiroshimashi, Japan; 3. Kanagawa University, Hiratsuka, Japan

EV-12. Modifying coercivity via growth rate on domain wall pinning (001) FePd thin film. C. Hsiao1, H. Chang2 and C. Ouyang1 1. Materials science and engineering, National Tsing Hua University, Hsinchu, Taiwan; 2. National Chung Cheng University, Chia-Yi, Taiwan
EV-13. Design and Simulation of a Double Tuned RF Coil for 1H and 31P MR imaging at 7T. F. Du1,2, S. Liu1, N. Li1,2, Y. Dou2, X. Zhang1,4 and Y. Li2 1. Department of Biomedical Engineering, Chongqing University of Technology, Chongqing, China; 2. Lauterbur Research Center for Biomedical Imaging, Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, Shenzhen, China; 3. Department of Radiology and Biomedical Imaging, University of California, San Francisco, San Francisco, CA, United States; 4. UCSF/UC Berkeley Joint Graduate Group in Bioengineering, San Francisco, CA, United States

EV-14. Effect of synthesis method on particle size and magnetic and structural properties of Co-Ni ferrites. S. Sharmin1, M. Kishimoto1, E. Kita1, H. Latiff1 and H. Yanagihara1 1. Applied Physics, University of Tsukuba, Nagareyama, Japan

EV-15. Effect of Sputtered Flux Direction on Damping Properties in Magnetic Bilayers. S. Nayak1, S. Mallick1, B.B. Singh1 and S. Bedanta1 1. LNMM, School of Physical Sciences, NISER, Bhubaneswar, India

THURSDAY SIMPOR/ROSELLE BALLROOM MORNING
8:30

Session EW
SENSORS: NEW SENSING PRINCIPLES (Poster Session)
Jai Lin Tsai, Chair
National Chung Hsing University, Taichung, Taiwan

EW-01. Hall effect spintronics for gas detection. A. Gerber1 and G. Kopnov1 1. School of Physics, Tel Aviv University, Tel Aviv, Israel


EW-03. Magnetoimpedance strain gage sensors on FeNi alloys. E. Fernandez Martin1, I. Orue3, J. Feuchtwanger2 and A. García-Arribas1 1. BCMaterials, Leioa, Spain; 2. Electricity and electronics, University of the Basque Country (UPV/EHU), Leioa, Spain; 3. SGIKER Magnetic Measurements, University of the Basque Country (UPV/EHU), Leioa, Spain

EW-04. Magnetic non-destructive materials characterization of non-ferromagnetic materials using magnetic susceptibility. B. Gupta1,2, B. Ducharme1, G. Sebald2 and T. Uchimoto2 1. INSA LYON, Laboratoire de Génie Electrique et Ferroélectricité, Villeurbanne, France; 2. ELYTMaX, Sendaï, Japan
EW-05. Low noise fundamental mode orthogonal fluxgate (FM-OFG) magnetometer built with an amorphous ribbon core. I. Sasada1 1. Sasada Magnetics & Sensors Laboratory, Fukuoka, Japan

EW-06. Accuracy Analysis of Sensing Coils in 2D Magnetic Properties Measurement. X. Ding1 and S. Ren1 1. Beihang University, Beijing, China

EW-07. Magnetic Properties and Detection Methods of the Metal Wear Particles under Harmonic Magnetic Field. R. Jia1, B. Ma1, C. Zheng1, L. Wang2 and Q. Du1 1. Beijing Institute of Technology, Beijing, China; 2. Beijing Information Science and Technology University, Beijing, China

EW-08. Graphene-Co Nanoparticle Composites: Sensor Applications. C.G. ünlü1,2, A. Tekgül3,4, M. Acet1, M. Ak1 and M. Farle2 1. Department of Chemistry, Pamukkale University, Denizli, Turkey; 2. Department of Physics, Duisburg-Essen University, Duisburg, Germany; 3. Department of Physics, Akdeniz University, Antalya, Turkey; 4. Department of Physics, Uludag University, Bursa, Turkey

EW-09. Force sensors based on magnetic amorphous wires. C. H lenschi1,2, S. Corodeanu1, H. Chiriac1 and N. Lupa1 1. National Institute of Research and Development for Technical Physics, Iasi, Romania; 2. Alexandru Ioan Cuza University, Iasi, Romania

EW-10. Rotating magnetoelectric sensor for DC magnetic field measurement. Y. Ren1, J. Ouyang1, X. Wu1, W. Wang1, J. Liang1, S. Chen1 and X. Yang1 1. School of Optics and electronic information, Huazhong University of Science and Technology, Wuhan, China


EW-12. The perceptually-inspired model of tactile texture sensor based on the inverse magnetostrictive effect. L. Wan1 and B. Wang1 1. Hebei University of Technology, Tianjin, China

EW-13. A magnetoresistive sensor based on the elasticity of domain walls. X. Zhang2,3, N. Vernier1, Z. Cao2,1, Q. Leng2, A. Cao1,2, D. Ravelosona3 and W. Zhao1,2 1. Fert Beijing Institute, School of Electronic and Information Engineering, Beihang University, Beijing, China; 2. Beihang-Goertek Joint Microelectronics Institute, Qingdao Research Institute, Beihang University, Qingdao, China; 3. Center for nanoscience and nanotechnology, Université Paris-Sud, Orsay, France

EW-14. Determination of the strain-impedance gauge factor of Si-cantilever-based giant magnetoimpedance sensors. G. Büttel1, J. Joppich1 and U. Hartmann1 1. Institute of Experimental Physics, Saarland University, Saarbrücken, Germany
EW-15. MgO-based Magnetoresistive Biosensor for Magnetically labeled Cells Detection. S. Amara¹, R. Bu², M. Alawein¹ and H. Fariborzi¹. 1. CEMSE, King Abdullah University of Science and Technology (KAUST), Thuwal, Saudi Arabia; 2. Computer School of Physics, Shandong University, Jinan, China

EW-16. Detection of magnetic nanoparticles by variation of magnetization dynamics of Co/Ni multilayer. Y. Otaki¹, T. Kato¹, S. Okamoto², N. Kikuchi², D. Oshima² and O. Kitakami². 1. Department of Electronics, Nagoya University, Nagoya, Japan; 2. Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Sendai, Japan; 3. Institute of Materials and Systems for Sustainability, Nagoya University, Nagoya, Japan

THURSDAY ORCHID I

THURSDAY AFTERNOON

2:00

Session FA

SYMPOSIUM ON TOPOLOGICAL AND COLLECTIVE MAGNETIC PHENOMENA

Fusheng Ma, Co-Chair
Nanyang Technological University, Singapore
Anjan Soumyanarayanan, Co-Chair
Data Storage Institute, Singapore, Singapore

2:00

FA-01. Topology of magnonic bands: From chiral edge modes to spin superfluidity. (Invited) Y. Tserkovnyak¹. 1. Physics and Astronomy, UCLA, Los Angeles, CA, United States

2:30

FA-02. Topological Magnon Materials. (Invited) I. Mertig¹,², A. Mook¹ and J. Henk¹. 1. Physics, Martin-Luther-Universität Halle-Wittenberg, Halle, Germany; 2. Max Planck Institute for Microstructure Physics, Halle, Germany

3:00

FA-03. Quantum anomalous Hall effect and topological Hall effect in magnetic topological insulators. (Invited) Y. Wang¹. 1. Tsinghua University, Beijing, China

3:30

FA-04. Mixed semimetals for magnetization and momentum space topology control. (Invited) J. Hanke¹, C. Niu¹, F. Freimuth¹, G. Bihlmayer¹, S. Bluegel¹ and Y. Mokrousov¹. 1. IAS-I, Forschungszentrum Julich, Juelich, Germany

4:00

FA-05. Topological bands and topological phase transitions in electronic and magnonic systems. (Invited) S. Murakami¹,². 1. Department of Physics, Tokyo Institute of Technology, Tokyo, Japan; 2. TIES, Tokyo Institute of Technology, Tokyo, Japan
FA-06. Magnonic Topological Materials and Devices, (Invited) X. Wang1,2 and X. Wang3,1 J. Physics, The Hong Kong University of Science and Technology, Kowloon, China; 2. HKUST Shenzhen Research Institute, Shenzhen, China; 3. University of Electronic Science and Technology of China, Chengdu, China

THURSDAY ORCHID III
AFTERNOON
2:00

Session FB
HARD MAGNETIC MATERIALS AND PROCESSING I
Alberto Bollero, Chair
IMDEA Nanoscience, Madrid, Spain

2:00
FB-01. Remanence enhancement melt-spun Nitroquench Sm2Fe17N3. M. Coey1, P.S. Stamenov1, M. Venkatesan1, S.B. Porter1 and T. Iriyama2 1. School of Physics, Trinity College Dublin, Dublin, Ireland; 2. Daido Electronics Company, Nagoya, Japan

2:15
FB-02. Preparation and characterization of phenol formaldehyde bonded Nd-Fe-B magnets with high strength and heat resistance. W. Xi1, W. Liu1, M. Yue1, D. Zhang1, Q. Lu1, H. Zhang1, Q. Wu1 and Y. Li1 1. College of Materials Science and Engineering, Beijing University of Technology, Beijing, China

2:30
FB-03. Effects of initial alloy on microstructure and magnetic properties during hot-deformation of Nd-Fe-B HDDR powder. J. Lee1, J. Yoo1, Y. Baek1, D. Lee2 and H. Kwom3 1. Korea Institute of Materials Science, Changwon, The Republic of Korea; 2. Pusan National University, Pusan, The Republic of Korea; 3. Pukyong National University, Pusan, The Republic of Korea

2:45
FB-04. Comparison of two Magnetizing Fixture Designs to Achieve Radial Magnetization Profile for Isotropic Bonded Neo Magnets. R.C. Angara1, K.W. Hsu1, P.J. Villar1 and N.K. Sheth1 1. R&D Magnesquench, Magnesquench Neo Powders Pte Ltd, Singapore, Singapore

3:00
FB-05. Desirable Measurement on Accurate Hysteresis Curve for Large Nd-Fe-B Sintered Magnets at Elevated Temperatures. H. Nishio1,2 and K. Machida1 1. Division of Applied Chemistry, Osaka University, Suita, Japan; 2. Research Institute for Measurement of Magnetic Materials, Yokohama, Japan

132 Thursday
High performance magnetic properties of CoFe2O4 nanoparticles for rare earth free permanent magnet applications, Y. Kumar1 and P.M. Shirage1,2. 1. Metallurgy Engineering and Materials Science, Indian Institute of Technology Indore, Indore, India; 2. Discipline of Physics, Indian Institute of Technology Indore, Indore, India

3-D Magnetic Field Analysis of a Permanent Magnet Spherical Actuator Using Spherical Harmonics, X. Li1,2, J. Liu1 and W. Chen1. 1. School of Automation Science and Electrical Engineering, Beihang University, Beijing, China; 2. Department of Materials and Production, Aalborg University, Aalborg, Denmark

Influence of Soft Magnetic Material type in Fixture Components on the Magnetization of Bonded Neo Magnet and Motor Performance, R.C. Angara1, K.W. Hsu1, P.J. Villar1 and N.K. Sheth1. 1. R&D Magnequench, Magnequench Neo Powders Pte Ltd, Singapore, Singapore

A hybrid coercivity mechanism for exchange-coupled nanocomposite permanent magnets, G. Zhao1. 1. Physics, Sichuan Normal University, Chengdu, China

The corrosion behavior with sintered (Ce,Nd)-Fe-B in the presence of pressurised vapour, X. Shi1, M. Zhu1, D. Zhou1, L. Song1, Y. Fang1 and W. Li1. 1. Division of Functional Materials, Central Iron & Steel Research Institute, Beijing, China

Element-specific characterization of Co:FePt nanocomposite magnet films, F. Wilhelm1, V. Dupuis2, D. Le Roy2, N. Dempsey1 and A. Rogalev3. 1. ESRF, Grenoble, France; 2. Laboratoire d’Optique Structurale, Grenoble, France; 3. Institut Néel, Grenoble, France

Effect of residue hydrogen content on microstructure and magnetic properties of Sm(Co0.92Fe0.28Cu0.053Zr0.02)7.84, C. Zhang1, Z. Liu1, L. Liu1, T. Li2, R. Chen1, D. Lee2 and A. Yan1. 1. Key Laboratory of Magnetic Materials and Devices, Ningbo Institute of Industrial Technology, Chinese Academy of Sciences, Ningbo, China; 2. University of Dayton, Dayton, OH, United States
Session FC
TMR, VCMA AND SWITCHING
Caihua Wan, Chair
Institute of Physics, Chinese Academy of Sciences, Beijing, China

2:00

FC-01. Voltage-driven precessional switching at zero bias magnetic field in a conically magnetized free layer. R. Matsumoto1, T. Nozaki1, S. Yuasa1 and H. Imamura1. 1. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan.

2:15

FC-02. Field-Free Switching of Perpendicular Magnetization through Voltage-Gated Spin Hall Effect. S. Peng1,2, W. Kang1, X. Li2, H. Zhang2, Z. Wang1, Y. Zhang1, K. Wang2 and W. Zhao1. 1. Fert Beijing Institute, BDBC, School of Electronic and Information Engineering, Beihang University, Beijing, China; 2. Department of Electrical Engineering, University of California, Los Angeles, CA, United States.

2:30

FC-03. Atomic layer number dependence of voltage-controlled magnetic anisotropy in Cr/Fe/MgAl2O4 heterostructure. Q. Xiang1,2, H. Sukegawa1, M. Al-Mahdawi1, M. Belmoubark1, S. Kasai1, Y. Sakuraba1, S. Mitani1,2 and K. Hono1,2. 1. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science (NIMS), Tsukuba City, Japan; 2. Graduate School of Pure and Applied Sciences, University of Tsukuba, Tsukuba, Japan.

2:45

FC-04. The lower bound of the write error rate of a voltage-torque MRAM. H. Imamura1 and R. Matsumoto1. 1. Spintronics RC, AIST, Tsukuba, Japan.

3:00

FC-05. Study of voltage-controlled perpendicular magnetic anisotropy in Ta/FeB/MgO and W/FeB/MgO nanowires by the Hall effect measurements. V. Zayets1, T. Nozaki1, A. Fukushima1 and S. Yuasa1. 1. Spintronics Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan.

3:15

FC-06. Electric-field effect on the exchange stiffness in CoFeB/MgO stacks. N. Ichikawa1, T. Dohi1, A. Okada1, H. Sato1,2, S. Fukami1,2 and H. Ohno1,2. 1. RIEC, Tohoku University, Sendai, Japan; 2. CSIS, Tohoku University, Sendai, Japan.
3:30
FC-07. Voltage-Controlled Magnetic Tunnel Junctions for Processing-In-Memory Implementation. L. Wang1,2, K. Wang1, F. Ebrahimi2, X. Li2, Y. Huang1, C. Zhao1, K. Wang2 and W. Zhao1. 1. Beihang University, Beijing, China; 2. UCLA, LA, CA, United States; 3. Institute of Microelectronics, Chinese Academy of Sciences, Beijing, China

3:45
FC-08. Ultrafast random number generator based on voltage-controlled switching. A. Fukushima1, T. Yamamoto1, T. Nozaki1, T. Ohkubo3, Z. Zhang1, X. Han7, W. Zhao4, N.G. Kioussis4, K. Hono3, P. Khalili1,8 and K. Wang1. 1. Electrical Engineering, University of California, Los Angeles, Los Angeles, CA, United States; 2. Institute Inc., Los Angeles, CA, United States; 3. National Institute for Materials Science (NIMS), Tsukuba, Japan; 4. Electronic and Information Engineering, Beihang University, Beijing, China; 5. Optical Science and Engineering, Fudan University, Shanghai, China; 6. Physics and Astronomy, California State University, Northridge, Northridge, CA, United States; 7. Institute of Physics, Chinese Academy of Sciences, Beijing, China; 8. Electrical Engineering and Computer Science, Northwestern University, Evanston, IL, United States

4:00
FC-09. High Voltage-Controlled Magnetic Anisotropy by Tuning Seed Layers of Magnetic Tunnel Junctions for Embedded Applications. X. Li1,2, T. Sasaki3, L. Wang1, C. Grezes1, D. Wu1, S. Kwon3, H. Wu3, K. Wang1, W. Zhao4, N.G. Kioussis4, K. Hono3, P. Khalili1,8 and K. Wang1. 1. Electrical Engineering, University of California, Los Angeles, Los Angeles, CA, United States; 2. Inston Inc., Los Angeles, CA, United States; 3. National Institute for Materials Science (NIMS), Tsukuba, Japan; 4. Electronic and Information Engineering, Beihang University, Beijing, China; 5. Optical Science and Engineering, Fudan University, Shanghai, China; 6. Physics and Astronomy, California State University, Northridge, Northridge, CA, United States; 7. Institute of Physics, Chinese Academy of Sciences, Beijing, China; 8. Electrical Engineering and Computer Science, Northwestern University, Evanston, IL, United States

4:15
FC-10. Effect of insertion layer on the properties of Mn2Ru1-xGa in magnetic tunnel junctions. A. Titova1,2, C. Fowley1, Y. Lau1, D. Betto1, N. Thiagarajah3, G. Atcheson1, C. Xu1, M. Coey3, P.S. Stamenov1, K. Rode3, J. Lindner3, J. Fassbender1,2 and A. Deac1. 1. Institute of Ion Beam Physics and Materials Research, Helmholtz - Zentrum Dresden - Rossendorf, Dresden, Germany; 2. Institute for Physics of Solids, Technische Universität Dresden, Dresden, Germany; 3. AMBER and School of Physics, Trinity College Dublin, Dublin, Ireland

4:30
FC-11. Current-induced magnetization switching in atom-thick tungsten engineered perpendicular magnetic tunnel junctions with large tunneling magnetoresistance. M. Wang1, W. Cai1, K. Cao1, J. Zhou1, J. Wrona2, S. Peng1, H. Yang1, J. Wei1, W. Kang1, Y. Zhang1, J. Langer2, B. Ocker2, A. Fert1,3 and W. Zhao1. 1. Fert Beijing Institute, BDBC, and School of Electronic and Information Engineering, Beihang University, HaiDian District, China; 2. Singulus Technologies, Kahl am Main, Germany; 3. Unité Mixte de Physique, CNRS, Thales, Univ. Paris-Sud, Université Paris-Saclay, Palaiseau, France
FC-12. Highly (001)-textured MgAl2O4-based magnetic tunnel junctions with large magnetoresistance over 240%. I. Tiar1, H. Sakegawa1, X. Xu1, M. Belmoubarik1, H. Lee1, S. Kasai2 and K. Hono3 1. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science (NIMS), Tsukuba, Japan

THURSDAY PEONY IV
AFTERNOON 2:00

Session FD
MAGNETO-CALORIC MATERIALS I
Ramanathan Mahendiran, Co-Chair
National University of Singapore, Singapore
R. Nirmala, Co-Chair
IIT Madras, IIT Madras, India

2:00
FD-01. Finding the separation between first- and second-order phase transitions in La(Fe,Ni,Si)13 magnetocaloric materials. L.M. Moreno-Ramirez1, J. Law1, C. Romero-Muñiz2, V. Franco2, A. Conde1, F. Maccari2, I.A. Radulov3, K. Skokov3 and O. Gutfleisch3 1. University of Seville, Seville, Spain; 2. Universidad Autónoma de Madrid, Madrid, Spain; 3. TU Darmstadt, Darmstadt, Germany

2:15
FD-02. Magnetocaloric effect in melt-spun rare earth high entropy alloy YGdTbDyHo. R. Nirmala1, A. Sankar1, A. Chelvane2, A. Morozkin3, A.K. Nigam4, S. Quezado5 and S.K. Malik5 1. Physics, Indian Institute of Technology Madras, Chennai, India; 2. DMRL, Hyderabad, India; 3. Lomonosov Moscow State University, Moscow, Russian Federation; 4. TIFR, Mumbai, India; 5. UFRN, Natal, Brazil

2:30
FD-03. Pressure-Dependent Magnetic Transition Temperatures in Magnetocaloric High Entropy Alloys. A.E. Perrin1, S. Mccall3, M. Sorescu2, D. Laughlin1 and M. McHenry1 1. Materials Science and Engineering, Carnegie Mellon University, Pittsburgh, PA, United States; 2. Physics, Duquesne University, Pittsburgh, PA, United States; 3. Lawrence Livermore National Lab, Livermore, CA, United States

2:45
FD-04. Magnetocaloric Behavior of Fe75-xMnxAl25 Alloys for Near Room Temperature Cooling. V.K. Sharma1, V. Chaudhary1 and R.V. Ramanujan1 1. School of Materials Science and Engineering, Nanyang Technological University, Singapore, Singapore
FD-05. Magnetocaloric effect in diluted magnetic ferroelectric: Ba_{0.6}Eu_{0.4}TiO_3. K. Rubi1 and R. Mahendiran1 1. Physics, National University of Singapore, Singapore

FD-06. Gd_4(Si,Ge)_4 nanoparticles produced by pulsed laser deposition. V.M. Andrade1, N. Checca2, J. Belo3, B. Almeida4, M.S. Reis2,5, A. Pereira1 and J. Araújo1 1. Department of Physics and Astronomy, IFIMUP-IN, Porto, Portugal; 2. Departamento de Física, Instituto de Física da Universidade Federal Fluminense, Rio de Janeiro, Brazil; 3. Department of Physics and CICECO, Aveiro University - CICECO, Aveiro, Portugal; 4. Physics Department, Minho University, Braga, Portugal; 5. Physics Department, Aveiro University - ISN, Aveiro, Portugal

3:30

FD-07. Influence of overlapping transitions on the MCE response of a series of Ni_{0.46}Mn_{0.36}In_{0.15} Heusler alloys. J. Law1, V. Franco1, A. Conde1 and A. Giri2 1. Condensed Matter Physics, Sevilla University, Sevilla, Spain; 2. Weapons and Materials Research Directorate, US Army Research Laboratory, Aberdeen, MD, United States

4:00

FD-09. Entropy Change and Hysteresis Losses in Ni_{45}Co_{5}Mn_{37-x}In_{13+x} Alloy Family. M. Ghahremani1, A. Aslani2, M. Hosseinnia3, L.H. Bennett2 and E. Della Torre2 1. Computer Science, Mathematics, and Engineering, Shepherd University, Shepherdstown, WV, United States; 2. Electrical and Computer Engineering, The George Washington University, Washington, DC, United States; 3. Beatson Institute, University of Glasgow, Glasgow, United Kingdom

4:15

FD-10. Low field and large magnetocaloric effect in Ni-Mn-Sn (Fe-B) alloys. K. Srikanth1, R. V.V1, G. Anusha1 and G. Raghavan1 1. CAEM, International Advanced Research Centre for Powder Metallurgy, Chennai, India
FD-11. Thermal stability, magnetic and magnetocaloric properties of Gd$_{55}$Co$_{35}$M$_{10}$ (M=Si, Zr and Nb) amorphous alloys.
X. Zhong$^{1,}$, X. Huang$^{1,}$, D. Jiao$^{1,}$, H. Zhang$^{1,}$, W. Qiu$^{1,}$, Z. Liu$^{1,}$ and R.V. Ramanujan$^{1,2,}$ 1. School of Materials Science and Engineering, South China University of Technology, Guangzhou, China; 2. School of Materials Science and Engineering, Nanyang Technological University, Singapore, Singapore; 3. Singapore-HUJ Alliance for Research and Enterprise (SHARE), Nanomaterials for Energy and Energy-Water Nexus (NEW), Campus for Research Excellence and Technological Enterprise (CREATE), Singapore, Singapore.

FD-12. Table-like Magnetocaloric Effect in Ho$_{36}$Co$_{48}$Al$_{16}$ Multiphase Alloy.
E.A. Balfour$^{1,}$, Y. Shang$^{1,}$, Y. Cao$^{1,}$, H. Fu$^{1,}$, A.A. El-Gendy$^{2}$ and R.L. Hadimani$^{3}$. 1. Applied Physics, School of Physical Electronics, University of Electronic Science and Technology of China, Chengdu, China; 2. Department of Physics, University of Texas at El Paso, El Paso, TX, United States; 3. Department of Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA, United States.

THURSDAY ROSELLE II AFTERNOON

2:00
Session FE
PATTERNED FILMS AND ELEMENTS
Olivier Fruchart, Chair
Univ. Grenoble Alpes, CNRS, CEA, Grenoble, France

2:00
FE-01. Peculiarities of disorder-induced ferromagnetism phenomena in Fe$_{60}$Al$_{40}$ films on a local scale. A. Smekhova$^{1,}$, E. La Torre$^{2,}$, T. Szyjka$^{2,}$, B. Eggert$^{2,}$, B. Cöster$^{2,}$, K. Ollefs$^{2,}$, D. Walecki$^{2,}$, S. Salamon$^{2,}$, R. Bali$^{4}$, J. Lindner$^{4}$, F. Wilhelm$^{4}$, A. Rogalev$^{3,}$, E. Wesczke$^{5,}$, D. Többens$^{5,}$, R. Banerjee$^{6,}$, B. Sanyal$^{6,}$, C. Schmitz-Antonio$^{6}$ and H. Wende$^{7}$ 1. PGI-6, FZ Juelich, Berlin, Germany; 2. University of Duisburg-Essen and CENIDE, Duisburg, Germany; 3. ESRF, Grenoble, France; 4. HZDR, Dresden, Germany; 5. HZB (BESSY II), Berlin, Germany; 6. Uppsala University, Uppsala, Sweden.

2:15
FE-02. Anomalous Nernst and Hall Effects in Co$_x$(MgO)$_{1-x}$ Granular Thin Films. P. Sheng$^{1,}$ and M. Mizuguchi$^{2,}$ 1. Institute for Materials Research, Tohoku University, Sendai, Japan; 2. CREST, Japan Science and Technology Agency, Kawaguchi, Japan.

138 Thursday

FE-04. Growth and Characterisation of Antiferromagnetic Polycrystalline Mn3Ga and Mn3Ge Films. H. Wu1, L. Sudoh2, R. Xu1, W. Si1, T. Takahashi2, C.A. Vaz1, J. Kim3, G. Vallejo-Fernandez1 and A. Hirohata1 1. University of York, YORK, United Kingdom; 2. Nagaoka University of Technology, Nagaoka, Japan; 3. City University of Hong Kong, Hong Kong; 4. Paul Scherrer Institute, Villigen, Switzerland

FE-05. Emergent dynamic chirality in a thermally driven artificial spin ratchet. (Invited) S. Gliga1 1. Physics and Astronomy, University of Glasgow, Glasgow, United Kingdom

FE-06. Long-range multi-modal ordering in artificial spin ice. R. Puttock1,2, V. Neu3, A. Manzin4, F. Garcia-Sanchez5, A. Fernandez-Scaroni5, V. Antonov2 and O. Kazakova1 1. Quantum Science, National Physical Laboratory, Teddington, United Kingdom; 2. Department of Physics, Royal Holloway University of London, Egham, United Kingdom; 3. Leibniz Institute for Solid State and Materials Research (IFW) Dresden, Dresden, Germany; 4. Istituto Nazionale di Ricerca Metrologica, Turin, Italy; 5. Physikalisch-Technische Bundesanstalt, Braunschweig, Germany

FE-07. Phase domain development in nanopatterned FeRh islands. R.C. Temple1, T.P. Almeida2, J. Massey1, K. Fallon1, S. Morley1,2, F. Maccherozzi4, S. Dhesi1, T.A. Moore1 and C.H. Marrows1 1. School of Physics and Astronomy, University of Leeds, Leeds, United Kingdom; 2. School of Physics and Astronomy, University of Glasgow, Glasgow, United Kingdom; 3. Physics Department, University of California, Santa Cruz, Santa Cruz, CA, United States; 4. Surfaces and Interfaces, Diamond Light Source Ltd, Didcot, United Kingdom

FE-08. Nonlinear Response of Patterned Ferromagnets with Spin Vortex Ground State. (Invited) M.P. Nikitin1,2, A.V. Orlov3, I. Sokolov2, A. Minakov1, P.I. Nikitin3, J. Ding1, S.D. Bader1, E.A. Rozhkov4 and V. Novosad1 1. Materials Science Division, Argonne National Laboratory, Argonne, IL, United States; 2. Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russian Federation; 3. Prokhorov General Physics Institute, Moscow, Russian Federation; 4. Center for Nanoscale Materials, Argonne National Laboratory, Argonne, IL, United States
Interpreting FORC diagrams beyond the Preisach model: an experimental permalloy micro array investigation.
F. Gross¹, S. Ilse¹, G. Schütz¹, J. Gräfe¹ and E. Goering¹
¹ Modern Magnetic Systems, Max Planck Institute for Intelligent Systems, Stuttgart, Germany

Ion Irradiation Induced Cobalt/Cobalt Oxide Heterostructures: From Materials to Devices.
D. Hilliard¹,², O. Yildirim¹,², C. Fowley¹, S. Arekapudi², H. Cansever¹,³, R. Böttger¹, G. Hlawacek¹, O. Hellwig², J. Lindner¹, J. Fassbender¹,³ and A. Deac¹
¹ Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 2. Institute of Physics, Chemnitz University of Technology, Chemnitz, Germany; 3. Empa-Swiss Federal Laboratories for Materials Science and Technology, Dübendorf, Switzerland; 4. Institute of Physics of Solids, Dresden University of Technology, Dresden, Germany

All-electrical detection of spin-wave interference in CoFeB waveguides.
G. Talmelli¹,², T. Devolder³, M. Heyns¹, I.P. Radut¹, C. Adelmann¹ and F. Ciubotaru¹
¹ IMEC, Leuven, Belgium; 2. Department of Materials Engineering, KU Leuven, Leuven, Belgium; 3. Centre de Nanosciences et de Nanotechnologies, Université Paris-Sud, Orsay, France

Voltage-controlled reconfigurable spin wave nanochannels and logic devices.
B. Rana¹ and Y. Otani¹,²
¹ Center for Emergent Matter Science, RIKEN, Wako, Japan; 2. Institute for Solid State Physics, The University of Tokyo, Kashiwa, Japan

Spin wave interference in vortex stacks.
C. Behncke¹,², C.F. Adolff¹,², N. Lenzing¹, M. Hänze¹,³, B. Schulte², M. Weigand² and G. Meier²,³,⁴
FF-04. Protected Chiral Spin-Wave Modes for Backscattering-Immune Magnonic Transport. M. Mohseni1, T. Brächer1, Q. Wang1, D.A. Bozhko1, B. Hillebrands1 and P. Pirro1
1. Physics, TU Kaiserslautern, Kaiserslautern, Germany

3:00

1. Modern Magnetic Systems, Max Planck Institute for Intelligent Systems, Stuttgart, Germany; 2. Faculty of Physics, Adam Mickiewicz University, Poznan, Poland; 3. Institute of Molecular Physics, Polish Academy of Sciences, Poznan, Poland; 4. Centre for Advanced Technology, Adam Mickiewicz University, Poznan, Poland

3:15

FF-06. Direct observation of sub-100 nm spin wave propagation in magnonic wave-guides. N.A. Träger1, P. Gruszecki2, F. Lisiecki1, J. Förster1, M. Weigand1, P. Kuswik3,4, J. Dubowik3, G. Schütz1, M. Krawczyk2 and J. Gräfe1
1. Modern Magnetic Systems, Max Planck Institute for Intelligent Systems, Stuttgart, Germany; 2. Faculty of Physics, Adam Mickiewicz University, Poznan, Poland; 3. Centre for Advanced Technology, Adam Mickiewicz University, Poznan, Poland

3:30

FF-07. Long Distance Lateral Spin Transport in Antiferromagnetic Insulators. R. Lebrun1, A. Rossi1,2, A. Qaiumzadeh3, S. Bender4, L. Baldrati1, J. Cramer1,2, O. Gomonay1, J. Sinova1, R. Duine5, A. Brataas1 and M. Kläui1,2
1. Johannes Gutenberg University, Mainz, Germany; 2. Graduate School of Excellence Materials Science in Mainz, Mainz, Germany; 3. Norges teknisk-naturvitenskapelige universitet (NTNU), Trondheim, Norway; 4. University of California, Los Angeles, CA, United States; 5. Utrecht University, Utrecht, Netherlands

3:45

FF-08. Variable effective magnetization and spin wave velocity in low magnetic damping metallic multilayers. J.M. Shaw1, E.R. Edwards1, T. Silva1 and H. Nembach1,2
1. Quantum Electromagnetics Division, NIST, Boulder, CO, United States; 2. JILA, University of Colorado, Boulder, CO, United States

4:00

FF-09. Finite Speed of Propagation of Spin Waves in the Inertial Regime. C. Serpico2, M. d’Aquino1, V. Scala2 and M. Lo Bue1
1. Dipartimento di Ingegneria, Università degli Studi di Napoli “Parthenope”, Napoli, Italy; 2. DIETI, University of Naples Federico II, Naples, Italy; 3. SATIE, CNRS, ENS Paris-Saclay, Université Paris-Saclay, Cachan, France
FF-10. The general Boltzmann method for magnon transport with full scattering process. Y. Li, T. Liu, W. Wang and J. Zhang. 1. School of Physics, Tongji University, Shanghai, China


THURSDAY PEONY III AFTERNOON

2:00

Session FG
MAGNETIC BEARINGS, GEARS AND LEVITATION
Mochimitsu Komori, Co-Chair
Kyushu Institute of Technology, Kitakyushu, Japan
Will Robertson, Co-Chair
Adelaide University, The University of Adelaide, SA, Australia

FG-01. Design and Analysis of a Hybrid Stator Permanent Magnet Biased Bearingless Switched Reluctance Motor. Y. Yuan, Y. Sun, Y. Huang, J. Yan and F. Yang. 1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China; 2. School of Automation, Nanjing University of Science and Technology, Nanjing, China

2:15

FG-02. Weight reduction of the damper coils in the superconducting magnetically levitated bogie. S. Ohashi. 1. Electrical and Electric Engineering, Kansai University, Osaka, Japan

2:30

FG-04. Investigating the Performance of a Halbach Rotor Magnetic Gearbox with 3-D Printed Structural Components. D.H. Wong¹ and J.Z. Bird¹ ¹. Portland State University, Portland, OR, United States

3:00

FG-05. A Disc-type Contra-rotating Permanent Magnet Synchronous Motor for Marine Electrical Propulsion System. Z. Rao¹, S. Huang¹ and C. Luo¹ ¹. College of Electrical and Information Engineering, Hunan University, Changsha, China

3:15

FG-06. Comparative Analysis of a Coaxial Magnetic Gearbox with a Flux Concentration Halbach Rotor and Consequent Pole Rotor Typology. D.H. Wong¹, S. Modaresahmadi², J.Z. Bird¹ and W. Williams² ¹. Portland State University, Portland, OR, United States; ². University of North Carolina at Charlotte, Charlotte, NC, United States

3:30

FG-07. A Novel Design Philosophy for Low-Stiffness Magnetic Levitation Gravity Compensation. H. Zhang¹, Y. Zhou¹, B. Kou¹ and Z. Zhu² ¹. Harbin Institute of Technology, Harbin, China; ². University of Sheffield, Sheffield, United Kingdom

3:45

FG-08. Design of a Novel Halbach-Array Permanent Magnet Motor for Electric Submersible Pumps. S.F. Rabbi¹ and M. Rahman² ¹. Electrical and Computer Engineering, Memorial University of Newfoundland, St. John’s, NL, Canada; ². Electrical and Computer Engineering, Memorial University of Newfoundland, St. John’s, NL, Canada

4:00

FG-09. Modeling and Analysis of Suspension Force of a New Bearingless Reluctance Machine with Independent DC Bias Winding. L. Yu¹, Z. Zhang¹, Y. Shi² and W. Lu¹ ¹. Department of Electrical Engineering, Nanjing University of Aeronautics and Astronautics, Nanjing, China

4:15

FG-10. The influences of lever arm on the stability of a quasi-zero stiffness magnetic levitation vibration isolation system. N. Kamaruzaman¹, M. Ghayesh¹, B. Cazzolato¹, A. Zander¹ and W. Robertson¹ ¹. School of Mechanical Engineering, The University of Adelaide, Adelaide, SA, Australia

4:30

FG-11. Design and Analysis of a Double Stator Halbach Permanent Magnet Bearingless Brushless DC Motor. Y. Yuan¹, Y. Sun², F. Yang¹ and Y. Huang¹ ¹. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China; ². School of Power Engineering, Nanjing Institute of Technology, Nsning, China
Session FH
ANALYSIS AND OPTIMISATION OF ELECTRICAL MACHINES I
Chunhua Liu, Co-Chair
City University of Hong Kong, Hong Kong
Li Zhu, Co-Chair
Shanghai Jiao Tong University, Shanghai, China

2:00
FH-01. Development of a Radial Flux Permanent Magnet Machine with an Amorphous Metal Stator Core. W. Tong¹, R. Sun¹, S. Wu¹ and R. Tang¹. 1. School of Electrical Engineering, Shenyang University of Technology, Shenyang, China

2:15
FH-02. Optimal Design of a Novel Five-phase SPM Machine with Electronic Pole-Changing Effects. J. Gong¹, T. Tong¹ and N. Bracikowski². 1. School of Electrical Engineering, Shandong University, Jinan, China; 2. IREENA Laboratory, Nantes University, Saint Nazaire, France

2:30
FH-03. Analysis and Control of the Permanent Magnet Synchronous Motor with Auxiliary Modular Design. H. Lin², F. Zhao¹ and B. Kwon¹. 1. Harbin Institute of Technology Shenzhen Graduate School, Shenzhen, China; 2. Chang’ an University, Xi’an, China; 3. Hanyang University, Ansan, The Republic of Korea

2:45
FH-04. Experimental Results and Parameter Identification of a Permanent Magnet Assisted Synchronous Reluctance Machine with a Ribless Rotor. M. Zimmermann¹, A. Lange¹ and B. Piepenbreier¹. 1. Institute of Electrical Drives and Machines, University of Erlangen-Nuremberg, Erlangen, Germany

3:00
FH-05. Magnetic materials and technologies enabling an even brighter future for electrical machines. (Invited) P. Upadhyay¹. 1. US Corporate Research, ABB Inc., Raleigh, NC, United States

3:30
FH-06. Analysis of a Novel Double-sided Dual-PM Hybrid-excitation Switched-flux Linear machine. Z. Zeng² and Q. Lu¹. 1. College of Electrical Engineering, Zhejiang University, Hangzhou, China
FH-07. Study of efficiency characteristics of Interior Permanent Magnet Synchronous Motors. S. Feng1, W. Jiang1, Z. Zhang1, J. Zhang1, Y. Li1 and Y. Wang1. 1. Department of Electrical Engineering, Nanjing University of Aeronautics and Astronautics, Nanjing, China; 2. Nanjing YueBoo Power System Co., Ltd, Nanjing, China


FH-09. An Innovative Dual-Rotor Axial-Gap Flux Switching Permanent Magnet Machine Topology with Hybrid Excitation. E. Yildiriz1, M. Gulec2 and M. Aydin2. 1. Electrical and Electronics Engineering, Duzce University, Düzce, Turkey; 2. Mechatronic Engineering, Kocaeli University, Kocaeli, Turkey

FH-10. Design of a +U shape Interior PM Machines for Electric Vehicle Applications. M. Sheng1. 1. Nanjing University of Aeronautics and Astronautics, Nanjing, China


THURSDAY ORCHID II
AFTERNOON
2:00

Session FI
FUNDAMENTAL PROPERTIES AND COOPERATIVE PHENOMENA II
Solveig Felton, Chair
Queen’s University Belfast, Belfast, United Kingdom

FI-01. Recovery of long-range magnetic order by Rh substitution in spin glass compound Mn$_{0.7}$Fe$_{0.3}$NiGe. S. Samatham1, A.K. Patel1 and S. K. G.1. 1. Department of Physics, Indian Institute of Technology Bombay, Mumbai, India
2:15

FI-02. Magnetization dynamics of weakly interacting sub-100 nm square artificial spin ices. J. Porro Azpiazu1,2, S. Morley3,4, D. Alba Venero1, R. Macêdo5, M. Rosamond3, R.L. Stamps3, C.H. Marrows3 and S. Langridge1. 1. ISIS, the Neutron and Muon Source, Rutherford Appleton Laboratory, Didcot, United Kingdom; 2. BCMaterials, the Basque Center for Materials, Applications and Nanostructures, Leioa, Spain; 3. School of Physics and Astronomy, University of Leeds, Leeds, United Kingdom; 4. Department of Physics, University of California, Santa Cruz, Santa Cruz, CA, United States; 5. School of Physics and Astronomy, University of Glasgow, Glasgow, United Kingdom

2:30

FI-03. Electron Accumulation and Emergent Magnetism in LaMnO3/SrTiO3 Heterostructures. Z. Liu. 1. School of Materials Science & Engineering, Beihang University, Beijing, China

2:45


3:00

FI-05. Universal magnetic behavior of Ni2Mn1-xFexIn (x = 0.0 and 0.1) through magnetization, magnetocaloric and magnetoresistancse scaling methods. A.K. Patel1, S. Samatham1 and K.G. Suresh1. 1. Department of Physics, Indian Institute of Technology Bombay, Mumbai, India

3:15

FI-06. Signature of a Griffiths phase in layered canted antiferromagnet Sr2IrO4. A. Rathi2, P. Rout1, S. Perween2, R. Singh2, A. Gupta2, R. Pant2 and G. Basheed2. 1. CSIR-National Physical Laboratory (NPL), New Delhi, India, New Delhi, India; 2. AcSIR, CSIR-National Physical Laboratory (NPL) Campus, New Delhi, India; 3. Indian Institute of Science Education and Research (IISER), Bhopal, India

3:30

FI-07. Modulation of spin dynamics across metal to insulator transitions in hybrid heterostructures. M. Zhu1, Z. Zhou1, W. Ren1 and M. Liu1. 1. Xi’an Jiaotong University, Xi’an, China

3:45

FI-08. Alternating spin chain compound AgVOAsO4 probed by 75As NMR. N.A. Koodacadavan1. 1. Physics, Indian Institute of Science Education and Research, Thiruvananthapuram, India

4:00

FI-09. Suppression of the double exchange in 4d-5d transition metal compounds. (Invited) S. Streltsov1 and D. Khomskii2. 1. Institute of Metal physics, Ekaterinburg, Russian Federation; 2. University of Cologne, Cologne, Germany
FI-10. Topological magnons and excitons. R. Shindou 1. Physics, Peking University, Beijing, China

FI-11. Interface Effects on Coercivity and Training in Exchange Bias Systems. J. Gompertz1, R. Carpenter2, S.A. Cavill1,3, G. Vallejo-Fernandez1 and K. O’Grady5 1. Department of Physics, University of York, Heslington, York, UK, YO10 5DD, York, United Kingdom; 2. Seagate Technology, Springtown Industrial Estate, Londonderry, United Kingdom; 3. Diamond Light Source Ltd, Harwell Science and Innovation Campus, Fermi Ave, Didcot, United Kingdom

THURSDAY SIMPOR/ROSELLE BALLROOM AFTERNOON 1:30

Session FP
CIRCUIT ANALYSIS OF TRANSFORMERS (Poster Session)
Tetsuya Ueda, Chair
Kyoto Institute of Technology, Kyoto, Japan

FP-01. Effect of annealing on magnetic and mechanical behavior of NANOPERM-type alloys. M. Hasiak1 and A. Laszcz1 1. Wroclaw University of Science and Technology, Wroclaw, Poland

FP-02. Magnetic Force Analysis in a Gapped-Core Reactor Model under Harmonic Magnetizations by Efficient Frequency-Domain Decomposition. X. Zhao1, Z. Jin1, Z. Cheng2, B. Forghani3, L. Li1 and H. Zhang1 1. North China Electric Power University, Baoding, China; 2. Institute of Power Transmission and Transformation Technology, Baoding, China; 3. Infolytica Corporation, Montreal, QC, Canada

FP-03. Investigation into the Effect of Yoke Pressed Structure on Electromagnetic Performance of Transformer. X. Yan1, Z. Peng2, Y. Kang3, X. Yu1, Z. Ren1 and Y. Zhang1 1. Shenyang University of Technology, Shenyang, China; 2. Shaoyang University, Shaoyang, China; 3. TBEA Shenyang Transformer Group Co. Ltd., Shenyang, China; 4. Shandong Power Equipment Co. Ltd., Jinan, China

FP-04. A Switched-capacitorless Energy-encrypted Transmitter for Roadway-charging Electric Vehicles. W. Liu1, K. Chau1, C. Lee2, C. Jiang1 and W. Han1 1. The University of Hong Kong, Hong Kong; 2. Massachusetts Institute of Technology, Boston, MA, United States

FP-05. Reduction of an Eddy Current Losses in Metallic Support of an Underground Power Cable. H. Song1, S. IM1 and G. Park1 1. Department of Electrical and Computer Engineering, Pusan National University, Busan, The Republic of Korea
FP-07. Copper Loss Reduction of Planar Transformer Using Magnetic Cap and Plate. T. Yamamoto¹, Y. Bu¹ and T. Mizuno¹ 1. Shinshu university, Nagano, Japan

FP-08. Determination Approach for the Parameters of Equivalent Circuit Model of Deep Saturated Three-phase Integrative Transformers. Y. Wang¹, Y. Shangguan¹ and J. Yuan¹ 1. Dept. of Electrical Engineering, Tsinghua University, Beijing, China

FP-09. Research on Split-Core Reactor Vibration Reduction Method Based on Magnetostrictive Effect. L. Zhu¹, R. Sha¹, X. Zhang¹, B. Wang¹ and T. Han¹ 1. Key Laboratory of Advanced Electrical En, Tianjin Polytechnic University, Tianjin, China

FP-10. Research on Transformer Inductance Parameter Calculation Model for High Frequency Characteristic Analysis. X.M. Zi¹, G. Jian¹ and Z. Ying¹ 1. Nanjing University of Aeronautics and Astronautics, Nanjing, China

FP-11. Inverse Updating Method of High-frequency Equivalent Circuit Model in Transformer for Winding Deformation Diagnosis. H. Zhang¹, S. Wang², S. Wang² and S. Wang² 1. Hubei Universitie of Arts and Science, Xiangyang, China; 2. Xi’an Jiaotong University, Xi’an, China

FP-12. The Integration of Energy-saving Transformer Possessing Variable Impedance. S. Wang¹, S. Wang¹, Y.H. He¹,², M.N. Zhang¹ and S. Wang¹ 1. Xi’an Jiaotong University, Xi’an, China; 2. State Grid Yulin Electric Power Company, Yulin, China

FP-13. Analysis of a Novel Three-Coil Wireless Power Transfer System Applied in Biomedical Devices. X. Zhang¹, L. Wang² and X. Zhang¹ 1. Tianjin Normal University, Tianjin, China; 2. Chinese Academy of Medical Science & Peking Union Medical College Institute of Biomedical Engineering, Tianjin, China
Session FQ
HARD MAGNETIC MATERIALS AND MOTOR APPLICATIONS
(Poster Session)
Mi-Ching Tsai, Chair
National Cheng Kung University, Tainan, Taiwan

FQ-01. Reduced magnetic response of Dy doped CoFe$_2$O$_4$ nanoparticles. H. Kumar$^1$ 1. H.A.S.(Physics), Rajkiya Engineering College Bijnor India, Bijnor, India

FQ-02. A Study on Optimal Design for Direct Drive Submerged Pump Actuator. Y. Kim$^1$, Q. Yan$^1$, D. Ryu$^1$ and J. Lee$^1$
1. Hanbat National University, Daejeon, The Republic of Korea

FQ-03. Analytical Method for 3-D Overhang Effect of Surface-Mounted Permanent-Magnet Motor Using Conformal Mapping. Y. Ko$^1$, J. Song$^1$, M. Seo$^1$, Y. Kim$^2$ and S. Jung$^1$
1. Sungkyunkwan University, Suwon, The Republic of Korea; 2. Chosun University, Gwangju, The Republic of Korea

FQ-04. Investigation of flux adjustment capability in hybrid excited switching flux permanent magnet machines. X. Liu$^{1,2}$, S. Wang$^{1,2}$ and D. Dong$^{1,2}$
1. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin, China; 2. School of Electrical Engineering, Hebei University of Technology, Tianjin, China

1. Mechatronics Engineering, Kocaeli University, Kocaeli, Turkey

FQ-06. The Influence of Magnetization on Modular Spoke-type Permanent-Magnet Machine for In-Wheel Traction Applications. H. Zhang$^1$ and W. Hua$^1$
1. School of Electrical Engineering, Southeast University, Nanjing, China

1. Department of Electrical & Electronic Engineering, Saga University, Sagacity, Japan; 2. Department of Electrical & Electronic Engineering, Wuhan University, Wuhan, China

FQ-08. Coercivity enhancement of Nd-Ce-Fe-B sintered magnets by the grain boundary diffusion process using Nd-Al-Cu alloys. Q. Zhou$^1$, R. Tang$^1$, F. Xiao$^1$ and Z. Liu$^1$
1. GuangDong Research Institute of Rare Metals, Guangzhou, China; 2. School of Materials Science and Engineering, South China University of Technology, Guangzhou, China
FQ-09. An Improved Analysis Method of Irreversible Demagnetization for Single-Phase Line Start Permanent Magnet Motor. J. Jung1, B. Lee2, M. Lim3 and J. Hong4

FQ-10. Demagnetization and Permanent-Magnet Minimization Analyses of Less-Rare-Earth Interior Permanent-Magnet Synchronous Machines Used for Electric Vehicles.
W. Wang1, P. Zheng1,2, M. Wang1, Y. Liu1 and Z. Fu1
1. Department of Electrical Engineering, Harbin Institute of Technology, Harbin, China; 2. State Key Laboratory of Robotics and System, Harbin Institute of Technology, Harbin, China

FQ-11. Structural and magnetic ordering in MnBi nanoclusters produced in a low energy cluster beam deposition system.
D. Le Roy1, F. Orlandini-Keller2, J. Jacquot3, N. Blanchard1, N. Dempsey2 and V. Dupuis1 1. Institut Lumière Matière, Villeurbanne, France; 2. Institut Néel CNRS, Grenoble, France; 3. CEA, Grenoble, France

Y. Zhang1 and K. Gao1 1. Argonne National Laboratory, North Oaks, MN, United States

THURSDAY SIMPOR/ROSELLE BALLROOM
AFTERNOON 1:30

Session FR
MAGNETIC FLUIDS AND ORGANIC MAGNETIC MATERIALS II
(Poster Session)
Mei Fang, Chair
Central South University, Changsha, China

J. Zhang1, W. Kosaka1 and H. Miyasaka1 1. Institute for Materials Research, Tohoku University, Sendai, Japan

FR-03. Magnetorheology of Core-Shell Structured Mesoporous Fe3O4@mSiO2 Nanoparticle Added Carbonyl Iron Dispersion. W. Han1 and H. Choi1 1. Polymer Science and Engineering, Inha University, Incheon, The Republic of Korea

FR-01. Effect of Fe3O4/sepiolite Nanocomposite Additive on Carbonyl Iron Based Magnetorheological Fluid. Y. Dong1, S. Piao1 and H. Choi1 1. Polymer Science and Engineering, Inha University, Incheon, The Republic of Korea
FR-04. Synthesis of Organic-inorganic Poly(diphenylamine)/magnetite Composite Particles and Their Magnetorheological Response. Y. Dong1 and H. Choi1

1. Polymer Science and Engineering, Inha University, Incheon, The Republic of Korea

FR-05. Synthesis and Viscoelastic Behavior of Non-stoichiometric Inverse Spinel Ferrite Nanoparticle Suspension with Controlled Morphology and Enhanced Magnetization. J. Han1, W. Han1, C. Gao1, Y. Dong1 and H. Choi1 1. Dept. of Polymer Science and Engineering, Inha University, Incheon, The Republic of Korea


FR-07. Experimental Verification of Effectiveness of Magnetorheological Fluid Damper fixed to an Elevator in Case of Earthquake. K. Kawase1, N. Kobayashi1, M. Yamada1 and T. Nakagawa1 1. Faculty of Engineering, Tokyo City University, Tmazutsumi, Japan

FR-08. Characterization of Output Torque of a Permanent Magnet-based MRF Clutch with a Field Blocking Mechanism. M.A. Fernández1, J. Chang1 and C. Huang1 1. Power Mechanical Engineering, National Tsing Hua University, Hsinchu, Taiwan

FR-09. Phenomenological magnetic hysteresis model of a polymer matrix filled with magnetic particles. Z. Xiang1, B. Gupta1, M. Le1, G. Coativy1 and B. Ducharne1 1. INSA LYON, Laboratoire de Génie Electrique et Ferroélectricité, Villeurbanne, France

FR-10. Magnetically controlled light manipulating properties of biogenic and synthetic guanine crystals. H. Kashiwagi1, M. Iwasaka2, H. Asada1, T. Koyanagi1 and K. Kishimoto3 1. Graduate School of AdSM, Hiroshima University, Higashihiroshima, Japan; 2. RNBS, Hiroshima University, Higashihiroshima, Japan; 3. Graduate School of Science and Technology for Innovation, Yamaguchi University, Ube, Japan

FR-11. Cr and Fe substitution effects on magnetic properties and phase stabilities in tetragonal Mn$_3$(Ga,Ge). H. Okada1, K. Moriya1 and M. Doi1 1. Tohoku Gakuin University, Tagajo, Japan

FR-12. Fabrication of biogenic guanine crystal/ferromagnetic film hybrid plate for micro-optical MEMS. T. Sogame1, K. Deguchi1, M. Inoue1, T. Kimura1, E. Muneyama1, K. Kishimoto1, T. Koyanagi1, H. Asada1 and M. Iwasaka2 1. Graduate School of Sci. & Tech. for Innov., Yamaguchi University, Ube, Japan; 2. RNBS, Hiroshima University, Higashihiroshima, Japan

FR-13. Magnetic Field Analysis and Optimization Design of Magnetorheological Fluid Brake. N. Yan1, W. Li1 and B. Zhang1 1. Shenyang University of Technology, Shenyang, China

FR-15. Fe3O4@Angelica Sinensis Polysaccharides Nanoparticles for Magnetic Resonance Imaging. X. Xu, K. Wang, Y. Li, Y. Wang, J. Wang and Y. Jiang. 1. School of Materials Science and Engineering, University of Science and Technology Beijing, Beijing, China; 2. Department of molecular imaging, Peking Union Medical College Hospital, Chinese Academy of Medical Sciences, Beijing, China.


THURSDAY SIMPOR/ROSELLE BALLROOM
AFTERNOON
1:30

Session FS
MAGNETO-ELASTIC MATERIALS (Poster Session)
Rastislav Varga, Chair
Faculty of Sciences, UPJS, Kosice, Slovakia


FS-02. Determination of stress-coefficient of magnetoelastic anisotropy in flexible amorphous CoFeB film by anisotropic magnetoresistance. X. Wen, B. Wang and R. Li. 1. CAS Key Laboratory of Magnetic Materials and Devices, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, Ningbo, China; 2. Zhejiang Province Key Laboratory of Magnetic Materials and Application Technology, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, Ningbo, China.


FS-04. Balancing negative and positive expansion effect in dual-phase La(Fe,Si)13/α-Fe composite with improved mechanical property. J. Wang. 1. School of Materials Science and Engineering, Nanjing University of Science and Technology, Nanjing, China.
FS-05. Magneto-mechanical Optimization and Analysis of a Magnetostrictive Cantilever Beam for Energy Harvesting. V. Apicella¹, C.S. Clemente², D. Duvino³, D. Leone¹ and C. Visone¹ 1. engineering, University of Sannio, Benevento, Italy

FS-06. Magnetoelastic Coupling Effect on Magnetization in FeGa Film Induced by Surface Acoustic Waves. C. Zhao¹, L. Pan¹, X. Li¹, Q. Liu¹ and J. Wang¹ 1. Key Laboratory for Magnetic and Magnetic Materials of the Ministry of Education, Lanzhou University, Lanzhou 730000, People’s Republic of China, Lanzhou University, Lanzhou, China

FS-07. Mössbauer investigation of magnetostrictive Fe₈₃Ga₁₇ with trace rare-earth doping. P.S. Stamenov¹, Y. He², C. Jiang² and M. Coey³ 1. School of Physics, Trinity College Dublin, Dublin, Ireland; 2. School of Materials Science and Engineering, Beihang University, Beijing, China

FS-08. High Frequency Vibration Model with Electromagnetic-Mechanical-Thermal Multi-FieldCoupled Effects for Giant Magnetostrictive Transducer. Y. Li¹, W. Huang¹, B. Wang¹, C. Gao¹, X. Wu¹ and Y. Xu¹ 1. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin, China

FS-09. Concurrent inverse effects of magnetostriction and electrostriction in magnetoelastic layered structures. B. Zadov², M. Auslender³ and E. Liverts³ 1. Electrical and Computer Engineering, Ben Gurion University of the Negev, Beer Sheba, Israel; 2. Electrical and Computer Engineering, Ben Gurion University of the Negev, Beer Sheba, Israel; 3. Department of Mechanical Engineering, Ben Gurion University of the Negev, Beer Sheba, Israel

FS-10. Experimental and Calculating Analysis of High Frequency Magnetic Energy Losses for Terfenol-D Magnetostrictive Material. W. Huang¹, C. Gao¹, B. Wang¹ and Y. Li¹ 1. Hebei University of Technology, Tianjin, China

FS-11. Magnetoelastic surface acoustic wave characteristics of the ScAlN/FeGa heterostructure with negative Poisson’s ratio. J. Jiang¹ and F. Bai¹ 1. State Key Laboratory of Electronic Thin Films and Integrated Devices, University of Electronic Science and Technology of China, Chengdu, China

FS-12. Tuning ferromagnetic properties of LaMnO₃ thin films by oxygen vacancies and strain. Y. Liu¹, H. Wong¹, K. Lam¹, C. Mak¹ and C. Leung¹ 1. Department of Applied Physics, The Hong Kong Polytechnic University, Hong Kong, Hong Kong
session FT

modeLLing of Machines II
(Poster Session)

Ronghai Qu, Chair
Huazhong University of Science and Technology, Wuhan, China

FT-01. Analysis and Measurements of Interior Permanent Magnet Motor Based on Equivalent Magnetic Circuit Method. T. Bang1, K. Shin1, J. Lee1, C. Han1, H. Cho1 and J. Cho1
1. Chungnam National University, Daejon, The Republic of Korea

1. Key Laboratory of Low-Voltage Apparatus Intellectual Technology of Zhejiang, Wenzhou University, Wenzhou, China;
2. College of Electrical Engineering, Zhejiang University, Hangzhou, China

FT-03. Theoretical and Experimental Analysis of Transverse Flux Linear Machines Using Mutually Coupled Windings for High Force Density. J. Du1,2, Q. Liu1, Y. Long1 and D. Yai1
1. State Key Laboratory of Electrical Insulation and Power Equipment, Xi’an Jiaotong University, Xi’an, China;
2. Aviation Industry Corporation of Qing’an Group, Xi’an, China

1. School of Mechanical Engineering and Automation, Shanghai University, Shanghai, China;
2. Mechanical Engineering, Pusan National University, Busan, The Republic of Korea

FT-05. Iron loss characteristics of a nanocrystalline ring excited by Si-IGBT and GaN-FET inverters. A. Yao1, T. Sugimoto1 and K. Fujisaki1
1. Department of Engineering, Toyota Technological Institute, Nagoya, Japan

FT-06. Analysis of Vibration of a Dual-stator Hybrid Excitation Permanent Magnet Motor for Electric Vehicles. Y. Fan1,
Z. Wu1 and C. Tan1
1. School of Electrical Engineering, Southeast University, Nanjing, China

FT-07. Thermal Effects on Magnetic Noise and Vibrations of Synchronous Motors. I. Ibrahim1, H. Mohammadi1,
V. Ghobanian1 and D. Lowther1
1. Elec and Comp Eng, McGill University, Montreal, QC, Canada

FT-08. Improvement of efficiency and vibration noise characteristics depending on excitation waveform of a brushless DC motor. S. Noguchi1
1. Motor Drive Laboratory, Tokyo City University, Setagaya-ku, Japan
FT-09. Analysis and Comparison on Motor Core Losses with Si-IGBT and SiC-MOSFET Inverter Excitations. G. Nguyen1, S. Odawara2, K. Fujisaki3, F. Iwamoto4, T. Yamada4 and T. Sasaya4 1. Research Center for Smart Vehicles, Toyota Technological Institute, Nagoya, Japan; 2. Kitami Institute of Technology, Kitami, Japan; 3. Electromagnetic Energy System Laboratory, Toyota Technological Institute, Nagoya, Japan; 4. Advanced Research and Innovation Div. 3, Denso Corporation, Aichi, Japan


FT-12. A Nonlinear Permanent Magnet Working Point Migration Model and its Application to Simulation of a Polarized Magnetic System. J. You1,2, X. Liao1, R. Wang1, H. Liang1 and J. Sykulski2 1. School of Electrical Engineering and Automation, Harbin Institute of Technology, Harbin, China; 2. Electronics and Computer Science, University of Southampton, Southampton, United Kingdom

FT-13. Analysis of Multi-phase and Multi-layer Fractional-Slot Concentrated-Winding on PM Eddy Current Loss Considering Axial Segmentation and Load Operation. Q. Chen1, D. Liang1, S. Jia1 and X. Wan1 1. Xi’an Jiaotong University, Xi’an, China


FT-15. Determination of Solenoid Coil Size for Resonance-Based Magnetically Coupled Wireless Power Transfer with Rated Distance. H. Song1 and Q. Xu1 1. Key Laboratory of Image Processing and Intelligent Control of Education Ministry, Department of Control Science and Engineering, Huazhong University of Science and Technology, Wuhan, China

FT-16. Adagrad Algorithm based Optimal Slot-pole Selection for Reduced Inductance Harmonics in Concentrated Wound Multiphase PMSM. H. Dhulipati1, E. Ghosh1, S. Mukundan1, J. Tjong1 and N. C. Kar1 1. University of Windsor, Windsor, ON, Canada
Session FU
MODELLING OF MACHINES III
(Poster Session)
Jin Hur, Chair
Incheon National University, Seoul, The Republic of Korea


FU-02. Hybrid analytical modeling of saturated electromagnetic devices: Integration of Fourier modeling and magnetic equivalent circuits. J. Bao¹, B. Gysen¹ and E. Lomonova¹ 1. Eindhoven University of Technology, Eindhoven, Netherlands

FU-03. Convergence Analysis of SEM and FEM to an analytical field distribution in the airgap. M. Curti¹, J. Jansen¹ and E. Lomonova¹ 1. Electrical Engineering, Eindhoven University of Technology, Eindhoven, Netherlands

FU-04. Reduction of Stator Core Loss in Interior PM Machines for Electric Vehicle Applications. Y. Hu¹ and S. Zhu¹ 1. Nanjing University of Aeronautics and Astronautics, Nanjing, China

FU-05. Vector Magnetic Characteristic Analysis of Induction Motor Considering Harmonic Wave by Slip Motion. M. Enokizono¹ and N. Kunihiro² 1. Vector Magnetic Characteristic Technical Laboratory, Usa-city, Japan; 2. Oita University, Oita, Japan

FU-06. Elimination of Unipolar Leakage Flux in Consequent-Pole PM Machines by Employing Novel Pole Sequence. J. Li¹, K. Wang¹ and C. Liu¹ 1. Electrical Engineering, Nanjing University of Aeronautics and Astronautics, Nanjing, China

FU-07. Indirect Analytical Method for Electromagnetic Performances Analysis of V-shaped Interior Permanent Magnet Synchronous Machine. L. Xu² and M. Lin¹ 1. Southeast University, Nanjing, China; 2. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China

FU-08. Improved E&S Model for Core Loss Calculation of Brushless Doubly Fed Machine with Hybrid Rotor. F. Zhang¹, Y. Wang¹ and S. Yu¹ 1. School of Electrical Engineering, Shenyang University of Technology, Shenyang, China
FU-09. About Accuracy and Influence of the Pole Coverage for Eddy Current Losses within Permanent Magnets of Electrical Machines. E. Schmidt1 and M. Kaltenbacher2
1. Institute of Energy Systems and Electrical Drives, Vienna University of Technology, Vienna, Austria; 2. Institute of Mechanics and Mechatronics, Vienna University of Technology, Vienna, Austria

FU-10. Non-conforming finite element method to simulate eddy currents due to motion using the $T, \Phi-\Phi$ formulation. G. Wallinger1 and O. Biro1 1. Institute of Fundamentals and Theory in Electrical Engineering, Graz University of Technology, Graz, Austria


FU-13. Comparison of Various Constraints in 3-D Adaptive Degrees-of-Freedom Finite Element Method. Y. Zhang1, S. Ho1 and W. Fu1 1. Department of Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong, Hong Kong

FU-14. Finite-element Method with Topological Data Structure Mesh for Optimization of Electrical Device. X. Liu1 and W. Fu1 1. Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong, Hong Kong

FU-15. An equivalent circuit model for predicting core losses of a claw pole permanent magnet motor with molded soft magnetic composite core. X. Ba1,2, C. Zhang1, Y. Guo1 and J. Zhu1 1. Beijing Institute of Technology, Beijing, China; 2. University of Technology, Sydney, Sydney, NSW, Australia

FU-16. Finite-element models for foil windings with an improved resolution of the electric field distribution. H. De Gersem1 1. Technische Universitaet Darmstadt, Darmstadt, Germany
Session FV
SPIN WAVES AND OPTICAL MAGNETISATION SWITCHING
(Poster Session)
Kaiyou Wang, Chair
Institute of Semiconductors, Chinese Academy of Sciences, Beijing, China

FV-01. Excitation of spin waves by pure spin current. B. Divinskiy¹, V.E. Demidov¹, S.O. Demokritov² and S. Urazhdin²
1. University of Muenster, Muenster, Germany; 2. Emory University, Atlanta, GA, United States

FV-02. Spin wave coupling in strain-tuned magnonic waveguide and reconfigurable magnonic crystals. A.V. Sadovnikov¹, A. Grachev¹, S. Sheshukova¹, Y. Sharaevsky¹, A. Serdobintsev² and S. Nikitov² ¹. Nonlinear Physics, Saratov State University, Saratov, Russian Federation; ². Kotel'nikov Institute of Radioengineering and Electronics, Russian Academy of Sciences, Moscow, Russian Federation

FV-03. Spin wave propagation in sputter-deposited YIG nanometer films. Y. Shiota¹, S. Kasukawa¹, T. Moriyama¹ and T. Ono¹,²
1. Institute for Chemical Research, Kyoto University, Uji, Japan; 2. Center for Spintronics Research Network, Osaka University, Toyonaka, Japan

FV-04. Suppression of spin-wave transport in antiferromagnets. J. Ohe¹ and N. Arakawa¹ ¹. Department of Physics, Toho University, Funabashi, Japan

FV-05. Antiferromagnetic magnonic crystals with alternating Dzyaloshinskii–Moriya interaction. S. Lee¹ and K. Lee¹

FV-06. Motion of a skyrmionium driven by spin wave. M. Shen¹, Y. zhang¹, J. Ouyang¹, X. Yang¹ and L. You¹ ¹. School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, China

FV-07. Bose-Einstein condensation of magnons in confined systems studied by micromagnetic simulations. M. Mohseni¹, T. Brächer¹, Q. Wang¹, O. Serga¹, B. Hillebrands¹ and P. Pirro¹
1. Physics, TU Kaiserslautern, Kaiserslautern, Germany

FV-08. Phase locking, intermittency and chaos, of an array of magnonic crystal cavities driven by spin torque nano oscillators. N. Kumar¹ and A. Prabhakar¹ ¹. Electrical Engineering, IIT Madras, Chennai, India
FV-09. Excitation of spin waves with controllable wavelength and spectrum by femtosecond laser pulses. I.V. Savochkin1, M. Jäckl1, V. Belotelo13, I. Akimov2, M. Kozhaev1, D. Sylgachew1, A. Chernov1, A. Shaposhnikov1, A. Prokopov1, V. Berzhansky3, D. Yakovlev2, A. Zvezdin2, and M. Bayer2, 1. Russian Quantum Center, Moscow, Russian Federation; 2. TU Dortmund, Dortmund, Germany; 3. Lomonosov Moscow State University, Moscow, Russian Federation; 4. Ioffe Institute, St. Petersburg, Russian Federation; 5. Prokhorov General Physics Institute, Moscow, Russian Federation; 6. Vernadsky Crimean Federal University, Simferopol, Russian Federation

FV-10. Mechanism of Magnetic Orientation Reversal Induced by Ultrafast Laser. Y. Zou1, H. Wang1, Z. Zeng1, T. Huang1, Y. Xiao1, W. Cheng1, K. Wang3, and C. Xie1. 1. Wuhan National Laboratory for Optoelectronics, Huazhong University of Science & Technology, Wuhan, China; 2. School of Physics, Huazhong University of Science & Technology, Wuhan, China; 3. School of Optical and Electronic Information, Huazhong University of Science & Technology, Wuhan, China

FV-11. Hybrid characteristic of multi-shot circularly polarized laser pulses for magnetization switching process in L1_0-FePt nanoparticles. Y. Xiao1, H. Wang1, T. Huang1, Y. Zou1, Z. Zeng1, K. Wang3, and C. Xie1. 1. Wuhan National Laboratory for Optoelectronics, Huazhong University of Science & Technology, Wuhan, China; 2. Wuhan National Laboratory for Optoelectronics, Huazhong University of Science & Technology, Wuhan, China

FV-12. Roles of heating and helicity in ultrafast all-optical magnetization switching in TbFeCo. X. Lu1,2, X. Zou1, D. Hinzke3, T. Liu4, T. Cheng4, J. Wu1, T. Ostler5,6, J. Cai4, U. Nowak3, R.W. Chantrell1, Y. Zhai7, and Y. Xu2,8. 1. Department of Physics, University of York, York, United Kingdom; 2. York-Nanjing International Joint Center in Spintronics, Nanjing University, Nanjing, China; 3. Department of Physics, University of Konstanz, Konstanz, Germany; 4. Institute of Physics, Chinese Academy of Sciences, Beijing, China; 5. Computing, Engineering and Sciences, Sheffield Hallam University, Sheffield, United Kingdom; 6. Département de Physique, L’Université de Liège, Liège, Belgium; 7. Department of Physics, Southeast University, Nanjing, China; 8. Department of Electronics, University of York, York, United Kingdom

FV-13. Femtosecond laser heating induced ultrafast magnetization reversal in TbCo films with different electron-phonon coupling interaction. W. Cheng1, W. Yang1, Z. Li1, Y. Hui2, H. Wang3, J. Chen2, Y. Hao1, and X. Miao1. 1. School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, China; 2. Wuhan National Research Center for Optoelectronics, Huazhong University of Science and Technology, Wuhan, China

FV-14. Photonic orbital angular momentum transfer and magnetic skyrmion rotation. W. Yang1, H. Yang1, Y. Cao1, and P. Yan1. 1. Microelectronics and Solid-State Electronics, University of Electronic Science and Technology of China, Chengdu, China
Dependency of Spin Pumping on Seed and Capping Layers in Co Ultrathin Films. B.B. Singh1, S. Jena1 and S. Bedanta1
1. Physical sciences, National Institute of science education and research, Bhubaneswar, India

FV-15. Dependency of Spin Pumping on Seed and Capping Layers in Co Ultrathin Films. B.B. Singh1, S. Jena1 and S. Bedanta1
1. Physical sciences, National Institute of science education and research, Bhubaneswar, India

THURSDAY SIMPOR/ROSELLE BALLROOM
AFTERNOON 1:30

Session FW
TRANSFORMERS AND INDUCTORS: MODELLING II
(Poster Session)
Makoto Sonehara, Co-Chair
Shinshu University, Nagano, Japan
Zhen Zhang, Co-Chair
Tianjin University, Tianjin, China

FW-01. A Magnetic Integration Structure of Hybrid Distribution Transformer. Y. Liu1, D. Liang1, M. Zhang1, Y. Liang1, X. Wan1, Q. Chen1, S. Wang1 and S. Wang1 1. Xi’an Jiaotong University, Xi’an, China

FW-02. Analytical and FEM Calculation of Electrical Parameters of Carbon Steel Pipelines for DEH systems. A. Chen1, A. Nysveen1, M. Høyer-Hansen2 and J. Lervik2 1. Electrical power engineering, Norwegian University of Science and Technology, Trondheim, Norway; 2. SINTEF Energy Research, Trondheim, Norway


FW-04. Study the Effect of Inductor Nonlinear Behavior on the LCL Three Phase Grid-Connected Inverter. S. Jiang1, Y. Liu1, H. Wang1, G. Wang1, J. Peng1 and Y. Liu2 1. College of Mechatronics and Control Engineering, Shenzhen University, Shenzhen, China; 2. School of Electrical and Electronic Engineering, Nanyang Technological University, Singapore, Singapore


FW-06. A Novel Multi-unit Out-rotor Homopolar Inductor Machine for Flywheel Energy Storage System. J. Yang1, C. Ye1, X. Lian1, F. Xiong1 and W. Xu1 1. State Key Laboratory of Advanced Electromagnetic Engineering and Technology (AEET), School of Electrical and Electronic Engineering (SEEDE), Huazhong University of Science and Technology, Wuhan, China
FW-07. Fabrication and development of miniaturized efficient power converters using ultra-soft magnetic ribbons. H. Ahmadian Baghbaderani1, D.J. Cronin1, P. McCloskey1, S. Kulkarni1, Z. Pavlovic1, A. Masood1, K. Ackland2, P. Stamenov2 and C. O’Mathuna1 1. Strategic Programs, Tyndall National Institute, Cork, Ireland; 2. School of Physics, Trinity College, Dublin, Ireland

FW-08. Prediction of Heating Power in Magnetic Pipe Conducting Large AC Current with High Frequencies Up to 200Hz. A. Chen1, A. Nysveen1, J. Lervik2 and M. Høyer-Hansen2 1. Electrical power engineering, Norwegian University of Science and Technology, Trondheim, Norway; 2. SINTEF energy, Trondheim, Norway

FW-09. A Novel Three Limb Topology of a Saturated Core Fault Current Limiter in HVDC System. H. Zhou1, J. Yuan1, L. Wei1,2, P. Gan1, F. Chen1, Y. Zhong1, C. Tian1, B. Chen1, Y. Gao1 and K. Muramatsu1 1. School of Electrical and Engineering, Wuhan University, Wuhan, China; 2. Department of Electrical Engineering, Graduate School of Engineering, Kyoto University, Kyoto, Japan; 3. Department of Electrical and Electronic Engineering, Saga University, Saga, Japan

FW-10. New Equivalent Circuit Model of UHVDC Converter Transformer Winding for the Calculation of Transient Potential Distribution. S. He1, C. Li1, Y. Liu1, Z. Zhao1, J. Deng2, J. Li1 and H. Qian2 1. electrical engineering, xi’an jiaotong university, Xi’an, China; 2. Maintenance and Test Center of EHV Power Transmission Company, China Soutern Power Grid, Guangzhou, China

FW-11. Dynamic Transformer Core Model Based on the Inverse Three-component Preisach Model. W. Sima1, D. Peng1, M. Yang1, M. Zou1 and Y. Liu1 1. Chongqing University, Chongqing, China


FW-13. AC Loss Analysis of a Flux-coupling type Superconducting Fault Current Limiter. S. Yan1, Y. Tang1, L. Ren1 and Z. Wang1 1. Hua Zhong University of Science and Technology, Wuhan, China
Session YA

PANEL DISCUSSION: THE FUTURE OF INFORMATION STORAGE AND MEMORY TECHNOLOGIES
(SPECIAL SESSION)
Jingsheng Chen, Chair
National University of Singapore, Singapore

Dr. Ed Gage, Vice President, Seagate Research Group, Minneapolis, MN, United States
Dr. Thao A. Nguyen, Senior Vice President of Head Operation, Western Digital Corporation, San Jose, CA, United States
Dr. Danny Shum, Fellow, Embedded Nonvolatile Memory Technology Development & Research, GLOBALFOUNDRIES, Singapore

This special evening session features three executives from leading hard disk drive and memory companies discussing the state of the art and future directions of data storage and magnetic memory technology. Each will present their vision and roadmap of technology development. What revolutionary approaches will extend the dominance of the hard disk in mass data storage? How and when will magnetic random access memory (MRAM) become competitive? What breakthroughs are still anticipated to keep these technologies growing at historic trends? In particular, there will be description of recent demonstrations of hard disk drives with Heat Assisted Magnetic Recording (HAMR) and Microwave Assisted Magnetic Recording (MAMR). The current status of Spin Transfer Torque (STT) MRAM will also be presented along with discussions on the embedding of MRAM into contemporary CMOS circuits. Following the presentations of the panelists, there will be an extended period for questions from the audience and further discussion.

FRIDAY MORNING

9:00

Session GA

SYMPOSIUM ON THE PRESENT AND FUTURE OF STT-MRAM
Hyunsoo Yang, Chair
National University of Singapore, Singapore

9:00

GA-01. Highly Manufacturable Embedded STT-MRAM Technology, (Invited) K. Nam, Samsung Electronics, Hawsung-City, The Republic of Korea

9:30

10:00


10:30

GA-04. High Performance pMTJ with Ir as RKKY and PMA enhancing Layer. *(Invited)* Y. Hua. Avalanche Technology, Fremont, CA, United States

11:00


11:30


FRIDAY MORNING

9:00

Session GB

NANOSTRUCTURED HARD MAGNETIC MATERIALS

Chih-huang Lai, Chair
National Tsing Hua University, HsinChu, Taiwan

9:00


9:15

GB-02. Ultra thin films of L1_2-MnAl on GaAs (001): tuning the properties of the Mn-Ga-As-Al interphase. C. Navío, M. Villanueva, E. Céspedes, F. Mompean, M. Garcia-Hernández, J. Camarero and A. Bollero. Division of Permanent Magnets and Applications, IMDEA Nanoscience, Madrid, Spain; Instituto de Ciencia de Materiales de Madrid, ICMM-CSIC, Madrid, Spain; Condensed Matter Physics, Universidad Autónoma de Madrid, Madrid, Spain
Mechanochemical synthesis of Dy substituted Nd$_2$(Fe,Co)$_{14}$B magnetic nanoparticles. Y. Zhong$^1$, V. Chaudhary$^2$, H. Parmar$^2$, X. Tan$^1$ and R.V. Ramamujan$^1$. 1. School of Materials Science and Engineering, Nanyang Technological University, Singapore, Singapore; 2. Rolls-Royce@NTU Corporate Lab, Nanyang Technological University, Singapore, Singapore

Large improvement in magnetic properties of hot deformed HREE-free Nd-Fe-B magnets using the rapid heating technique of the powder. Y. Nakazawa$^1$, R. Kato$^1$, Y. Shintani$^1$ and H. Shimizu$^1$. 1. Honda R&D Co., Ltd. Automobile R&D Center, Haga-machi, Haga-gun, Japan

Sustainability In The Production Of Sr-ferrite Magnets: Understanding Microstructure-Magnetic-Correlation Translates To A Successful Recycling Case In Industry. A. Bollero$^1$, J. Rial$^1$, M. Villanueva$^1$, A. Seoane$^2$, J. Almunia$^2$ and R. Altirima$^2$. 1. Permanent Magnets and Applications, IMDEA Nanoscience, Madrid, Spain; 2. Ingeniería Magnética Aplicada, IMA S.L., Barcelona, Spain

Effects of Hot Pressing Temperature on Magnetic Properties of Hot Pressed Nanocrystalline Nd-Fe-B Magnets. Z. Jing$^1$, Z. Guo$^1$, M. Li$^1$, M. Zhu$^1$ and W. Li$^1$. 1. Central Iron & Steel Research Institute, Division of Functional Materials, Beijing, China

The effect of the presence of Ni/Cu coating residues on the recyclability of Sm$_2$Co$_{17}$ magnets. A. Eldosouky$^{1,2}$ and I. Skulj$^1$. 1. Magneti Ljubljana, d.d., Ljubljana, Slovenia; 2. Jožef Stefan International Postgraduate, Ljubljana, Slovenia

Structural Evolution and Magnetic Properties of Bulk MnAl-C Prepared by High Pressure Compaction of Gas-atomized Powders. P. Si$^{1,2}$, H. Qian$^1$, J. Park$^1$, C. Choi$^1$, S. Han$^1$ and H. Ge$^2$. 1. Korea Institute of Materials Science, Changwon, The Republic of Korea; 2. China Jiliang University, Hangzhou, China

Additive Manufactured Magnetic Structures with Locally Varying Magnetization Direction in 3D. C. Huber$^{1,2}$, F. Bruckner$^{1,2}$, C. Abert$^{1,2}$, M. Groenefeld$^3$ and D. Suess$^{1,2}$. 1. Physics of Functional Materials, University of Vienna, Vienna, Austria; 2. Christian Doppler Laboratory for Advanced Magnetic Sensing and Materials, Vienna, Austria; 3. Magnetfabrik Bonn GmbH, Bonn, Germany
GB-10. Magnetic Force Equations based on Computer Simulation and the Effect of Load Line. C. Chen1,3, H. Meng2 and M. Fan1
1. Quadrant at San Jose, San Jose, CA, United States; 2. Quadrant at Hangzhou, Hangzhou, China; 3. Magnet Energy LLC, San Jose, CA, United States

11:30

GB-11. High (BH)\textsubscript{max} (Nd,Dy)-(Fe,Co)-B Hard Magnetic Powders Synthesized by Microwave Processing. X. Tan1, H. Parmar1,2, V. Chaudhary1,2, Y. Zhong1 and R.V. Ramanujan1 1. Materials Science and Engineering, Nanyang Technological University, Singapore, Singapore; 2. Rolls-Royce@NTU Corporate Lab, Nanyang Technological University, Singapore, Singapore

11:45


Friday 165

FRIDAY ORCHID IV

MORNING

9:00

Session GC
MAGNETISATION SWITCHING AND MAGNON-PHOTON COUPLING
Philipp Pirro, Co-Chair
TU Kaiserslautern, Kaiserslautern, Germany
Sebastiaan van Dijken, Co-Chair
Aalto University, Espoo, Finland

9:00

GC-01. Domain Wall Motion Driven by Laplace Pressure in CoFeB-MgO Nanodots with Perpendicular Anisotropy. Y. Zhang1,2, X. Zhang1, N. Vernier2, Z. Zhang1, G. Agnus2, J. Coudevylle2, X. Lin1, Y. Zhang1, Y. Zhang1, W. Zhao1 and D. Ravelosona2 1. Beihang University, Beijing, China; 2. Centre de Nanosciences et de Nanotechnologies, CNRS, University of Paris-Sud, Orsay, France

9:15

GC-02. Oscillatory spin-orbit torque switching due to field-like torques. J. Lee1, J. Kwon1, R. Ramaswamy1, R. Mishra1, S. Srivastava1, K. Cai1 and H. Yang1 1. Department of Electrical Engineering and Computer Engineering, National University of Singapore, Singapore
GC-03. Magnetization damping in spin-orbit coupled magnetic textures. C. A. Akosa¹, Z. Yuan³, A. Takeuchi² and G. Tatara¹
1. RIKEN Center for Emergent Matter Science (CEMS), Wako, Japan; 2. Department of Physics and Mathematics, Aoyama Gakuin University, Sagamihara, Japan; 3. The Center for Advanced Quantum Studies and Department of Physics, Beijing Normal University, Beijing, China

9:45

GC-04. Structural and magnetic study by nonmagnetic (Ti⁺⁺ and Ga⁺⁺) doping at Ru site in SrRuO₃. R. Gupta¹ and A. Pramanik¹ 1. School of Physical Science, Jawaharlal Nehru University, New Delhi, India

10:00

GC-05. Plasmon-Induced Demagnetization and Magnetic Switching in Nickel Nanoparticle Arrays. M. Kataja¹, F. Freire-Fernandez¹, J. Witteveen¹, T. Hakala¹, R. Törnä¹ and S. van Dijken¹ 1. Department of Applied Physics, Aalto University, Espoo, Finland

10:15

GC-06. Scaling of All-Optical Switching to Nanometer Dimensions. A. El-Ghazaly¹, C. Lambert¹, B. Tran², A. Pattabi¹, J. Gorchon¹, S. Salahuddin¹, H. Wong¹ and I. Bokor¹
1. Electrical Engineering and Computer Science, University of California Berkeley, Berkeley, CA, United States; 2. Physics, University of California Berkeley, Berkeley, CA, United States; 3. Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 4. Electrical Engineering, Stanford University, Stanford, CA, United States

10:30

GC-07. Magnons in Photonic Cavities and Resonators. (Invited) B. Rameshti¹, S. Sharma², Y. Blanter² and G. Bauer³,⁴
1. Institute for Research in Fundamental Sciences, Tehran, The Islamic Republic of Iran; 2. Delft University of Technology, Delft, Netherlands; 3. Tohoku University, Sendai, Japan; 4. University of Groningen, Groningen, Netherlands

11:00

GC-08. Cavity Spintronics. (Invited) C. Hu¹ 1. Department of Physics and Astronomy, University of Manitoba, Winnipeg, MB, Canada

11:30

GC-09. Tunable magnon photon coupling using a BLIG ((LuBi)₃Fe₅O₁₂) film and a split ring resonator. M. M¹, S. S², G. Venkat¹, K. Arunachalam² and A. Prabhakar¹ 1. Electrical Engineering, Indian Institute of Technology Madras, Chennai, India; 2. Engineering Design, Indian Institute of Technology Madras, Chennai, India
GC-10. Microwave to optical photon conversion by means of travelling-wave magnons in YIG films. M. Kostylev1 and A. Stashkevich2 1. University of Western Australia, Crawley, WA, Australia; 2. LSPM (CNRS-UPR 3407), Université Paris 13, Villetaneuse, France

Friday Morning

Frida Peony IV

Session GD

Spin-Orbitronics IV

Yi Wang, Chair
National University of Singapore, Singapore

9:00

GD-01. Modulation of spin-orbit torque efficiency in ultrathin ferromagnetic layer with different capping layers. Z.A. Bekele1, K. Meng1, J. Chen1, Y. Wu1, J. Miao1, X. Xu1 and Y. Jiang1 1. School of Materials Science and Engineering, University of Science and Technology Beijing, China

9:15

GD-02. Charge-spin current interconversion in epitaxial systems: symmetric spin-torque ferromagnetic resonance scan but not infinity spin Hall angle. S. Petit-Watelot1, C. Guillemard1, S. Andrieu1 and J. Rojas-Sanchez1 1. Institut Jean Lamour - CNRS - Univ. Lorraine, Nancy, France

9:30

GD-03. Nonvolatile memory devices with magnetic nanowires controlled by spin-transfer and spin-orbit torques. (Invited) S. Fukami1 and H. Ohno1 1. Tohoku University, Sendai, Japan

10:00

GD-04. Magnon transport in multilayer magnetic system. Z. Fu2, S. Ruta1, T. Ostler3, A. Kimel4, R.F. Evans1 and R.W. Chantrell1 1. Physics, University of York, York, United Kingdom; 2. Tongji University, Shanghai, China; 3. Sheffield Hallam University, Sheffield, United Kingdom; 4. Institute for Molecules and Materials, Radboud University Nijmegen, Nijmegen, Netherlands

10:15

GD-05. Enhancement of Gilbert damping in NiFe/Pt bilayers with MgO capping layers. T. Zhu1 and F. Chang1,2 1. State Key Lab for Magnetism, Institute of Physics, Chinese Academy of Sciences, Beijing, China; 2. Institute of high energy physics, Beijing, China
Influence of W insertion layer in Ta and CoFeB on antidamping-like effective torque efficiency. I. Cha¹, Y. Kim¹, G. Kim¹, T. Kim¹, K. Garello² and Y.K. Kim¹
¹. Materials Science and Engineering, Korea University, Seoul, The Republic of Korea; 2. Imec, Leuven, Belgium

Optimize Fe/Pt bilayers as efficient spintronic terahertz emitters by tailoring the thickness of the layers and the interface structural properties. L. Scheuer¹, S. Keller¹, G. Torosyan², M. Battiato³, R. Beigang¹ and E. Papaioannou³
¹. Physics, TU Kaiserslautern, Kaiserslautern, Germany; 2. Photonic Center Kaiserslautern, Kaiserslautern, Germany; 3. School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore, Singapore

Spin Seebeck effect in a polycrystalline bulk-YIG fabricated by the sol-gel synthesis. M. Jang¹ and K. Lee¹
¹. Materials Science and Engineering, Ulsan National Institute of Science and Technology (UNIST), Ulsan, The Republic of Korea

Anomalous Nernst and Hall effects in ferromagnetic multilayers. M. Mizuguchi¹,², H. Suzuki¹, H. Sharma¹,² and K. Takanashi¹
¹. Tohoku University, Sendai, Japan; 2. JST-CREST, Kawaguchi, Japan

Thermal contribution to the spin-orbit torque in metallic/ferrimagnetic systems: the switching temperature. J. Rojas-Sánchez¹, T. Pham¹, S. Je¹,², P. Vallobra¹, T. Fache¹, D. Lacour¹, G. Malinowski¹, M. Cyrille², G. Gaudin², O. Boulle², M. Hehn¹ and S. Mangin¹
¹. Institut Jean Lamour - CNRS - Univ. Lorraine, Nancy, France; 2. CNRS, SPINTEC, Grenoble, France; 3. Leti, technology research institute, CEA, Grenoble, France

Anomalous hall effect in Ultrathin FePt ferromagnetic layer. J. Yu¹,², L. Liu¹, J. Deng¹, H. Yoong¹, W. Lin¹, H. Wang¹, H. Liu², F. Poh², D. Shum² and J. Chen¹
¹. Material Science and Engineering, National University of Singapore, Singapore; 2. GLOBALFOUNDRIES Singapore Pte Ltd., Singapore 738406, Singapore
Session GE
EXCHANGE COUPLING, SUPERCONDUCTIVITY AND ELECTRONIC STRUCTURES II
Xiaoxi Liu, Chair
Shinshu University, Nagano, Japan

9:00
GE-01. Chiral Majorana Fermion Modes in a Quantum Anomalous Hall insulator-Superconductor Structure for Topological Quantum Computing, (Invited) K. Wang1 1. Departments of ECE, Physics and Astronomy, and MSE, University of California, Los Angeles, Los Angeles, CA, United States

GE-02. Superconducting exchange coupling and spin currents between ferromagnets, (Invited) M.G. Blamire1 1. Materials Science, University of Cambridge, Cambridge, United Kingdom

9:30
GE-03. Domain Imaging Across the Magneto-Structural Phase Transition in Fe1+yTe. J. Warmuth1, M. Bremholm1, P. Hofmann2, J. Wiebe1 and R. Wiesendanger1 1. Department of Chemistry, Aarhus University, Aarhus, Denmark; 2. Department of Physics and Astronomy, Interdisciplinary Nanoscience Center (iNANO), Aarhus University, Aarhus, Denmark; 3. Department of Physics, Hamburg University, Hamburg, Germany

GE-04. Coexistence of Ferromagnetism and Superconductivity in Zn-ion implanted and buffer-free InN films. W. Xie1, Q. Xie2, F. Duan1, K. Wang1, H. Tian1 and X. Wu1 1. Physics, Nanjing University, Nanjing, China; 2. Nanjing University of Posts and Telecommunications, Nanjing, China

10:00
GE-05. Diamagnetically diluted iron borate-based single crystals: EMR and SQUID studies. J. Kliava1, P. Rosa2, K. Seleznyova3, M. Strugatsky2 and S. Yagupov3 1. LOMA, UMR 5798, Université de Bordeaux-CNRS, Talence, France; 2. ICMCB, UPR 9048, Université de Bordeaux-CNRS, Pessac, France; 3. V.I. Vernadsky Crimean Federal University, Simferopol, Russian Federation

10:15
GE-06. Theory of Mn-containing high-magnetization permanent magnets, (Invited) A. Kashyap1, D. Sellmyer2 and R. Skomski2 1. School of Basic Sciences, IIT Mandi, Mandi, India; 2. Department of Physics and Astronomy, NCMN, University of Nebraska-Lincoln, Lincoln, NE, United States
GE-07. Origin of perpendicular magnetic anisotropy in Co/Pd multilayers studied by x-ray magnetic circular dichroism and first-principles calculations. J. Okabayashi¹, Y. Miura² and H. Munekata³ 1. The University of Tokyo, Bunkyo-ku, Japan; 2. Kyoto Institute of Technology, Kyoto, Japan; 3. Tokyo Institute of Technology, Yokohama, Japan

GE-08. Perpendicular exchange bias in CoPt/FeMn bilayers. C. Pan¹,², T. Gao³, T. Harumoto², Z. Zhang¹, Y. Nakamura² and J. Shi² 1. School of Materials Science and Engineering, Tsinghua University, Beijing, China; 2. School of Materials and Chemical Technology, Tokyo Institute of Technology, Tokyo, Japan; 3. Department of Applied Physics and Physicoinformat, Keio University, Yokohama, Japan

GE-09. Additively Manufactured Functionally Graded FeNi based High Entropy Magnetic Alloys. V. Chaudhary¹, T. Borkar²,³, C.V. Mikler², B. Gwalani², D. Choudhuri², V. Soni², T. Alami², R.V. Ramanujan¹ and R. Banerjee¹ 1. Nanyang Technological University, Singapore, Singapore; 2. University of North Texas, Denton, TX, United States; 3. Cleveland State University, Cleveland, OH, United States
9:45

GF-03. Reconfigurable Spin Wave Propagation in Pseudo One-Dimensional Magnonic Crystal for High Frequency Nanoscale Devices. C. Banerjee¹, S. Choudhury¹, I. Sinha¹ and A. Barman¹ 1. S. N. Bose National Centre for Basic Sciences, Kolkata, India

10:00

GF-04. Field Controlled Modulation of Magnetization Dynamics and Spin-Wave Mode Conversion in Two-Dimensional Nanoscale Antidot Lattices. A. De¹, S. Mondal¹, S. Sahoo¹, S. Barman², Y. Otani³ and A. Barman¹ 1. S. N. Bose National Centre for Basic Sciences, Kolkata, India; 2. Institute of Engineering and Management, Kolkata, India; 3. The University of Tokyo, Chiba, Japan

10:15

GF-05. Propagating spin waves and reprogrammability in 1D Fibonacci magnonic quasicrystals. F. Lisiecki¹, J. Rychly², P. Kuswik¹,³, H. Glowinski¹, M. Zelent², F. Gross¹, I. Bykova⁴, M. Weigand⁵, G. Schütz⁶, J.W. Klos⁷, M. Krawczyk², F. Stobiecki¹,², J. Dubowik¹ and J. Gräfe⁷ 1. Institute of Molecular Physics Polish Academy of Sciences, Poznan, Poland; 2. Faculty of Physics, Adam Mickiewicz University, Poznan, Poland; 3. Centre for Advanced Technology, Adam Mickiewicz University, Poznan, Poland; 4. Max Planck Institute for Intelligent Systems, Stuttgart, Germany; 5. Institute of Physics, Ernst Moritz Arndt University, Greifswald, Germany; 6. NanoBioMedical Centre, Adam Mickiewicz University, Poznan, Poland

10:30

GF-06. 3D magnonic crystals. E. Beginin¹, A.V. Sadovnikov¹,², A. Sharaevskaia¹,², A. Stognij³ and S. Nikitov¹,² 1. Nonlinear Physics, Saratov State University, Saratov, Russian Federation; 2. Kotel’nikov Institute of Radioengineering and Electronics, Russian Academy of Sciences, Moscow, Russian Federation; 3. Scientific-Practical Materials Research Center, National Academy of Sciences of Belarus, Minsk, Belarus

10:45

GF-07. Magnetization Dynamics of Ni₈₀Fe₂₀ Nanowires with Continuous Width Modulation. L. Xiong¹, M. Kostylev² and A. Adeyeye¹ 1. National University of Singapore, Singapore; 2. University of Western Australia, Crawley, WA, Australia

11:00

GF-08. Efficient Modulation of Spin Wave Dynamics in two-dimensional Quasiperiodic magnonic crystals. S. Choudhury¹, S. Barman², Y. Otani³,⁴ and A. Barman¹ 1. S. N. Bose National Centre for Basic Sciences, Kolkata, India; 2. Institute of Engineering and Management, Kolkata, India; 3. Institute for Solid State Physics, University of Tokyo, Kashiwa, Japan; 4. RIKEN-CEMS, Wako, Japan
GF-09. Low losses YIG based nano-magnonic crystals for tunable frequency filtering. H.P. Merbouche¹, M. Collet¹, L. Soumah¹, S. Xavier², V. Cros¹, P. Bortolotti¹ and A. Anane¹,²,³ ¹. Unité Mixte de Physique CNRS/THALES, Palaiseau, France; ². Thales Research & Technology, Palaiseau, France; ³. Université Paris-Sud, Orsay, France

GF-10. Integrated magnonic networks based on the lateral magnonic stripes and magnonic crystals. A.V. Sadovnikov¹,², Y. Sharaevsky¹, S. Sheshukova¹, E. Beginín¹ and S. Nikitov²,³ ¹. Nonlinear Physics, Saratov State University, Saratov, Russian Federation; ². Kotel’nikov Institute of Radioengineering and Electronics, Russian Academy of Sciences, Moscow, Russian Federation

GF-11. Tunable microwave properties of rhomboid shaped nanomagnet pairs. C. Tian¹ and A. Adeyeye¹ ¹. Electrical and Computer Engineering, National University of Singapore, Singapore

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FRIDAY PEONY III
MORNING 9:00

Session GG
MODELLING OF MACHINES V
Parag Upadhyay, Chair
ABB Inc., Raleigh, NC, United States

9:00
GG-01. High-order methods applied to electrical machine modeling. L. Friedrich¹, M. Curti¹, B. Gysen¹, J. Jansen¹ and E. Lomonova¹ ¹. EPE, TU/e, Eindhoven, Netherlands

9:15
GG-02. Reluctance Network Model of Permanent Magnet Synchronous Motor Considering Magnetic Hysteresis Behavior. Y. Hane¹ and K. Nakamura¹ ¹. Tohoku University, Sendai, Japan

9:30
GG-03. Motor Core Losses Evaluation with PWM and PAM Inverter Excitations in Computational Analysis and Experiments. G. Nguyen¹, S. Odawara², T. Endo¹, C. Taki¹, K. Fujisaki¹, F. Iwamoto¹, T. Yamada¹ and T. Sasaya¹ ¹. Research Center for Smart Vehicles, Toyota Technological Institute, Nagoya, Japan; ². Kitami Institute of Technology, Kitami, Japan; ³. Electromagnetic Energy System Laboratory, Toyota Technological Institute, Nagoya, Japan; ⁴. Advanced Research and Innovation Div. 3, DENSO CORPORATION, Aichi, Japan
GG-04. Unity Power Factor Control Method for Permanent Magnet Synchronous Generator Based on Flux-Weakening Current Injection. Y. Xu1, Z. Zhang1, Y. Jiang1, J. Huang1 and Z. Miao1
1. Nanjing University of Aeronautics and Astronautics, Nanjing, China

10:00

GG-05. Virtual Flux Direct Power and Voltage Balance Control of Dual-Stator Linear and Rotary Permanent Magnet Generator. C. Zhang1, L. Xu1 and X. Hu1 1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China

10:15

GG-06. Computation of Cogging Force of a Linear Tubular Flux switching Permanent Magnet Machine Using a Hybrid Analytical Modeling. D. Lo1, H. Lawali Ali1, Y. Amara1, G. Barakat1 and F. Chabour1 1. GREAH, University of Le Havre, France, Le Havre, France

10:30

GG-07. A fully magnetic multi-scale model dedicated to power grid planning, V. G. Mazauric1,2 and N. Maïzi2 1. Strategy & Technology, Schneider Electric, Grenoble, France; 2. Centre for Applied Mathematics, MINES ParisTech, PSL Research University, Sophia-Antipolis, France

10:45

GG-08. Electromechanical Analysis in Electromagnetic Rail Launcher With Different Cross Section Rails. X. Wan1, J. Lou1, J. Lu3 and D. Liang1 1. School of Electrical Engineering, Xi’an Jiaotong University, Xi’an, China; 2. School of Electrical Engineering, Naval University of Engineering, China, Wuhan, China

11:00

GG-09. Reduced Order Modeling of Axially Laminated Synchronous Reluctance Motors Based on Numerical Field Solutions. D. Lin1, P. Zhou1 and M. Rahman2 1. Ansys Inc., Pittsburgh, PA, United States; 2. Memorial University of Newfoundland, St. John’s, NL, Canada

11:15

GG-10. Development of a New Approach to Core Quality Assessment of Modern Electrical Machines. H. Bahmani1 1. Ulster University, Londonderry, United Kingdom

11:30

Analysis of Temperature Field of High Power Permanent Magnet Driving Motor for Special Vehicle. C. Li\textsuperscript{1} and J. Gao\textsuperscript{1}

\textsuperscript{1} Hunan University, Chang Sha, China

Session GH
HIGH SPEED MACHINES II
Heyun Lin, Co-Chair
Southeast University, Nanjing, China
Vincent Mazauric, Co-Chair
Schneider Electric, Grenoble, France

9:00
GH-01. Exciting Force and Vibration Analysis of Stator Permanent Magnet Synchronous Motor. J. Hong\textsuperscript{1}, S. Wang\textsuperscript{1}, Y. Sun\textsuperscript{1}, J. Li\textsuperscript{1} and H. Cao\textsuperscript{1} I. Tsinghua University, Beijing, China

9:15
GH-02. Loss Calculation and Thermal Analysis of a High Speed Permanent Magnet Synchronous Motor with an Amorphous Metal Stator Core. W. Tong\textsuperscript{1}, R. Sun\textsuperscript{1}, C. Zhang\textsuperscript{1}, S. Wu\textsuperscript{1} and X. Ma\textsuperscript{1} 1. School of Electrical Engineering, Shenyang University of Technology, Shenyang, China

9:30
GH-03. Investigation of Losses for a Concentrated Winding High Speed Permanent Magnet Assisted Synchronous Reluctance Motor for Washing Machine Application. O.F. Payza\textsuperscript{1,2}, Y. Demir\textsuperscript{1,3} and M. Aydin\textsuperscript{1,3} I. Kocaeli University, Kocaeli, Turkey; 2. Arcelik A.S, Istanbul, Turkey; 3. MDS Motor Design Ltd., Kocaeli, Turkey

9:45
GH-04. Design and Analysis of Halbach Array Flywheel Motor/Generators. M. Yin\textsuperscript{1}, K. Liu\textsuperscript{1}, Y. Kong\textsuperscript{1} and M. Lin\textsuperscript{1} 1. Southeast University, Nanjing, China

10:00
GH-05. Eddy-Current Loss Measurement of Permanent Magnet Material at Different Frequency. C. Zhang\textsuperscript{1}, B. Jiang\textsuperscript{1}, R. Chen\textsuperscript{1}, Y. Li\textsuperscript{1} and Q. Yang\textsuperscript{2} I. Hebei University of Technology, Tianjin, China; 2. Tianjin Polytechnic University, Tianjin, China

10:15
GH-06. Reduction of Rotor Losses by Using Amorphous Rotor Core for Ultra-High-Speed Motors. Y. Liu\textsuperscript{1}, J. Ou\textsuperscript{1}, M. Schiefer\textsuperscript{1}, P. Breining\textsuperscript{1} and M. Doppelbauer\textsuperscript{1} I. Karlsruhe Institute of Technology, Karlsruhe, Germany
10:30
GH-07. Design and Optimize an external rotor Ironless BLDCM used in a Flywheel Energy Storage System. K. Liu¹, M. Yin¹, X. Fu¹, M. Lin¹ and Y. Kong¹ ¹ Institute of Electrical Engineering, Southeast University, Nanjing, China

10:45
GH-08. Four Degrees of Freedom Self-decoupling Bearingless Motor for Direct-Driven Flywheel. Y. Yuan¹,², Y. Sun¹,², Z. Zhu², G. Meng², Y. Huang¹ and F. Yang¹ ¹ School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China; ² School of Power Engineering, Nanjing Institute of Technology, Nanjing, China

11:00
GH-09. Comparison of Sleeve Types for Ultra-High-Speed Surface-Mounted PM Motors. Y. Liu¹, J. Ou¹, M. Schiefer¹ and M. Doppelbauer¹ ¹ Karlsruhe Institute of Technology, Karlsruhe, Germany

11:15
GH-10. Simulation and Experimental Research on No-Load Losses of an IPM Motor under the Conditions of both Sinusoidal Supply and Converter Supply. W. Tong¹, Y. Wang¹, R. Sun¹, S. Wu¹ and J. Jia¹ ¹ School of Electrical Engineering, Shenyang University of Technology, Shenyang, China

11:30
GH-11. A Novel Topology of Magnetic Gear. O. Molokanov¹, P. Dergachev¹, S. Osipkin¹, E. Kuznetsova¹ and P. Kurbatov¹ ¹ Moscow Power Engineering Institute, Moscow, Russian Federation

FRIDAY ORCHID II
MORNING
9:00
Session GI
RECORDING SYSTEMS AND HEAD-DISK INTERFACE
Debashish Tripathy, Co-Chair
Western Digital, San Jose, CA, United States
Jun Zhang, Co-Chair
3M Singapore, R&D Center, Singapore, Singapore

9:00
GI-01. Channel modeling and multi-island recording scheme on bit patterned media with long-range island orientation fluctuations. Y. Wang¹,², V. Bhagavatula²,³, Y. Wen¹ and P. Li³ ¹ School of Electronic Information and Electric Engineering, Shanghai Jiao Tong University, SHANGHAI, China; ²,³ Electrical and Computer Engineering Department, Carnegie Mellon University, Pittsburgh, PA, United States; ³ Carnegie Mellon University, Kigali, Rwanda
GI-02. A Bit-Flipping Technique Based on 2D Modulation Constraint in BPMR Systems. W. Busyтратs1, N. Jongswat1, L.M. Myint3 and C. Warisarn2 1. Faculty of Science and Technology, Rajamangala University of Technology Thanyaburi, Thailand; Thanyaburi, Thailand; 2. King Mongkut’s Institute of Technology Ladkrabang (KMITL), Bangkok, Thailand; 3. Shinawatra University, Pathumthani, Thailand

GI-03. Unbalanced Track Pitch Combined with 2D Modulation Code in TDMR Systems. K. Pituso1, C. Warisarn1 and D. Tongsomporn2 1. College of Advanced Manufacturing Innovation (AMI), King Mongkut’s Institute of Technology Ladkrabang, KMITL, Bangkok, Thailand; 2. Seagate Technology (Thailand), Samutprakarn, Thailand

GI-04. Spatially-Coupled Codes for Channels with SNR Variation. H. Esfahanizadeh1, A. Hareddy1, R. Wu1, R. Galbraith2 and L. Dolecek1 1. Department of Electrical and Computer Engineering, University of California, Los Angeles, Los Angeles, CA, United States; 2. Hitachi Global Storage Technologies, a Western Digital Company, Rochester, MN, United States

GI-05. The Effective Fuzzy Logic Equalizer Based Adaptive Nonlinear Equalization for the Nonlinear Perpendicular Magnetic Recording Channels. R. Wongsathan1 and P. Supnithi1 1. Electrical Engineering, King Mongkut’s Institute of Technology Ladkrabang (KMITL), Bangkok, Thailand

GI-06. Flexible Inter-track Interference Cancellation for Generalized Interlaced Magnetic Recording. S. Yoon1 and E. Hwang1 1. School of Mechatronics, Gwangju Institute of Science and Technology, Gwangju, The Republic of Korea


GI-08. Molecularly Structural Change of PFPE Lubricant Accumulated on Pin Surface at Laser Heating. H. Tani1, Y. Shibahara2, R. Lu1, S. Kogamezawa1 and N. Tagawa1 1. Mechanical Engineering Dept., Kansai University, Suita-shi, Japan; 2. Graduate School of Kansai University, Suita-shi, Japan
11:00
GI-09. HAMR Air Bearing, Water Monolayer Vaporization and Diffusion. O.J. Ruiz1 1. Advance Tribology, Western Digital, San Jose, CA, United States

11:15
GI-10. Modified MGL Equation Considering Both Effects of Surface Roughness and Accommodation Coefficient for Ultra-thin Gas Film Lubrication. B. Shi1,2, K. Guo1, Y. Sun1 and Y. Feng1 1. School of Mechanical and Electrical Engineering, Shandong Jianzhu University, Jinan, China; 2. School of Mechanical Engineering, Hebei University of Technology, Tianjin, China

11:30
GI-11. Investigation into slider wear under high temperature. Y. Wang1,2 and X. Wei1 1. University of California, Berkeley, Berkeley, CA, United States; 2. Xi’an Jiaotong University, Xi’an, China; 3. SAE Magnetics (H.K.) Ltd., Dongguan, China

11:45
GI-12. Effect of Pressure and Temperature on Lubricant Transfer from Disk to Slider in Helium-filled Hard Disk Drives. Z. Tang1, D. Zhou1, T. Jia1, C. Zhang2 and B. Shi3 1. School of Mechanical Engineering, Guizhou University, Guiyang, China; 2. School of Mechatronics Engineering, Harbin Institute of Technology, Harbin, China; 3. School of Mechanical and Electrical Engineering, Shandong Jianzhu University, Jinan, China

FRIDAY SIMPOR/ROSELLE BALLROOM
MORNING 8:30

Session GP
ELECTRICAL MACHINES AND CONTROL II
(Poster Session)
Mingyao Lin, Co-Chair
Southeast University, Nanjing, China
Po-Wei Huang, Co-Chair
National Cheng Kung University, Tainan, Taiwan

GP-01. A Torque Compensation Control Scheme of PMSM Considering Wide Variation of Permanent Magnet Temperature. S. Cho1 1. Electric Power Train System R&D Center, Korea Automotive Technology Institute, Cheonan-si, The Republic of Korea


Friday 177
GP-03. Improvement of torque ripple characteristics of double winding PMSM with using twin inverter. S. Noguchi
1. Motor Drive Laboratory, Tokyo City University, Setagaya-ku, Japan

GP-04. Compensation of Imbalanced Current for Dual-Three PM Machine with Asymmetrical Windings by Three-Phase Decomposition. J. Zhang1 and Z. Zong1. NanJing University of Aeronautics And Astronautics Graduate School, Nanjing, China


GP-06. Decoupling Control for Bearingless Synchronous Reluctance Motor Based on Exact Feedback Linearization. X. Diao1 and H. Zhu1. 1. Jiangsu University, Zhenjiang, China


GP-08. Rotor Position Estimation of Permanent Magnet Synchronous Motor Based on Hall-effect sensors. Y. Zhang1,2, S. Chi1,2, X. Li1,2 and H. Yang1,2. 1. Hebei University of Technology, Tianjin, China; 2. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Tianjin, China

GP-09. Dynamic DC link Voltage Control Strategy of Electric Vehicles Considering the Cross Saturation Effect. H. Li1, J. Gao1, S. Huang1 and P. Fan1. 1. Hunan University, Changsha, China


GP-11. Investigations on the Sensorless Position Estimation of an IPMSM with Short-Circuited Rotor windings. C. Hittinger1, D. Thyroff1 and I. Hahn1. 1. Institute of Electrical Drives and Machines, University of Erlangen-Nuremberg, Erlangen, Germany


GP-13. Position Sensorless Control of Switched Reluctance Motors Eliminating Mutual Inductance Effect. H. Wang1, H. Cai1, M. Li1 and S. Shen1. 1. Hunan University, Chang Sha, China
GP-14. Maximum torque per ampere control for hybrid excited switching flux permanent magnet machines. X. Liu¹, D. Xing¹, Q. Wang² and S. Li² 1. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin, China

GP-15. A Flexible Position Sensorless Control of Switched Reluctance Motors Considering Both Embrace Design and Magnetic Saturation. H. Cai¹, H. Wang¹, M. Li³ and S. Shen¹ 1. Hunan University, Chang Sha, China

GP-16. Fault-Tolerant Design and Control of Hybrid Excitation Axial Field Flux-Switching Permanent Magnet Machines. W. Zhang¹ and X. Liang² 1. School of Electrical Engineering, Nantong University, Nantong, China; 2. School of Computer Science and Technology, Nantong University, Nantong, China

FRIDAY SIMPOR/ROSELLE BALLROOM
MORNING 8:30
Session GQ
EMERGING AND INTERDISCIPLINARY APPLICATIONS II
(Poster Session)
Julie Grollier, Chair
Unité Mixte CNRS/Thales, Palaiseau, France


GQ-02. A Multi-Modular Helical Magnetic Millirobot Composed of Soft Modules Capable of Navigating and Anchoring in Curved Tubular Environments. S. Jeon¹, H. Lee¹, S. Lee¹, J. Oh¹ and J. Shin¹ 1. Mechanical and Automotive Engineering, Kongju National University, Cheonan, The Republic of Korea


GQ-04. Experimental Verification of Transcranial Magnetic Stimulation Using Anatomically Accurate Brain Phantom. H. Magsood², F. Syeda¹ and R.L. Hadimani¹ 1. Virginia Commonwealth University, Henrico, VA, United States

Friday 179


GQ-07. Characteristic Analysis of Periodic Electromagnetic Force in Wireless Power Transfer System. X. Ni, X. Zhang, Q. Yang and Y. Li. School of Electrical Engineering and Automation, Tianjin Polytechnic University, Tianjin, China

GQ-08. Stress Induced Domain Wall Motion in Zig-zag shaped Microwires for Energy Harvesting in IOT devices. C. Vaahsan, S. Bhatti, C. Ma, X. Liu and S. Piramanayagam. Division of Physics and Applied Physics, Nanyang Technological University, Singapore, Singapore; 2. Department of Electrical and Computer Engineering, Shinshu University, Nagano, Japan


GQ-10. Characteristics of Impulsive Force on coupler of Wireless Power Transfer. Z. Yuan, X. Zhang, Q. Yang and Y. Li. Tianjin Key Laboratory of Advanced Electrical Engineering and Energy Technology, Tianjin Polytechnic University, Tianjin, China

GQ-11. Nanoscaled magnetic Cu-Co alloys with tuneable properties processed by high-pressure torsion deformation. A. Bachmaier, H. Krenn, P. Knoll and R. Pippan. Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Leoben, Austria; 2. Institute of Physics, University of Graz, Graz, Austria

GQ-12. Preparation and thermoelectric properties of Mn$_2$V(Al$_{1-x}$Si$_x$) full-Heusler compounds. H. Li, K. Hayashi and Y. Miyazaki. Tohoku University, Sendai, Japan

GQ-13. A MLC STT-MRAM based Computing in-Memory Architecture for Binary Neural Network. Y. Pan, P. Ouyang, Y. Zhao, W. Kang, S. Yin, Y. Zhang, W. Zhao and S. Wei. Beihang University, Beijing, China; 2. Tsinghua University, Beijing, China

GQ-14. Dual material ferroelectric gate stack Tunnel FET. M. Zare. Electrical Engineering department, Ferdowsi University of Mashhad, Mashhad, The Islamic Republic of Iran
Session GR

HARD MAGNETIC MATERIALS AND PROCESSING II
(Poster Session)

Damien Le Roy, Chair
Institut Lumière Matière, Villeurbanne, France

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**GR-01.** Anisotropic SmCo$_5$ nanocrystalline magnet prepared by hot deformation with bulk amorphous precursors. J. Liang$^1$, M. Yue$^1$, D. Zhang$^1$, Y. Li$^1$ and H. Li$^1$ 1. Beijing University of Technology, Beijing, China

**GR-02.** Magnetic properties of Co-ferrite/FeCo bilayers. Y. Hara$^2$, S. Shirsath$^1$, D. Wang$^1$, A. Morisako$^2$ and X. Liu$^2$ 1. School of Materials Science and Engineering, University of New South Wales, Sydney, NSW, Australia; 2. Faculty of Engineering, Shinshu University, Nagano, Japan

**GR-03.** High Content Nd-Fe-B in Polymer Composite by Fused Deposition Modeling. T. Chang$^2$, J.K. Jyun$^3$, W. Lee$^1$, M. Tsai$^{1,2}$ and C. Cheng$^2$ 1. Mechanical Engineering Department, National Cheng Kung University, Tainan, Taiwan; 2. Electric Motor Technology Research Center, National Cheng Kung University, Tainan, Taiwan; 3. Department of Electrical Engineering, National Cheng Kung University, Tainan, Taiwan; 4. Department of Mechanical Engineering, National Chiao Tung University, Hsinchu, Taiwan

**GR-04.** Micro-Patterning of NdFeB Hard Magnetic Films for Micro Systems. A. Dias$^1$, G. Shaw$^1$, K. Hasselbach$^1$, M. Bonfim$^2$ and N. Dempsey$^1$ 1. Institut Neel, Grenoble, France; 2. Universidade Federal do Paraná, Curitiba, Brazil

**GR-05.** The magnetic properties of misch-metal partially substituted Nd-Fe-B magnets sintered by dual alloy method. J. Xiong$^1$, R. Shang$^1$, R. Li$^1$, Y. Zhang$^1$, J. Zhang$^1$, H. Zhang$^1$, Y. Liu$^1$, F. Hu$^1$, J. Sun$^1$, T. Zhao$^1$ and B. Shen$^1$ 1. State Key Laboratory of Magnetism, Institute of Physics, Chinese Academy of Sciences, Beijing, China.; 2. Zhejiang University, Hangzhou, China

**GR-06.** Nanocomposite Nd-Y-Fe-B-Mo bulk magnets prepared by injection casting technique. S. Tao$^1$ and M. Yan$^2$ 1. China Jiliang University, Hangzhou, China; 2. Zhejiang University, Hangzhou, China

**GR-07.** Modeling of piezomagnetic effect in magnetostriective-electromagnetic hybrid vibration-powered generator. B. Yan$^1$, J. Hong$^1$ and C. Zhang$^2$ 1. Guangdong University of Technology, Guangzhou, China; 2. Harbin Institute of Technology, Harbin, China

**GR-08.** Novel thermal stability of coercivity in Alnico 8 alloys with thermomagnetic heat-treatment conditions. T.J. Zhao$^1$, L.Y. Sun$^1$, L. Liu$^1$, Z. Liu$^1$, X. Zhang$^1$ and C. Feng$^1$ 1. Ningbo Institute of Industrial Technology, Chinese Academy of Sciences, Ningbo, China
GR-09. Electromagnetic Transient Analysis and Inductance Characterization in Fractional-Slot Concentrated-Wound Interior Permanent Magnet Synchronous Machines under Rotor Demagnetization. A. Pouramin¹, M. Malekpour¹, R. Dutta¹ and F.M. Rahman¹. School of Electrical Engineering and Telecommunications, University of New South Wales, NSW, Australia

GR-10. Effect of Temperature and Pressure on Electrical Resistivity of Permanent Magnet. L. Xiao¹, G. Yu¹, J. Zou¹, Y. Xu¹, H. Lan¹, M. Wang¹ and F. Gao¹. Harbin Institute of Technology, Harbin, China

GR-11. Magnetic field annealing effect and superparamagnetic contributions in one-dimensional CoPt nanostructures. S. Ali¹, W. Li¹, K. Javed¹, M. Irfan¹ and X. Han¹. State Key Lab of Magnetism, Institute of Physics, Beijing, China

GR-12. Simplified Magnetic Circuit for Analyzing Demagnetization of Permanent-magnets in PMSMs. S. Lee¹ and J. Hur¹. Incheon National University, Incheon, The Republic of Korea

GR-13. Polar transformed subdomain modeling for double-stator permanent magnet linear synchronous machine. R. Guo¹, H. Yu¹, T. Xia¹, X. Liu¹ and G. Yang¹. Southeast University, Nanjing, China

GR-14. An Analytical and Numerical Hybrid Model for Static Characteristics of a Radial Linear and Rotary Interior Permanent Magnet Actuator. P. Jin¹, Y. Guo¹ and Y. Zhu¹. School of Energy and Electrical Engineering, Hohai University, Nanjing, China

GR-15. Magnetic characteristics of the ferromagnetic Fe-rich clusters in bulk amorphous Nd₀₉Fe₀₃₉Al₀₁₈ alloy. L. Zhao¹,², H. Yu², W. Li², X. Liao², J. Zhang², X. Zhong², K. Su², Z. Liu² and J. Greneche³. Innovative Center for Advanced Materials (ICAM), Hangzhou Dianzi University, Hangzhou, China; 2. South China University of Technology, Guangzhou, China; 3. Le Mans Université, Institut des Molécules et Matériaux du Mans CNRS UMR-6283, Le Mans, France

FRIDAY SIMPOR/ROSELLE BALLROOM
MORNING
8:30

Session GS
HIGH SPEED MACHINES I
(Poster Session)
Kenji Nakamura, Chair
Tohoku University, Sendai, Japan

GS-01. Comparative study of magnet flux linkage influence on IPM synchronous machine for high-speed properties. W. Wu¹, X. Zhu¹ and S. Zheng¹. Jiangsu University, Zhenjiang, China
GS-02. Improvement of Air Watt in Single-Phase BLDC Motor for 100,000 rpm Applications. H. Hwang1, J. Cho1, Y. Choo2, C. Kim1 and C. Lee1 1. Electrical and Computer Engineering, Pusan National University, Pusan, The Republic of Korea

GS-03. Multi-physics and multi-objective optimization of a high speed PMSM for aircraft electric propulsion. W. Zhao1, X. Wang2, C. Gerada3, H. Zhang1, C. Liu1 and Y. Wang1 1. University of Nottingham Ningbo China, Ningbo, China; 2. Yusheng Group, Ningbo, China; 3. University of Nottingham, Nottingham, United Kingdom

GS-04. Design and Characteristic Analysis of High Speed Permanent Magnet Motor for High-speed and High-head Centrifugal Pump. G. Jung1, S. Seo1, C. Kim1, K. Shin1 and J. Choi1 1. Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea

GS-05. Investigation of Optimal Split Ratio for High-Speed Permanent Magnet Brushless Machines. Y. Wang1, S. Guo2, Y. Li2, Z. Chen2, Y. Wang2 and Z. Zhu1 1. Department of Electronic and Electrical Engineering, University of Sheffield, Sheffield, United Kingdom; 2. CRRC Zhuzhou Institute Co. Ltd, Zhuzhou, China

GS-06. Design and Experimental Validation of High Speed Motor for Electric Turbo Charger Considering the Variation of L/D Ratio. D. Hong1,2 and Y. Jeong1 1. Electric Motor Research Center, Korea Electrotechnology Research Institute, Changwon, The Republic of Korea; 2. Energy and Power Conversion Engineering, National University of Science and Technology, Changwon, The Republic of Korea

GS-07. Trial of Superconducting Magnetic Bearings Applied to High Speed Turbine Rotor. M. Komori1, K. Hara1, K. Asami1 and N. Sakai1 1. Kyushu Institute of Technology, Kitakyushu, Japan

GS-08. Fast Calculation of PM eddy current loss in IPMSM under PWM VSI supply. S. Zhu1, M. Cheng2 and Y. Zhu1 1. Department of Energy and Electrical Engineering, Hohai University, Nanjing, China; 2. Department of Electrical Engineering, Southeast University, Nanjing, China

GS-09. Thermal-Loss Coupled Analysis of an Electrical Machine Using Improved Temperature Dependent Iron Loss Model. S. Xue1, J. Feng2, S. Guo2, Y. Li2, Z. Chen2, J. Peng2 and Z. Zhu1 1. Electric and Electrical Engineering, The University of Sheffield, Sheffield, United Kingdom; 2. CRRC Zhuzhou Institute Co. Ltd, Zhuzhou, China


GS-11. Sensitivity Analysis of Inverse Thermal Modelling to Determine Power Losses in Electrical Machines. D.G. Nair1 and A. Arkkio1 1. School of Electrical Engineering, Aalto University, Espoo, Finland

Friday 183
Analysis on the Number of Axial Segments of Permanent Magnet in SPMSM for Ultra-High-Speed Application.

H. Lee, D. Jung and J. Lee. 1. Electric Automatization, Busan Institute of Science and Technology University, Busan, The Republic of Korea; 2. Electrical Engineering, Hanyang University, Seoul, The Republic of Korea

FRIDAY SIMPOR/ROSELLE BALLROOM
MORNING
8:30

Session GT
HYSTERESIS MODELLING I
(Poster Session)
David Lowther, Chair
McGill University, Montreal, QC, Canada

GT-01. Accurate Prediction of Dynamic Hysteresis Loops Using the Modified Jiles-Atherton Model. Z. Li¹, X. Huang², L. Wu¹, J. Ma¹ and Y. Fang¹. ¹. College of Electrical Engineering, Zhejiang University, Hangzhou, China

GT-02. Hysteresis modeling of soft and hard multilayer magnetic thin film structure by Stoner-Wohlfart model. W. Tipcharoen¹, T. Pipathanapoompron¹, A. Kaewrawang¹ and A. Sriratariwat¹. ¹. Electrical Engineering, Khon Kaen University, Khon Kaen, Thailand

GT-03. Characterization and local phenomenological model of Barkhausen noise under mechanical and magnetic excitations. B. Ducharne¹, B. Gupta¹, Y. Hebrard² and J. Coudert². ¹. INSA LYON, Laboratoire de Génie Electrique et Ferroélectricité, Villeurbanne, France; ². SKF aerospace, Valence, France

GT-04. Hysteresis Nonlinearity Modeling for Magnetics Shape Memory Alloy Actuator Based on a Novel Black-box Model with Least Squares Support Vector Machines. R. Xu¹, M. Zhou¹ and Y. Wang¹. ¹. Department of control science and engineering, Jilin University, ChangChun, China

GT-05. Dynamic magnetic scalar hysteresis lump model, based on Jiles-Atherton quasi-static hysteresis model extended with dynamic fractional derivatives. B. Ducharne¹, B. Zhang², B. Gupta³, G. Sebald³ and T. Uchimoto⁴. ¹. INSA LYON, Laboratoire de Génie Electrique et Ferroélectricité, Villeurbanne, France; ². Shandong university, Weihai, China; ³. ELyTMaX Tohoku University, Sendai, Japan; ⁴. IFS Tohoku University, Sendai, Japan

GT-06. An Improved Centered Cycle Method for Identifying the Preisach Distribution Function. D. Peng¹, W. Sima¹, M. Yang¹, M. Zou¹ and Y. Liu¹. ¹. Chongqing University, Chongqing, China
GT-07. Simplified and algorithmic Preisach modeling for soft and hard magnetic hysteresis using general global basis functions. A. Bhattacharjee, A. Mohanty and A. Chatterjee
1. Computational and Data Sciences, Indian Institute of Science, Bangalore, Bangalore, India; 2. Mechanical Engineering, Indian Institute of Technology Kanpur, Kanpur, India

1. Xi’an Jiaotong University, Xi’an, China; 2. State Grid Shaanxi Electric Power Company Economic Research Institute, Xi’an, China; 3. Hebei University of Technology, Tianjin, China; 4. University of Technology Sydney, Sydney, NSW, Australia

1. School of Electrical Engineering, Shenyang University of Technology, Shenyang, China; 2. School of Science, Shenyang University of Technology, Shenyang, China; 3. College of Electrical and Computer Engineering, Chungbuk National University, Cheongju, The Republic of Korea

GT-10. Study on Calculation Methods of AC Loss for a HTS Magnet with Iron Core. Y. Zhang, L. Ren, S. Yan and Z. Wang
1. Huazhong University of Science and Technology, Wuhan, China

1. Naval University of Engineering, Wuhan, China

1. SATIE, CNRS, ENS Cachan, Cachan, France; 2. CNAM, Paris, France; 3. GREAH, Le Havre, France; 4. Université du Havre, Le Havre, France

1. Electrical Engineering, The hongkong Polytechnic University, Hong Hom, Hong Kong

1. Electrical Engineering, The HongKong Polytechnic University, Hong Hom, Hong Kong

GT-15. Skin Effect and Eddy Current Loss in Electrical Steel Sheets under Applied Excitation Fields. J. Li, Q. Yang, S. Wang and Y. Li
1. State Key Laboratory of Control and Simulation of Power System and Generation Equipments, Tsinghua University, Beijing, China; 2. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin, China; 3. Municipal Key Laboratory of Advanced Technology of Electrical Engineering and Energy, Tianjin Polytechnic University, Tianjin, China

FRIDAY SIMPOR/ROSELLE BALLROOM
MORNING 8:30

Session GU
INDUCTORS
(Poster Session)
Lijian Wu, Chair
Zhejiang University, Zhejiang, China

GU-01. Electromagnetic-Mechanical Analysis of a Balanced Armature Receiver by Considering the Nonlinear Parameters as the Function of Displacement and Current. Y. Jiang1, D. Xu1 and S. Hwang1 1. Mechanical Engineering, Pusan National University, Busan, The Republic of Korea

GU-02. Performance Analysis of Superconducting Coil Impregnated with Epoxy Resin. Z. Chen1, G. Geng1 and J. Fang1 1. Beijing Jiaotong University, School of Electrical Engineering, Beijing, China


GU-04. Inductance analysis for the multi-unit permanent magnet synchronous machine in different operating situations. D. Zeng1, J. Zou1, Y. Xu1 and F. Liu1 1. Harbin Institute of Technology, Harbin, China

GU-05. Characteristics Analysis of Electric Motor using Ring Core Test and its Experimental Verification. D. Kim1, J. Chin1, M. Lim1 and J. Hong1 1. Department of Automotive, Hanyang University, Seoul, The Republic of Korea

GU-06. Improving the transmission efficiency of wireless power transfer systems in electric vehicles by using magnetoplated aluminum pipes. Y. Bu1, S. Endo1 and T. Mizuno1 1. Shinshu University, Nagano, Japan

GU-07. Accurate Calculation of Eddy Current Loss in Litz-Wired High Frequency Transformer Windings. Z. Liu1, L. Zhu1 and J. Zhu2 1. Tianjin Polytechnic University, Tianjin, China; 2. University of Technology Sydney, Sydney, NSW, Australia
GU-08. Applying Response Surface Method to Oil-immersed Transformer Cooling System for Design Optimization. Y. Zhang¹, S. Ho¹ and W. Fu¹ 1. Department of Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong, Hong Kong

GU-09. Improvement of output stability in magnetic resonance wireless power supply using Helmholtz type transmission coil. D. Sayama¹, S. Suzuki², Y. Akimoto¹, Y. Iijima¹, T. Kato¹, M. Ishihara¹ and Y. Kobayashi¹ 1. National Institute of Technology, Oyama College, Oyama, Japan

GU-10. Calculation of Magnetic Inductance of the Spiral Coils Including Ferrite Core for Remote Field Energy Transfer Devices. Y. Jang¹ and G. Park¹ 1. School of Electrical and Computer Engineering, Pusan National University, Busan, The Republic of Korea

GU-11. Magnetostriction impact noise and vibration on power transformer characteristic via PSO method. C. Hsu¹² and Y. Huang² 1. Department of Mechanical Engineering, Oriental Institute of Technology, New Taipei city, Taiwan; 2. Department of Mechanical Engineering, National Central University, Taoyuan, Taiwan

GU-12. Electromagnetic characteristics of basic structure of wireless power transmission coil for electric vehicles. T. Chen¹ and J. Zhao¹² 1. Xuji Power Co. Ltd., Xuchang, China; 2. School of Electronic and Electrical Engineering, Nanyang Institute of Technology, Nanyang, China

GU-13. Design and Analysis of Cubical Compact Coils for Wireless Power Transfer. C. Jiang¹, K. Chau¹, W. Han¹ and W. Liu¹ 1. The University of Hong Kong, Hong Kong

GU-14. Move-and-Charge System for Automatic Guided Vehicles. C. Jiang¹, K. Chau¹, C. Lee², W. Han¹ and W. Liu¹ 1. The University of Hong Kong, Hong Kong; 2. Research Laboratory of Electronics, Massachusetts Institute of Technology, Boston, MA, United States

GU-15. Design and Optimization of Quasi-constant Mutual Inductance for Asymmetric Two-Coil Wireless Power Transfer System With Lateral Misalignments. Z. Li² 1. College of Traffic Engineering, Hunan University of Technology, Zhuzhou, China
Session GV
MODELLING OF MACHINES IV
(Poster Session)
Chao Bi, Co-Chair
University of Shanghai for Science & Technology, Shanghai, China
Jiang Quan, Co-Chair
University of Shanghai for Science & Technology, Shanghai, China

S. Nagata1. Faculty of Engineering, University of Miyazaki, Miyazaki city, Japan

GV-02. Seismic circuit breaker with electromagnetic contactor.  
T. Mifune1 and K. Nishimura1. National Institute of Technology, Suzuka College, Suzuka, Japan

GV-03. Marker-free coil-misalignment detection approach using TMR sensor array for dynamic wireless charging system of electric vehicles. X. Liu1, W. Han1, C. Liu2 and P. Pong1  
1. Department of Electrical and Electronic Engineering, the University of Hong Kong, Hong Kong, China; 2. School of Energy and Environment, City University of Hong Kong, Hong Kong, China

GV-04. Effects of Heat Treatment under Strong Magnetic Field of 1T or Higher on Magnetic Properties of Non-oriented Electrical Steel Sheet. T. Kinoshita1,2, K. Kohara2, H. Shimoji3, T. Sato2 and T. Todaka2  
1. Technology Research Center, Sumitomo Heavy Industries, Ltd., Yokosuka, Japan; 2. Oita university, Oita, Japan; 3. Oita Industrial Research Institute, Oita, Japan

GV-05. Analytical Modeling of Multi-layer Permanent Magnet Eddy Current Brake With Hybrid Secondary. B. Kou1, W. Chen1,2, Y. Jin1 and X. Zhao1  
1. Harbin Institute of Technology, Harbin, China; 2. Harbin University of Science and Technology, Harbin, China

J. Sim1, K. Jung1, D. Kim1 and J. Hong1  
1. Automotive Engineering, Hanyang University, Seoul, The Republic of Korea

1. School of Electrical Engineering, Southeast University, Nanjing, China
GV-08. Investigation of an Axial-Gap Electromagnet-Assisted Ferrite Magnet Motor. K. Motoki1, Y. Kobayashi1, N. Jike1, T. Fukami1, M. Koyama1, T. Morii1, M. Yamada1 and M. Nakano1. 1. Division of Electrical Engineering, Kanazawa Institute of Technology, Nonoichi, Japan; 2. Advanced Technology R&D Center, Mitsubishi Electric Corporation, Amagasaki, Japan; 3. Himeji Works, Mitsubishi Electric Corporation, Himeji, Japan

GV-09. Core loss properties of a permanent magnet synchronous motor with nanocrystalline stator and rotor cores under inverter excitation. A. Yao1, T. Sugimoto1, S. Odawara2 and K. Fujisaki1. 1. Department of Engineering, Toyota Technological Institute, Nagoya, Japan; 2. Department of Electrical and Electronic Engineering, Kitami Institute of Technology, Kitami, Japan

GV-10. An Approach Combining Analytical Calculation and FEA for Evaluation of Rotor Strength of IPM Motors. M. Hsieh1, J. Lai1 and C. Li1. National Cheng Kung University, Tainan, Taiwan

GV-11. 2D Analytical Subdomain Model of Surface-Mounted PM Machines Accounting for Step-skewed Magnets. S. Zhang1 and S. Guo2. 1. Bangor College, Central South University of Forestry and Technology, Changsha, China; 2. State Grid Hunan Electric Power Research Institute, Changsha, China


GV-14. Development of enhanced magnetic equivalent circuit (eMEC) by considering dominant fringing fluxes in semi-high-speed Maglev train. C. Ha1, J. Jeong2 and J. Lim1. 1. Dept. of Magnetic Levitation and Linear Drive, KIMM, Daejeon, The Republic of Korea; 2. Dept. of Electrical Engineering, Chung Nam National University, Daejeon, The Republic of Korea


GV-16. Analytical Model for Axial Flux PM Machines with Halbach Arrays: Taking into Account of Rotor Iron. B. Guo1 and Y. huang1. 1. School of Electrical Engineering, Southeast University, Nanjing, China
ULTRATHIN FILMS AND SURFACE EFFECTS I
(Poster Session)
Sarah Thompson, Co-Chair
University of York, York, United Kingdom
Stephen McVitie, Co-Chair
The University of Glasgow, Glasgow, United Kingdom

GW-01. XMCD study of Ru/Co/W/Ru films with strong Dzyaloshinskii-Moriya interaction. A.S. Samardak1, A. Kolesnikov1, A. Ognev1, M. Platunov2,3 and A. Rogalev2. 1. School of Natural Sciences, Far Eastern Federal University, Vladivostok, Russian Federation; 2. European Synchrotron Radiation Facility (ESRF), Grenoble, France; 3. Kirensky Institute of Physics, Krasnoyarsk, Russian Federation

GW-02. Tunable interfacial Dzyaloshinskii-Moriya interaction in Ta/W/CoFeB/MgO films. T. Kim1, I. Cha1, Y. Kim1, G. Kim1, A. Stashkevich3, Y. Roussigné3, M. Belmeguenai3, S.M. Chéri0, A.S. Samardak2 and Y.K. Kim1. 1. School of Natural Sciences, Far Eastern Federal University, Vladivostok, Russian Federation; 2. School of Natural Sciences, Far Eastern Federal University, Vladivostok, Russian Federation; 3. LSPM (CNRS-UPR 3407), Université Paris 13, Sorbonne Paris Cité, Villeurbanne, France

GW-03. Magnetic proximity effects in Co/Pt/Gd/Pt multilayers. A. Rogalev1, F. Wilhelm1 and N. Jaouen2. 1. ESRF, Grenoble, France; 2. Synchrotron Soleil, Saint Aubin, France

GW-04. XMCD Investigation of CoFeB/MgO Structure. Y. Yan1, X. Lu1, J. Wang1, J. Wu1 and Y. Xu1. 1. University of York, York, United Kingdom

GW-05. Splitting of Ferromagnetic Resonance Spectra in Periodically Modulated 1-D Magnonic Crystal - II. P.N. Sherpa1, S. Khanal1 and L. Spinu1. 1. Physics/Advanced Materials Science Institute, University of New Orleans, New Orleans, LA, United States

GW-07. Lattice distortion and thermal stability of [Fe2CoSi/Pt]n multilayers with high perpendicular magnetic anisotropy. Y. Liu1, Y. Zheng1, L. Ren1, H. Yang2 and K. Teo1 1. Electrical and Computer Engineering, National University of Singapore, Singapore

GW-08. Atomic Layer Deposition of cobalt films. M. Jullien1, C. Chang1, D. Barth1, S. Robert1, L. Badie1, D. Lacour1, C. Guillemard1, S. Petit-Watelot1 and F. Montaigne1 1. Institut Jean Lamour, Université de Lorraine - CNRS, Vandoeuvre les Nancy, France

GW-09. Large Perpendicular Magnetic Anisotropy in Fe-Al/MgAl2O4(001) epitaxial heterostructures. T. Scheike1, H. Sukegawa1, X. Xu1, K. Hono1,2 and S. Mitani1,2 1. National Institute for Materials Science (NIMS), Tsukuba, Japan; 2. University of Tsukuba, Tsukuba, Japan

GW-10. In-depth structural analysis of MgO/Co(bcc) by XPS and XPD. K. Shamout1, P. Roese1, P. Espeter1, U. Berges1 and C. Westphal1 1. Experimentelle Physik I, Technical University Dortmund, Dortmund, Germany

GW-11. Perpendicular magnetic anisotropy in annealing-free La/CoFeB/MgO heterostructures. Y. Iida1,2, J. Okabayashi1, P. Sheng2, M. Hayashi2,3 and S. Mitani1,2 1. Graduate School of Pure and Applied Sciences, University of Tsukuba, Tsukuba, Japan; 2. Research Center for Magnetic and Spintronic Materials (CMSM), National Institute for Materials Science (NIMS), Tsukuba, Japan; 3. Research Center for Spectrochemistry, The University of Tokyo, Bunkyo, Japan; 4. Department of Physics, The University of Tokyo, Bunkyo, Japan

GW-12. Structural and magnetic properties of CoMnO3-(0001) orbital ferrimagnet epitaxial thin films. H. Koizumi1, S. Sharmin1 and H. Yanagihara1 1. University of Tsukuba, Tsukuba, Japan

GW-13. Interlayer exchange coupling of FeCoB/(Ta,Mo)/FeCoB. T.J. McKinnon1, P. Omelchenko1, B. Heinrich1 and E. Girt1 1. Physics, SFU, North Vancouver, BC, Canada


GW-15. Magnetization studies of obliquely sputtered CoFeB for TMR sensors. S. Willing1, K. Schlage1, T. Guryeva1 and R. Roehlsberger1,2 1. Deutsches Elektronen-Synchrotron (DESY), Hamburg, Germany; 2. PIER Helmholtz Graduate School, Hamburg, Germany; 3. Hamburg University, Hamburg, Germany

GW-16. Magneto-optical properties of Pt/TbCo heterostructure films. S. Iemoto1, S. Sumi1, H. Awano1 and M. Hayashi2,3 1. Toyota Technological Institute, Nagoya, Japan; 2. The University of Tokyo, Tokyo, Japan; 3. National Institute for Materials Science (NIMS), Tsukuba, Japan
Session HA
SYMPOSIUM ON ATOMS, MOLECULES AND INTERFACES FOR SPIN QUANTUM ENGINEERING
Ilaria Bergenti, Chair
ISMN-CNR, Bologna, Italy

2:00
HA-01. Interface as key unit in molecular spintronic devices. (Invited) V.A. Dediu1 1. DSCTM, CNR-ISMN, BOLOGNA, Italy

2:30
HA-02. Activating the molecular spininterface. (Invited) M. Cinchetti3
1. Experimentelle Physik VI, Technical University Dortmund, Dortmund, Germany

3:00
HA-03. Under-barrier spin-phonon relaxation in molecular magnets. (Invited) A. Lunghi1, F. Totti2, R. Sessoli2 and S. Stefano1 1. School of Physics and CRANN, Trinity College Dublin, Dublin, Ireland; 2. Dipartimento di Chimica “Ugo Schiff”, Universita` degli Studi di Firenze, Firenze, Italy

3:30
HA-04. Portraying the spin dynamics of molecular nanomagnets by four-dimensional inelastic neutron scattering. (Invited) S. Carretta1 1. University of Parma, Parma, Italy

4:00
HA-05. Operating Quantum States in Single Magnetic Molecules: Implementation of Quantum Gates and Algorithm. (Invited) C. Godfrin1, R. Ballou1, E. Bonet1, S. Klyatskaya1, M. Ruben3, W. Wernsdorfer3,1 and F. Balestro1,2 1. CNRS-UGA-Institut Néel, Grenoble, France; 2. Institut Universitaire de France, Paris, France; 3. Institute of Nanotechnology (INT), Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany

4:30
HA-06. Electron spin resonance of single atoms in scanning tunneling microscopy. (Invited) A.J. Heinrich1, Y. Bae1 and P. Willke1 1. Center for Quantum Nanoscience, Institute for Basic Science, Seoul, The Republic of Korea
Session HB
HARD MAGNETS II
Yanglong Hou, Chair
Peking University, Beijing, China

2:00
HB-01. Microstructure and magnetic properties of anisotropic polycrystalline \( \text{Sm(Fe}_{x}\text{Co}_{1-x})_{12} \) thin films with \( \text{ThMn}_{12} \) structure. D. Ogawa\(^1\), Y. Takahashi\(^1\), S. Hirosawa\(^1\) and K. Hono\(^1\).
\(^1\) Elements Strategy Initiative Center for Magnetic Materials (ESICMM), Tsukuba, Japan; \(^2\) National Institute for Materials Science (NIMS), Tsukuba, Japan

2:15
HB-02. Intrinsic magnetic properties of \( \text{Sm(Fe}_{1-x}\text{Co}_{x})_{11}\text{Ti} \) and \( \text{Zr-substituted Sm}_{1-y}\text{Zr}_{y}(\text{Fe}_{0.8}\text{Co}_{0.2})_{11.5}\text{Ti}_{0.5} \) compounds with \( \text{ThMn}_{12} \) structure toward the development of permanent magnets. P. Tozman\(^1\), H. Sepehri-Amin\(^1\), Y. Takahashi\(^1\), S. Hirosawa\(^1\) and K. Hono\(^1\).
\(^1\) National Institute for Materials Science (NIMS), Tsukuba, Japan

2:30
HB-03. Intrinsic Magnetic Properties of \( \text{SmFe}_{12-x}\text{V}_x \) Alloys with reduced \( V \)-content. A.M. Schönhöbel\(^1\), R. Madugundo\(^1\), J.M. Barandiarán\(^1,3\) and G.C. Hadjipanayis\(^2\).
\(^1\) BCMaterials, Leioa, Spain; \(^2\) Physics and Astronomy, University of Delaware, Newark, DE, United States; \(^3\) Electricity and electronics, University of the Basque country, Leioa, Spain

2:45
HB-04. Solidification behavior and its effect on mechanical properties of \( \text{SmC}_{0.7} \) type sintered magnets. K. Song\(^1\), Y. Fang\(^1\), S. Wang\(^1\), H. Chen\(^1\), N. Yu\(^1\), M. Zhu\(^1\) and W. Li\(^1\).
\(^1\) Division of Functional Materials, Iron & Steel Research Institute, Beijing, China

3:00
HB-05. Microstructure and magnetic properties of casted strips \( [(\text{La}_{0.5}\text{Ce}_{0.5})_{1-x}\text{Nd}_{x}\text{Pr}_{0.5}]_{2.14}\text{Fe}_{14}\text{B} (0.6≤x≤1.0) \). Y. Liu\(^1\), B. Peng\(^1\), J. Jin\(^1\) and M. Yan\(^1\).
\(^1\) Zhejiang University, Hangzhou, China

3:15
HB-06. \( \text{YCo}_{5} \) and \( \text{CeCo}_{5} \) thin films with perpendicular magnetic anisotropy grown by molecular beam epitaxy. S. Sharma\(^1\), E. Hildebrandt\(^1\), M. Major\(^1\), P. Komissinskiy\(^1\), I.A. Radulov\(^1\) and L. Alff\(^1\).
\(^1\) Institute of Materials Science, Technische Universität Darmstadt, Darmstadt, Germany

Friday
193
Confirmation of hard magnetic L1₀ FeNi phase precipitated in FeNiSiBPCu alloy by anomalous X-ray diffraction.

P. Sharma¹, S. Okamoto², H. Tajiri³, Y. Zhang⁴, O. Kitakami⁴ and A. Makino¹  
¹. New Industry Creation Hatchery Center (NIChe), Tohoku University, Sendai, Japan; ². Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Sendai, Japan; ³. Japan Synchrotron Radiation Research Institute (SPring-8), Sayo, Japan; ⁴. Institute for Materials Research, Tohoku University, Sendai, Japan

S. Zhao¹,², Y. Tanaka¹, T. Satoh¹,², K. Kamiya¹,², G.J. Mankey¹,⁴ and T. Suzuki¹,²  
¹. Center for Materials for Information Technology (MINT), University of Alabama, Tuscaloosa, AL, United States; ². Metallurgical and Materials Engineering, University of Alabama, Tuscaloosa, AL, United States; ³. Materials Development Center & IP HQ, TDK Corporation, Ichikawa, Japan; ⁴. Physics and Astronomy, University of Alabama, Tuscaloosa, AL, United States

V. Øygarden¹, J. Rial², A. Bollero² and S. Deledda¹  
¹. Institute for Energy Technology, Kjeller, Norway; ². Division of Permanent Magnets and Applications, IMDEA Nanoscience, Madrid, Spain

Tuning permanent magnet properties in MnAl nanocrystalline powder processed by ultrafast-milling with different milling media.  
J. Rial¹, P. Svec², E. Palmero¹, J. Camarero¹, P. Švec³ and A. Bollero¹  
¹. Division of Permanent Magnets and Applications, IMDEA Nanoscience, Madrid, Spain; ². Institute of Physics, Slovak Academy of Sciences, Bratislava, Slovakia

Spark Plasma Sintered MnGa-alloys for Permanent Magnet Applications.  
S. Perween¹,², B. Gahtori¹,², A. Rathi², R. Singh³, A. Bhattacharya¹, B. Sivaih¹,², P. Rout¹, R. Pant¹, A. Dhari¹,² and G. Basheed¹,²  
¹. CSIR - National Physical Laboratory, Delhi, India; ². CSIR - National Physical Laboratory, Academy of Scientific and Innovative Research, Delhi, India; ³. Department of Physics, Indian Institute of Science Education and Research (IISER, Bhopal, India

Tailoring Magnetic Properties of Al-substituted M-Type Strontium Hexaferrites.  
Y. Dai¹, Z. Lan¹, K. Sun¹, Z. Yu¹, R. Guo³ and X. Jiang¹  
¹. University of Electronic Science and Technology of China, Chengdu, China
Session HC
MAGNETIC TUNNEL JUNCTIONS AND STT-MRAM
Bernard Dieny, Chair
Spintec, Grenoble, France

2:00

HC-01. Resonance Spin Transfer Torque Magnetoresistive Memory. 
(Invited) J. Zhu1 and A. Shadman1. 1. Data Storage Systems Center, Carnegie Mellon University, Pittsburgh, PA, United States

2:30

HC-02. Top-pinned STT-MRAM devices with high thermal stability hybrid free layers for high density memory applications. 
E. Liu1,2, J. Swerts1, A. Vaysset1, Y. Wu1,2, S. Couet1, S. Mertens1, S. Rao1, W. Kim1, S. Van Elshocht1, J. De Boeck1,2 and G.S. Kar1. 1. imec, Leuven, Belgium; 2. Department of Electrical Engineering, KU Leuven, Leuven, Belgium

2:45

HC-03. X nm Magnetic Tunnel Junctions with Perpendicular Anisotropy. 
K. Watanabe1, B. Jinnai2, S. Fukami1,2, H. Sato1,2 and H. Ohno1,2. 1. RIEC, Tohoku University, Sendai, Japan; 2. CSIS, Tohoku University, Sendai, Japan

3:00

HC-04. Etch Process Technology for High Density STT-MRAM. 
(Invited) T. Endoh1,2, S. Kang3, T. Kudo3 and Y. Yagi3. 1. Center for Innovative Integrated Electronic Systems (CIES), Tohoku University, Sendai, Japan; 2. Graduate School of Engineering, Tohoku University, Sendai, Japan; 3. Tokyo Electron Ltd., Yamanashi, Japan

3:30

HC-05. High thermal tolerance synthetic ferrimagnetic reference layer with modified buffer layer by ion irradiation for perpendicular anisotropy magnetic tunnel junctions. 
H. Honjo1,2, S. Ikeda1,2, H. Sato1, K. Nishioka1,2, T. Watanabe1,2, S. Miura1,2, T. Nasuno1,2, Y. Noguchi1,2, H. Inoue1,2, M. Yasuhira1,2, T. Tanigawa1,2, H. Koike1,2, M. Muraguchi1,2, M. Niwa1,2, H. Ohno3,4 and T. Endoh1,4. 1. Center for Innovative Integrated Electronic Systems, Tohoku University, Sendai, Japan; 2. JST-ACCEL, Saitama, Japan; 3. Center for Spintronics Integrated Systems, Tohoku University, Sendai, Japan; 4. Graduate School of Engineering, Tohoku University, Sendai, Japan; 5. RIEC, Tohoku University, Sendai, Japan

3:45

HC-06. Role of Curie temperature on thermal stability limits of perpendicular STT-MRAM. 
L. Tillie1,2, R.C. Sousa1, J. Chatterjee2, N. Larnard2, J. Guelucci2, E. Nowak1, B. Dieny2 and I.L. Prejbeanu1. 1. CEA-Leti, Grenoble, France; 2. CEA-SPINTEC, Grenoble, France
HC-07. Back hopping in spin-transfer-torque devices, possible origin and counter measures. C. Abert1, H. Sephehri-Amin2, F. Bruckner1, C. Vogler1, M. Hayashi2 and D. Sues1 1. Physics of Functional Materials, University of Vienna, Vienna, Austria; 2. National Institute for Materials Science (NIMS), Tsukuba, Japan

HC-08. Spin Transfer Torque efficiency enhancement utilizing precessional spin current (PSC) structure for STT-MRAM application. M. Pinarbaşi1, B. Kardasz1, G. Wolf1, J. Vasquez1, S. Watts1, T. Boone1, J. Hernandez2, K. Bozdog1, D. Guarisco1, M. Schabes1, P. Manandhar1, E. Dobisz1, P. Shrivastava1, Y. Chin1, E. Ryan1 and G. Jagtiani1 1. Spin Transfer Technologies Inc., Fremont, CA, United States


HC-10. Effect of free-layer size on magnetic properties in nanoscale magnetic tunnel junctions. M. Shinozaki1, J. Igarashi1, H. Sato2,3 and H. Ohno1,3 1. Research Institute of Electrical Communication, Tohoku University, Sendai, Japan; 2. Center for Spintronics Research Network, Tohoku University, Sendai, Japan; 3. Center for Spintronics Integrated Systems, Tohoku University, Sendai, Japan

FRIDAY PEONY IV

AFTERNOON

2:00

Session HD

SPIN INJECTION AND TRANSPORT

Cheng Song, Chair
Tsinghua University, Beijing, China

2:00

HD-01. Enhanced spin relaxation and spin-to-charge conversion at the surface of Cu thin film decollated with molecules. S. Takizawa1, K. Kondou2, H. Isshiki1, K. Shimose1, T. Kawabe1, S. Miwa1 and Y. Otani1,2 1. ISSP, The University of Tokyo, Kashiwa, Japan; 2. CEMS, RIKEN, Wako, Japan; 3. Graduate School of Engineering Science, Osaka University, Suita, Japan

2:15

HD-02. TiO2 as diffusion barrier at Co/Alq3 spinterface studied by X-ray standing wave technique. V. Phatak Londhe1, D. Gupta2 and N. Ponpandian1 1. Bharathiar University, Coimbatore, India; 2. Amity Center for Spintronic Materials, Amity University, Noida, India
2:30


3:00

**HD-04. Quenching of Spin-Polarization Switching in Organic Multiferroic Tunnel Junctions by Ferroelectric “Ailing-Channel” in Organic Barrier.** S. Liang  1, X. Devaux  1, A. Ferri  2, R. Desfeux  2, W. Huang  1, X. Li  3, D. Chaudhuri  4, H. Yang  4, M. Chshiev  4, S. Migot  1, S. Mangin  1 and Y. Lu  1  1. Institut Jean Lamour, Nancy, France; 2. Univ. Artois, Lens, France; 3. University of Science and Technology of China, Hefei, China; 4. CEA-SPINTEC, Grenoble, France

3:15

**HD-05. Tuning Spin Injection Efficiency by Molecular Design.** A.D. Wittmann  1, G. Schweicher  1, K. Broch  3, A. Marks  3, C. Jellett  1, I. McCulloch  3, E. McNellis  4, J. Sinova  5, J. Wunderlich  5 and H. Sirringhaus  1  1. Physics, University of Cambridge, Cambridge, United Kingdom; 2. Institut für Angewandte Physik, Universität Tübingen, Tübingen, Germany; 3. Chemistry, Imperial College London, London, United Kingdom; 4. Physics, Johannes Gutenberg University, Mainz, Germany; 5. Hitachi Cambridge Laboratory, Cambridge, United Kingdom

3:30

**HD-06. Large spin-valve effect in Si nano spin-valve devices.** H.D. Duong  1, M. Tanaka  2,3 and N. Pham  1,3  1. Department of Electrical and Electronic Engineering, Tokyo Institute of Technology, Tokyo, Japan; 2. Department of Electrical Engineering and Information Systems, The University of Tokyo, Tokyo, Japan; 3. Center for Spintronics Research Network, Graduate School of Engineering, The University of Tokyo, Tokyo, Japan

3:45

**HD-07. Large local magnetoresistance at room temperature in Si<100> devices.** M. Ishikawa  1,2, M. Tsukahara  1, M. Yamada  1, Y. Saito  2 and K. Hamaya  1,3  1. Graduate School of Engineering Science, Osaka University, Toyonaka, Japan; 2. Corporate Research & Development Center, Toshiba Corporation, Kawasaki, Japan; 3. Center for Spintronics Research Network, Osaka University, Toyonaka, Japan

4:00

**HD-08. Nonlinear spin detection in a biased ferromagnetic tunnel contact.** R. Jansen  1, A. Spiessser  1, H. Saito  1, Y. Fujita  2,3, S. Yamada  2, K. Hamaya  2 and S. Yuasa  1  1. AIST, Tsukuba, Japan; 2. Osaka University, Toyonaka, Japan

Friday 197
HD-09. Observation and quantification of spin drift in non-local devices with a heavily-doped Si channel. A.M. Spiesser¹, H. Saito¹, Y. Fujita², S. Yamada², K. Kamaya², W. Mizuhayashi², K. Endo³, S. Yuasa¹ and R. Jansen¹
1. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan; 2. Department of Systems Innovation, Graduate School of Engineering Science, Osaka University, Osaka, Japan; 3. Center for Spintronics Research Network, Graduate School of Engineering Science, Osaka University, Osaka, Japan; 4. Nanoelectronics Research Institute, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan

HD-10. Intrinsic generation of propagating spin waves by a magnonic “black hole” in a current-driven nano-constricted wire. M. Dvornik¹, R. Khymyn¹, J. Åkerman¹, V.S. Tiberkevich² and A.N. Slavin² 1. Department of Physics, University of Gothenburg, Gothenburg, Sweden; 2. Department of Physics, Oakland University, Rochester, MI, United States; 3. Department of Applied Physics, KTH Royal Institute of Technology, Stockholm, Sweden

HD-11. Electrical spin injection into an AlGaAs/GaAs-based high-mobility two-dimensional electron system. Z. Lin¹, D. Pan², M. Rasly¹ and T. Uemura¹ 1. Graduate School of Information Science and Technology, Hokkaido University, Sapporo, Japan; 2. School of Engineering, Hokkaido University, Sapporo, Japan

FRIDAY ROSELLE II
AFTERNOON
2:00

Session HE
DYNAMICS OF SKYRMIONS
Christian Back, Chair
University of Regensburg, Regensburg, Germany

2:00

HE-01. 140% voltage induced modification of interfacial DMI to tune skyrmionic bubbles in Ta/FeCoB/TaOx trilayers. T. Srivastava¹, M. Schott², M. Belmeguenai¹, Y. Roussigné¹, A. Bernard-Mantel², L. Ranno², V. Krizakova², S. Pizzini², S.M. Chérief³, A. Stashkevich¹, S. Auffret¹, M. Chshiev¹, C. Baraduc¹ and H. Béa¹ 1. Univ. Grenoble Alpes, CEA, CNRS, Grenoble INP, INAC-Spintec 38000, Grenoble, France; 2. Univ. Grenoble Alpes, CNRS, Néel Institute, F-38042, Grenoble, France; 3. Laboratoire des Sciences des Procédés et des Matériaux, Univ. Paris 13 Nord, Villetaneuse, France
2:15
HE-02. Manipulating magnetic skyrmions in ultrathin Pt/Co/MgO₃ nanostructures. R. Juge¹, S. Je¹, D. de Souza Chaves², S. Pizzini³, L.D. Buda-Prejbeanu¹, L. Aballe³, M. Foerster³, A. Locatelli⁴, T.O. Mentes⁵, F. Maccherozzi⁵, S. Dhesi⁶, S. Affret¹, G. Gaudin¹, J. Vogel¹ and O. Boulle¹. 1. CEA-SPINTEC, Grenoble, France; 2. Institut Néel CNRS, Grenoble, France; 3. ALBA Synchrotron Light Facility, Barcelona, Spain; 4. Elettra Sincrotrone, Trieste, Italy; 5. Diamond Light Source Ltd, Didcot, United Kingdom

2:30
HE-03. Dynamics of Skyrmions in Magnetic Multilayers at Room Temperature. (Invited) S. Woo¹. 1. Center for Spintronics, Korea Institute of Science and Technology, Seoul, The Republic of Korea

3:00
HE-04. Hybrid Chiral Skyrmions in Multilayered Magnetic Stacks. W. Legrand¹, J. Chauleau¹,², D. Maccariello¹, N. Reyren¹, S. Collin¹, K. Bouzehouane¹, N. Jaouen², V. Cros¹ and A. Fert¹. 1. Unité Mixte de Physique CNRS/Thales, Univ. Paris Sud, Université Paris-Saclay, Palaiseau, France; 2. Synchrotron SOLEIL, L’Orme des Merisiers, Gif-sur-Yvette, France

3:15
HE-05. Skyrmion and antiskyrmion dynamics in ultrathin ferromagnetic films driven by spin-orbit torques. U. Ritzmann¹,², S. von Malottki³, J. Kim³, J. Sinova³, S. Heinze³ and B. Dupé¹. 1. Institut für Physik, Johannes Gutenberg Universität Mainz, Mainz, Germany; 2. Department for Physics and Astronomy, Uppsala University, Uppsala, Sweden; 3. Institute of Theoretical Physics and Astrophysics, Christian-Albrechts-Universität zu Kiel, Kiel, Germany; 4. Centre de Nanosciences et de Nanotechnologies, CNRS, Université Paris-Sud, Université Paris-Saclay, 91405 Orsay, France

3:30
HE-06. Electrical detection of skyrmions in multilayer nanostructures. (Invited) K. Zeissler¹, K. Shahbazi¹, J. Massey¹,², J. Raabe², M. Rosamond³, E. Linfield³, T.A. Moore¹, G. Burnell¹ and C.H. Marrows¹. 1. School of Physics and Astronomy, University of Leeds, Leeds, United Kingdom; 2. Swiss Light Source, Paul Scherrer Institut, Villigen, Switzerland; 3. School of Electronic and Electrical Engineering, University of Leeds, Leeds, United Kingdom

3:45
HE-07. Dynamics of a magnetic skyrmionium driven by a spin wave. S. Li¹,², J. Xia¹, X. Zhang¹, W. Kang¹, M. Ezawa¹, X. Liu¹, Y. Zhou¹ and W. Zhao¹. 1. Fert Beijing Institute, BDBC, and School of Electronic and Information Engineering, Beihang University, Beijing, China; 2. Shenyuan Honors college, Beihang University, Beijing, China; 3. School of Science and Engineering, The Chinese University of Hong Kong, Shenzhen, China; 4. Department of Applied Physics, University of Tokyo, Tokyo, Japan; 5. Department of Electrical and Computer Engineering, Shinshu University, Nagano, Japan
4:15

HE-08. A theory on skyrmion size and profile. X. Wang1,2, H. Yuan3 and X. Wang2,4. 1. University of Electronic Science and Technology of China, Chengdu, China; 2. Physics, The Hong Kong University of Science and Technology, Hong Kong, Hong Kong; 3. Physics, Southern University of Science and Technology, Shenzhen, China; 4. HKUST Shenzhen Institute, Shenzhen, China

4:30

HE-09. High speed bilayer skyrmion transport by voltage controlled magnetic anisotropy gradient. C.C. Ang1, W. Gan1 and W. Lew1. 1. School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore, Singapore

4:45

HE-10. Magnetic Skyrmion Dynamics in Wedge-shaped Nanotrack and Its Potential Applications. X. Chen1, W. Kang1, D. Zhu1, X. Zhang2, Y. Zhang1, Y. Zhou2 and W. Zhao1. 1. Beihang University, Beijing, China; 2. The Chinese University of Hong Kong, Shenzhen, China

FRIDAY AFTERNOON

2:00

Session HF

ULTRATHIN FILMS AND SURFACE EFFECTS II

Weisheng Zhao, Chair
Beihang University, Beijing, China

2:00

HF-01. Various ways to tune non-collinear magnetism in ultrathin films. (Invited) A. Finco1, P. Hsu1,2, L. Rózsa1,3, A. Kubetzka1, E. Vedmedenko1, K. von Bergmann1 and R. Wiesendanger1. 1. University of Hamburg, Hamburg, Germany; 2. Department of Physics, National Tsing Hua University, Hsinchu, Taiwan; 3. Institute for Solid State Physics and Optics, Wigner Research Centre for Physics, Budapest, Hungary

2:30

HF-02. Electrical field induced directional motion of skyrmionic bubbles in a micro-racetrack. X. Liu1, X. Zhang1,2, C. Ma1, J. Xia2, M. Ezawa3, W. Jiang4, Y. Zhou5, S. Piramanayagam3 and T. Ono6. 1. Department of Electrical and Computer Engineering, Shinshu University, Nagano, Japan; 2. School of Science and Engineering, The Chinese University of Hong Kong, Shenzhen, China; 3. Department of Applied Physics, The University of Tokyo, Tokyo, Japan; 4. Department of Physics, Tsinghua University, Beijing, China; 5. School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore, Singapore; 6. Institute for Chemical Research, Kyoto University, Kyoto, Japan
HF-03. Strong Dzyaloshinskii-Moriya interaction in symmetric crystalline [Co/Pd(111)]$_n$ superlattices. A. Davydenco$^1$, A. Kozlov$^1$, M. Stebly$^1$, A. Ognev$^1$ and L. Chebotkevich$^1$
1. Far Eastern Federal University, Vladivostok, Russian Federation


HF-05. In-situ Annealing Study of Pt/Co Interface and its Effect on Perpendicular Magnetic Anisotropy of Pt/Co/MgO. H. Xie$^1$, Y. Yang$^1$, M. Zhang$^1$ and Y. Wu$^1$ 1. Department of Electrical and Computer Engineering, National University of Singapore, Singapore

HF-06. Exploring interfacial Dzyaloshinskii-Moriya interaction for in-plane thin film permalloy nanostructures using micromagnetic simulations and Lorentz microscopy. K. Fallon$^1$, S. Azzawi$^2$, D. Atkinson$^2$ and S. McVitie$^1$
1. University of Glasgow, Glasgow, United Kingdom; 2. Durham University, Durham, United Kingdom

HF-07. Enhancement of perpendicular magnetic anisotropy in Co/Ni multilayer by inserting MoS$_2$ under layer. Q. Xie$^{1,2}$, B. Yang$^1$, S. Chen$^1$, W. Lin$^1$, L. Liu$^1$, T. Zhou$^1$, X. Han$^3$, J. Chai$^2$ and J. Chen$^2$ 1. Department of Material Science and Engineering, National University of Singapore, Singapore; 2. Institute of Material Research and Engineering, A*STAR, Singapore, Singapore; 3. Beijing National Laboratory for Condensed Matter Physics, Institute of Physics, University of Chinese Academy of Sciences, Beijing, China

HF-08. Voltage tailoring of the magnetic anisotropy of CoFeB with graphene oxide membranes. K. Ning$^{1,3}$, H. Liu$^{1,3}$, X. Liu$^{1,3}$, Y. Li$^{1,3}$, C. Fang$^2$, C. Wan$^2$, Y. Yang$^{1,3}$ and T. Ren$^{1,3}$ 1. Institute of Microelectronics, Tsinghua University, Beijing, China; 2. Beijing National Laboratory of Condensed Matter Physics, Institute of Physics, University of Chinese Academy of Science, Chinese Academy of Sciences, Beijing, China; 3. Tsinghua National Laboratory for Information Science and Technology, Tsinghua University, Beijing, China

HF-09. Control of magnetic anisotropy by lattice distortion in cobalt ferrite thin film. H. Onoda$^1$, H. Sukegawa$^2$, E. Kita$^1$ and H. Yanagihara$^1$ 1. Inst. Appl. Phys, University of Tsukuba, Tsukuba, Japan; 2. National Institute for Materials Science (NIMS), Tsukuba, Japan
HF-10. Torque magnetometry of perpendicular anisotropy exchange-spring heterostructures. P. Vallobra¹, T. Hauët¹, F. Montaigne¹, E. Shipton², E. Fullerton² and S. Mangin¹
1. Institut Jean Lamour, Université de Lorraine, Nancy, France; 2. CMRR, University of California, San Diego, La Jolla, CA, United States

HF-11. Effects of Heavy Metal Microstructure on Spin Transport in the Ultrathin Limit. S.J. Brennan¹, J. Liao¹, T. Vemulkar¹, L. O’Brien² and R. Cowburn¹ 1. University of Cambridge, Cambridge, United Kingdom; 2. University of Liverpool, Liverpool, United Kingdom

2:00
HG-01. Nonlinear Modeling of the Flux Linkage in Two-Dimensional Plane for the Planar Switched Reluctance Motor. G. Cao¹, N. Chen¹, S. Huang¹, S. Xiao¹ and J. He²
1. Shenzhen Key Laboratory of Electromagnetic Control, Shenzhen, China; 2. GE Global Research, Schenectady, NY, United States

2:15

2:30
HG-03. Axial Magnetic Force Analysis of Conical-rotor Permanent Magnet Synchronous Motor. J. Wang¹, S. Huang¹ and C. Guo¹
1. College of Electrical & Information Engineering, Hunan University, Changsha, China
HG-04. Analysis and experimental validation of performance for a switched reluctance motor with pre-fabricated soft magnetic core. V. Krishnan¹, K. Selvam² and K. Radhakrishnan³: ¹. EEE, Avvaiyar college of engineering, Puducherry, India; ². Research and Development, Greenenergy solar solutions, Pondicherry, India; ³. EEE, Sri Venkateswara college of Engineering, Tamilnadu, India

3:00

HG-05. Study on Static Magnetic Characteristics of a Switched Reluctance Motor with 12/10 Poles under Different Operation Modes. Y. Hu¹ and W. Ding¹: ¹. Xi’an Jiaotong University, Xi’an, China

3:15

HG-06. Demagnetization under normal operation in variable flux PM-assisted Synchronous Reluctance Machines. I. Manolas¹, A. Kladas², D. Svechkarenko¹ and R. Chin¹: ¹. Corporate Research Sweden, ABB, Västerås, Sweden; ². School of Electrical and Computer Engineering, National Technical University of Athens, Zografou, Greece

3:30

HG-07. Design Procedure for a 4-pole, External Rotor Synchronous Reluctance Motor (Ex-R SynRM) for the Application Mechanical Constraints. R. Azhagar¹ and A. Kavitha¹: ¹. Electrical and Electronics Engineering, College of Engineering, Anna University, Chennai, India

3:45

HG-08. Design of a High-Effective Fault-Tolerance Double-Stator Magnetless Vernier Machine for Direct-Drive Robotics. J. Yu¹ and C. Liu¹: ¹. School of Energy and Environment, City University of Hong Kong, Hong Kong, China

4:00

HG-09. Analysis of Local Demagnetization in Magnet for PM-Assisted Synchronous Reluctance Motors. H.T. Anh² and M. Hsieh¹: ¹. Department of Electrical Engineering, National Cheng Kung University, Tainan, Taiwan; ². Department of Systems and Naval Mechatronic Engineering, National Cheng Kung University, Tainan, Taiwan

4:15

HG-10. An Integrated Motor-Drive and Battery-charging System Utilizing Doubly Salient Electro-magnet Machine with Split Field Windings. T. Zhang¹, J. Wei¹, P. Liu¹, W. Tao¹ and B. Zhou¹: ¹. Jiangsu Key Laboratory of New Energy Generation and Power Conversion, Nanjing University of Aeronautics and Astronautics, Nanjing, China

4:30

HG-12. Design and Characterization of a single-phase Main Exciter for Aircraft Starter-Generator. J. Li, Z. Zhang, Y. Liu, J. Lu and Z. Chen 1. Nanjing University of Aeronautics and Astronautics, Nanjing, China

FRIDAY PEONY II
AFTERNOON
2:00

Session HH
HYSTERESIS MODELLING II
Kay Hameyer, Chair
RWTH Aachen University, Aachen, Germany

2:00
HH-01. Broadband modeling of magnetic components with saturation and hysteresis for circuit simulations of power converters. B. Wunsch, S. Skibin, T. Christen and V. Forsstrom 1. ABB Corporate Research, Baden, Switzerland; 2. ABB Oy Drives, Helsinki, Finland

2:15
HH-02. Temperature Dependence in the Jiles-Atherton Model for Non-Oriented Electrical Steels: An Engineering Approach. S. Hussain, A. Benabou, S. Clenet and D. Lowther 1. School of Electrical and Electronic Engineering, North China Electric Power University, Beijing, China

2:30
HH-03. A Hybrid Algorithm for Parameter Extraction of Energetic Hysteresis Model. R. Liu and L. Li 1. School of Electrical and Electronic Engineering, North China Electric Power University, Beijing, China

2:45

3:00
HH-05. Prandtl-Ishlinskii Modeling for Giant Magnetostrictive Actuator Based on Internal Time-delay Recurrent Neural Network. Y. Wang, R. Xu and M. Zhou 1. Department of control science and engineering, Jilin University, Changchun, China
HH-06. Vector Hysteresis Modeling of Soft Magnetic Composite by the Improved Preisach Model Considering Anisotropic Characteristic. X. Zhao\textsuperscript{1}, H. Zhang\textsuperscript{1}, L. Li\textsuperscript{1}, F. Xiao\textsuperscript{1}, X. Liu\textsuperscript{1} and Y. Li\textsuperscript{2} 1. North China Electric Power University, Baoding, China; 2. Hebei University of Technology, TianJing, China

HH-07. Modeling the role of magnetic charges on field cooling memory in low anisotropy polycrystalline materials. H. ElBidweihy\textsuperscript{1}, A. Arrott\textsuperscript{2} and V. Provenzano\textsuperscript{3} 1. Department of Electrical and Computer Engineering, United States Naval Academy, Annapolis, MD, United States; 2. Physics Department, Simon Fraser University, Burnaby, BC, Canada; 3. Materials Science and Engineering Division, National Institute of Standards and Technology, Gaithersburg, MD, United States

HH-08. Vector Magnetization By A Distribution Of Easy Axes. A. Jamali\textsuperscript{1}, E. Della Torre\textsuperscript{1} and A. Aslani\textsuperscript{1} 1. Department of Electrical and Computer Engineering, The George Washington University, Falls Church, VA, United States

FRIDAY AFTERNOON

Session HI
TRANSFORMERS AND INDUCTORS: HIGH FREQUENCY EFFECTS
Jianguo Zhu, Chair
University of Technology, Shanghai, China

HI-01. Analysis on variable inductances of planar coils sandwiched by soft magnetic layers. Y. Wen\textsuperscript{1}, P. Li\textsuperscript{1}, F. Song\textsuperscript{1}, S. Yu\textsuperscript{1}, L. Bian\textsuperscript{2} and Y. Wang\textsuperscript{1} 1. Instrument Science and Engineering, Shanghai Jiaotong University, Shanghai, China; 2. Mechanical Engineering, Nanjing Technology University, Nanjing, China

HI-02. Layout Optimization of Indoor Substation Considering Power Transformer Spatial Acoustic Radiation Characteristics. D. Wang\textsuperscript{1}, L. Ying\textsuperscript{1}, W. Wang\textsuperscript{2} and J. Wang\textsuperscript{1} 1. School of Electrical Engineering, Wuhan University, Wuhan, China; 2. Central Southern China Electric Power Design Institute Co., Ltd, Wuhan, China
HI-03. 3D Magnetic Properties Measurement of Silicon Steel under Biased Magnetic Excitation along Laminated Direction. C. Zhang1, B. Jiang1, Y. Li3 and Q. Yang2. 1. Hebei University of Technology, Tianjin, China; 2. Tianjin polytechnic University, Tianjin, China

HI-04. Numerical Modeling of Magnetic Characteristics of Ferrite Core Taking Account of Both Eddy Current and Displacement Current. M.K. Ghosh1, Y. Gao1, H. Dozono1, K. Muramatsu1, W. Guan2, J. Yuan2, C. Tian2 and B. Chen2. 1. Dept. of Electrical & Electronic Engineering, Saga University, SAGACITY, Japan; 2. School of Electrical Engineering, Wuhan University, Wuhan, China

HI-05. Rapid Design of Litz Wire Through Inverse Surrogate Modeling. H. Chen1,2, Y. Du2 and Q. Cheng1. 1. Department of Electrical and Electronic Engineering, Southern University of Science and Technology, Shenzhen, China; 2. Department of Building Service Engineering, The Hong Kong Polytechnic University, Hong Kong, Hong Kong

HI-06. The Effect of Different Core Materials on Transformer Inrush Currents. W. Sima1, Y. Liu1, M. Yang1 and D. Peng1. 1. State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University, Chongqing, China

HI-07. A Novel High-Q-value Inductor with Vacant Space for a High-frequency Non-isolated DC-DC Converter. Y. Konno1, T. Yamamoto1, Y. Chai1, S. Kawahara1, T. Kenta1, Y. Bu1 and T. Mizuno1. I. Department Electric and Electronic Engineering, Shinshu University, Nagano, Japan

HI-08. Vibration and Acoustic Noise Emitted by Three-phase Iron-core Reactors under PWM Voltage Excitation. J. Li1, H. Gao2, S. Wang1, J. Hong1 and M. Liu3. 1. State Key Laboratory of Control and Simulation of Power System and Generation Equipments, Tsinghua University, Beijing, China; 2. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin, China

HI-09. A Novel Structure Design of Iron Core for Power Transformers Considering Joints Forms and Magnetostriction. J. Li1, S. Wang1, H. Gao2, M. Liu3 and J. Hong1. 1. State Key Laboratory of Control and Simulation of Power System and Generation Equipments, Tsinghua University, Beijing, China; 2. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin, China
HI-10. Comprehensive Analysis and Control of Maximum Power and Maximum Efficiency for Multiple-Objective Wireless Charging Systems. Z. Zhang1, R. Tong1, W. Ai1, S. Chang1 and J. Wang1. School of Electrical and Information Engineering, Tianjin University, Tianjin, China

4:30

HI-11. Analysis of High Frequency Effects of Excitation Winding in High Frequency Rotating Tester with Nanocrystalline material. Y. Li1, A. Li1, C. Zhang1 and Q. Yang1. State Key Laboratory of EFEAR, Hebei University of Technology, Tianjin, China

FRIDAY SIMPOR/ROSELLE BALLROOM
AFTERNOON
1:30

Session HP

AB-INTIO CALCULATIONS
(Poster Session)
Arti Kashyap, Co-Chair
IIT Mandi, Mandi, India
Jia Zhang, Co-Chair
Huazhong University of Science and Technology, Wuhan, China

HP-01. Possible Origin of Ferromagnetism in Undoped Magnesium Oxide Film. M. Wang1,2, D. Hou1, S. Tang2, J. Ren3, Y. Li4, T. Zhou2 and Y. Han2. College of Physics and Information Engineering, Hebei Normal University, Shijiazhuang, China; 2. School of Information Science and Engineering, Hebei University of Science and Technology, Shijiazhuang, China; 3. College of Science, Hebei University of Science and Technology, Shijiazhuang, China; 4. School of Materials Science and Engineering, Hebei University of Technology, Tianjin, China; 5. College of Electronic Information and Optical Engineering, Nankai University, Tianjin, China; 6. Department of Construction Engineering, Hebei Vocational College of Politics and Law, Shijiazhuang, China

HP-02. About softening of phonon modes in Heusler alloys. V. Buchelnikov1,2, O. Miroshkina1,2 and A. Zayak3. Condensed Matter Physics, Chelyabinsk State University, Chelyabinsk, Russian Federation; 2. National University of Science and Technology “MIS&S”, Moscow, Russian Federation; 3. Institute of Radioengineering and Electronics of RAS, Moscow, Russian Federation; 4. Department of Physics & Astronomy, Bowling Green State University, Bowling Green, OH, United States

HP-03. Investigation of magnetic and structural properties of FeRh1-xPtx (x = 0.5 - 1) alloys by first principles method. O. Pavlukhina1, V. Sokolovskiy1, V. Buchelnikov1 and M.A. Zagrebin1. Chelyabinsk State University, Chelyabinsk, Russian Federation
HP-04. First-principles study of MnAl/MgO/MnAl magnetic tunnel junctions with perpendicular magnetic anisotropy. X. Zhang1, L. Tao1, J. Zhang2, S. Liang1, L. Jiang1 and X. Han1 1. State Key Lab of Magnetism, Institute of Physics, Beijing, China; 2. Huazhong University of Science and Technology, School of Physics and Wuhan National High Magnetic Field Center, Wuhan, China

HP-05. Numerical Modeling of Iron Loss Considering Laminated Structure and Excess Loss. D. Zhang1, W. Guan1, M. Yang1, Y. Gao2 and K. Muramatsu2 1. School of Electrical Engineering, Wuhan University, Wuhan, China; 2. Department of Electrical and Electronic Engineering, Saga University, Saga, Japan

HP-06. Enhancement of perpendicular magnetic anisotropy in Co/graphene and Co/BN heterostructures by strain. B. Yang1,2, J. Zhang1, L. Jiang2, W. Chen2, P. Tang2, Y. Yan1 and X. Han1 1. Key Laboratory of Physics and Technology for Advanced Batteries (Ministry of Education), Department of Physics, Jilin University, Changchun, China; 2. State Key Lab of Magnetism, Institute of Physics, Beijing, China; 3. Huazhong University of Science and Technology, School of Physics and Wuhan National High Magnetic Field Center, Wuhan, China

HP-07. Silicene spintronics: Fe(111)/silicene system for efficient spin injection. J. Zhou1,2, A. Bournel2, Y. Wang3, X. Lin1, Y. Zhang1 and W. Zhao1 1. Beihang University, Beijing, China; 2. Université Paris-Sud, Orsay, France; 3. The University of Hong Kong, Hong Kong, China

HP-08. First-principles investigation of magnetocrystalline anisotropy oscillation in Co2FeAl/Ta heterostructure. J. Qiao1,2, S. Peng1,2, Y. Zhang1,2, H. Yang1 and W. Zhao1,2 1. School of Electronic and Information Engineering, Beihang University, Beijing, China; 2. Fert Beijing Institute, BDBC, Beihang University, Beijing, China; 3. Key Laboratory of Magnetic Materials and Devices, Ningbo Institute of Material Technology and Engineering, Chinese Academy of Sciences, Ningbo, China

HP-09. Theory of non-collinear interactions beyond Heisenberg exchange; applications to bcc Fe. S. Attila1, D. Thonig1, P.F. Bessarab2, Y. Kvashnin1, D. Rodrigues1, M. Pereiro1, L. Nordstrom1, A. Bergman1, A. Klautau2, O. Eriksson1 and R. Cardias1 1. Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden; 2. Science Institute of the University of Iceland, Reykjavik, Iceland; 3. Faculdade de Física, Universidade Federal do Para, Belem, Brazil

HP-10. Ab initio study of phase stability in Fe-Pd binary alloys. R. Pathak1, O. Golovnya2,3, A. Popov2,3, R. Skomski4 and A. Kashyap1 1. Physics, School of Basic Sciences, Indian Institute of Technology, Mandi, HP, Mandi, India; 2. Ural Federal University, Ekaterinburg, Russian Federation; 3. M.N. Miheev Institute of Metal Physics of Ural Branch of Russian Academy of Sciences, Str. S. Kovalevskoy, Ekaterinburg, Russian Federation; 4. Nebraska Center for Materials and Nanoscience and Department of Physics and Astronomy, University of Nebraska-Lincoln, Lincoln, NE, United States
Session HQ
ANALYSIS AND OPTIMISATION OF ELECTRICAL MACHINES II
(Poster Session)
Georges Barakat, Co-Chair
University of Le Havre, Le Havre, France
Heyun Lin, Co-Chair
Southeast University, Nanjing, China

HQ-01. Analysis and Discussion of the Indirect Testing Method for the Losses of Multi-unit Permanent Magnet Synchronous Machines. D. Zeng1, J. Zou1, Y. Xu1, F. Liu1 and H. Lan1
1. Harbin Institute of Technology, Harbin, China

HQ-02. Investigation of Unbalanced Magnetic Force and Vibration Performance Degeneration Caused by Asymmetric Design in Permanent Magnet Synchronous Machines. H. Lan1, J. Zou1, Y. Xu1 and M. Liu1
1. School of Electrical Engineering and Automation, Harbin Institute of Technology, Harbin, China

HQ-03. Optimal Design of an Ultra-premium Efficiency PMA-Synchronous Reluctance Motor with Winding Method and Slots Size to Considering Nonlinear Slots Saturation and Minimize Torque Pulsations. H. Liu1, S. Oh1, Y. Oh1, J. Lee1 and H. Lee2

HQ-04. A Novel Doubly Salient Flux Modulation PM Machine with Halbach Magnets. K. Xie1, D. Li1, R. Qu1, Y. Gao1 and Y. Pan1
1. Huazhong University of Science & Technology, Wuhan, China

1. School of Electrical Engineering, Shandong University, Jinan, China

HQ-06. Withdrawn

HQ-07. Development of a Slotted Limited-Angle Torque Motor with Asymmetrical Teeth for Torque Performance Improvement. G. Yu1, B. Zheng1, Y. Xu1, J. Zou1, L. Xiao1 and H. Lan1
1. Harbin Institute of Technology, Harbin, China

HQ-08. Design Optimization of Interior Permanent Magnet Synchronous Motor for Electric Compressors of Air-Conditioning Systems Mounted on EVs and HEVs. S. Cho1, J. Choi1, H. Shin2, K. Jung2 and K. Shin1

Friday 209
HQ-09. Comparison of Modular Spoke-type Permanent-Magnet Machines Using Different Magnets for In-Wheel Traction Applications. H. Zhang1 and W. Hua1. School of Electrical Engineering, Southeast University, Nanjing, China

HQ-10. Study on the torque ripple reduction design through varying the air-gap magnetic flux density in the SPM motor. K. Lee1, J. Lee1, R. Kim1, J. Seo1 and S. Rhyu1. Korea Electronics Technology Institute, Gyeonggi-do, The Republic of Korea


HQ-12. Analysis and Optimization of Rotor Deformation in Interior Permanent Magnet Synchronous Motors. Y. Pei1, Y. Li1, F. Chai1 and Y. Yu1. Harbin Institute of Technology, Harbin, China


HQ-14. Optimized design of segmented magnet demagnetization and eddy current loss analysis of fractional pole slot combination IPMSG for ISG. B. Kim1, D. Lee1, J. Lee1, S. Lee1 and D. Kang1. Keimyung University, Daegu, The Republic of Korea


Session HR
ENERGY HARVESTERS AND GENERATORS II
(Poster Session)
Shuangxia Niu, Co-Chair
The Hong Kong Polytechnic University, Hung Hom, Hong Kong
Shuhong Wang, Co-Chair
Xi’an Jiaotong University, Xi’an, China

1. Electrical and Computer Engineering, Pusan National University, Pusan, The Republic of Korea

HR-02. Influence of Additional Loss in the Rotor Surface on Rotor Temperature Field of 1100MW Half-speed Nuclear Power Turbine Generator. L. Hu², Y. Su¹, W. Li¹, Y. Li¹, P. Wang¹ and W. Liu¹
1. Electrical Engineering, Beijing jiaotong University, Beijing, China; 2. Shanghai Electric Power Generation Equipment Co., Ltd., Shanghai, China

HR-03. Research on an Asymmetric-primary Axis-flux Maglev Generator for the Vertical Axis Wind Turbine. J. Liu¹
1. Hohai University, Nanjing, China

HR-04. Modeling and Design of a Efficient Magnetostriective Energy Harvesting System with Low-Voltage and Low-Power under Low Vibration Excitation. S. Cao¹, X. Wang¹ and J. Zheng¹
1. Hebei University of Technology, Tianjin, China

HR-05. Performance Analysis of a Novel Brushless Hybrid Excitation Synchronous Generator. C. Zhu¹, Y. Yang¹, Y. Zhang² and Y. Shen¹
1. School of Electrical Engineering, Shandong University, Jinan, China; 2. Yijun Motor Technology Development Center, Liaochen, China

HR-06. Analysis of the Resonance Characteristics by a Variation of Coil Distance in Magnetic Resonant Wireless Power Transmission. H. Lee¹ and G. Park¹
1. Department of Electrical Engineering, Pusan National University, Busan, The Republic of Korea

HR-07. Optimization of Planar Spiral Coils for Uniform Magnetic Field to Wirelessly Power Moving Targets. Y. Xie¹ and Q. Xu³
1. Key Laboratory of Image Processing and Intelligent Control of Education Ministry, Department of Control Science and Engineering, Huazhong University of Science and Technology, Wuhan, China

HR-08. Demagnetization Characteristics of a Permanent Magnet Embedded Salient Pole Wind Generator. Y. Guo¹, P. Jin¹, H. Yang² and Y. Zhu¹
1. College of Energy and Electrical Engineering, Hohai University, Nanjing, China; 2. School of Electrical Engineering, Southeast University, Nanjing, China
HR-09. Design of a Novel Brushless Electrically-Excited Claw-Pole Generator for Hybrid Electric Vehicles. X. Zhao¹ and S. Niu¹
1. Electrical Engineering, The Hong Kong Polytechnic University, Kowloon, Hong Kong

HR-10. Study of Air-gap Magnetic Field of a Novel Integrated Brushless Excitation Generator. S. Zhu¹ and C. Li¹
1. Nanjing University of Aeronautics and Astronautics, Nanjing, China

HR-11. Performance of Hybrid Excitation Synchronous Machine for Small Hydropower Generation. Y. Xia¹, W. Gu¹, L. Zhou¹,
C. Zhang¹ and Z. Wen¹ 1. School of Information Engineering, Nanchang University, Nanchang, China

HR-12. Research of an Axial Flux Stator Partition Hybrid Excitation Brushless Synchronous Generator. C. Ye¹,²,
Y. Du¹, J. Yang¹, X. Liang¹, F. Xiong¹ and W. Xu¹ 1. School of Electrical and Electronic Engineering, Huazhong University of Science and Technology, Wuhan, China; 2. State Key Laboratory of Advanced Electromagnetic Engineering and Technology, Huazhong University of Science and Technology, Wuhan, China

HR-13. A Novel Interior Permanent Magnet Brushless Doubly-fed Generator with Segmented Reluctance Rotor for Wind Power Application. J. Zhang¹, Y. Jiang¹, J. Zhao¹ and W. Hua¹
1. School of Electrical Engineering, Southeast University, Nanjing, China

HR-14. Electromagnetic energy harvester for harvesting energy from low-frequency vibration. K. Zhang¹, Y. Su¹, J. Ding¹ and
Z. Zhang¹ 1. School of Mechanical Engineering, Zhengzhou University, Zhengzhou, China

HR-15. Parameter Determination of PMSM using Coupled Electromagnetic and Thermal Model Incorporating Current Harmonics. S. Mukundan¹, H. Dhulipati¹, J. Tjong¹ and N. C. Kar¹
1. Electrical & Computer Engineering, University of Windsor, Windsor, ON, Canada

FRIDAY SIMPOR/ROSELLE BALLROOM
AFTERNOON
1:30

Session HS
SHIELDING, ELECTROMAGNETIC COMPATIBILITY, MOTORS AND GENERATORS II (Poster Session)
Jonathan Bird, Chair
Portland State University, Portland, OR, United States

HS-02. Influence of Sleeve Material on Electromagnetic Field Based on Multi-Physical Field for Permanent Magnet Synchronous Motor. W.L. Li¹, L. Li², J. Li³, J. Shen¹, J. Cao¹ and D. Li¹ ¹. School of Electrical Engineering, Beijing Jiaotong University, Beijing, China; 2. School of Electrical Engineering and Automation, Harbin Institute of Technology, Harbin 150001, China, Harbin, China; 3. College of Electrical and Electronic Engineering, Harbin University of Science and Technology, Harbin, China, Harbin, China

HS-03. Design and Analysis of a Linear Interior Permanent Magnet Vernier Machine. C. Shi¹, R. Qu¹, Y. Gao¹, D. Li² and Y. Zhou¹ ¹. School of Electrical and Electronics Engineering, Huazhong University of Science & Technology, Wuhan, China

HS-04. Reduction of magnetically induced vibration and noise in SPM motors due to segmented magnets. J. Song¹, S. Sung¹, H. Jang¹, C. Kang¹ and G. Jung¹ ¹. Dept of Mechanical Convergence Engineering, Hanyang University, Seoul, The Republic of Korea

HS-05. A High Torque Density Concentrated Winding Vernier Reluctance Machine with DC-Biased Current. S. Jia¹,², D. Liang¹,², D. Li², W. Kong² and R. Qu² ¹. School of Electrical Engineering, Xi’an Jiaotong University, Xi’an, China; 2. School of Electrical and Electronic Engineering, Huazhong University of Science and Technology, Wuhan, China; 3. State Key Laboratory of Electrical Insulation and Power Equipment, Xi’an, China


HS-07. Comparative Study of Airgap Field Modulation in Flux Reversal and Vernier Permanent Magnet Machines. H. Li¹, Y. Liu¹ and Z. Zhu¹ ¹. Department of Electrical and Electronic Engineering, The University of Sheffield, Sheffield, United Kingdom

HS-08. Low Cost High Torque Density Dual-Stator Permanent Magnet Vernier Machine. N. Baloch¹, B. Kwon¹ and Y. Gao² ¹. Electronic Systems Engineering, Hanyang University, Ansan, The Republic of Korea; 2. School of Electrical and Electronic Engineering, Huazhong University of Science and Technology, Wuhan, China

HS-09. A Generalized Method of Electromagnetic Vibration Analysis of Amorphous Alloy Permanent Magnet Synchronous Machines. S. Wu¹, W. Tong¹, R. Sun¹ and R. Tang¹ ¹. Shenyang University of Technology, Shenyang, China

HS-10. A Double Stator Flux Reversal PM Machine with Halbach Consequent Pole in Slot Opening. H. Huang¹, D. Li¹, R. Qu¹ and K. Xie¹ ¹. Huazhong University of Science & Technology, Wuhan, China
Analysis on a Novel Flux Adjustable Permanent Magnet Eddy Current Coupler with a Double-layer Permanent Magnet Rotor. M. Tian1, X. Wang1, W. Zhao1, Y. Yang1, J. Diao2 and X. Ma2 1. School of Electrical Engineering, Shandong University, Ji’nan, China; 2. Shandong Jiemeng Energy Conservation and Environmental Protection Technology Co., Ltd, Ji’nan, China

FRIDAY SIMPOR/ROSELLE BALLROOM
AFTERNOON
1:30

Session HT
MICROMAGNETICS II
(Poster Session)
Oksana Chubykalo-Fesenko, Chair
Instituto de Ciencia de Materiales de Madrid, CSIC, Madrid, Spain

HT-01. Peaked linewidth broadening of ferromagnetic resonance induced by Dzyaloshinskii-Moriya interaction. J. Oh1, I. Hong1 and K. Lee1 1. Material Science Department, Korea University, Seoul, The Republic of Korea

HT-02. Spin transport model including thermal effect of GMR based devices. N. Saenphum2, J. Chureemart1, R.W. Chantrell3 and P. Chureemart2 1. Physics, Mahasarakham University, Mahasarakham, Thailand; 2. Physics, Mahasarakham University, Mahasarakham, Thailand; 3. Physics, University of York, York, United Kingdom

HT-03. Electrical Modeling of Double-Barrier Magnetic Tunnel Junction with Reliability Analyses. G. Wang1,2, Y. Zhang1,2, Z. Zhang1,2, Z. Zheng1,2, K. Zhang1,2, Y. Zhang1,2 and W. Zhao1,2 1. Fert Beijing Institut, Beihang University, Beijing, China; 2. Electronics and Information Engineering School, Beihang University, Beijing, China

HT-04. Role of Defect on Stabilizing Skyrmion in Magnetic Nanostructure. A. Talapatra1 and J. Mohanty1 1. Physics, Indian Institute of Technology, Hyderabad, Hyderabad, India

HT-05. Comparison of Computational Speed between Landau-Lifshitz-Gilbert and Hybrid-Monte-Carlo Micromagnetics. J. Song1, Z. Zhao1 and D. Wei1 1. School of Materials Science and Engineering, Tsinghua University, Beijing, China

HT-06. Realistic micromagnetic model in exchange bias: The parametric study including thermal activation as setting process. W. Daeng-am1, P. Chureemart1, L.J. Atkinson2, R.W. Chantrell3 and J. Chureemart1 1. Physics, Mahasarakham University, Kantharawichai, Thailand; 2. Physics, University of York, York, United Kingdom
HT-07. Micromagnetic Studies of Laser-induced Magnetization Dynamics in FePt-C Films. J. Miao1, J. Wang2, R. Mandal1, D. Wei1, Y. Takahashi2 and K. Hono2 1. School of Materials Science and Engineering, Tsinghua University, Beijing, China; 2. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science (NIMS), Tsukuba, Japan

HT-08. Micromagnetic simulation for the effects of Fe nanowires distribution on the magnetic properties of the Nd2Fe14B/α-Fe nanocomposite magnets. W. Li1, L. Zhao1 and Z. Liu1 1. South China University of Technology, Guangzhou, China


HT-10. Voltage induced strain-mediated perpendicular magnetization control for in-memory computing device. Q. Wang1, C. Liang1 and G.P. Carman1 1. Department of Mechanical and Aerospace Engineering, University of California, Los Angeles, Los Angeles, CA, United States

HT-11. Three-dimensional Domain Calculations by Hybrid Monte Carlo Micromagnetics. L. Bao1, M. Dai2, D. Wei2,3 and G. Yun1,3 1. Inner Mongolia Key Lab of Nanoscience and Nanotechnology and School of Physical Science and Technology, Inner Mongolia University, Hohhot, China; 2. Key Laboratory of Advanced Materials, School of Materials Science and Engineering, Tsinghua University, Beijing, China; 3. College of Physics and Electronic Information, Inner Mongolia Normal University, Hohhot, China

HT-12. Design and Optimization of Skyrmion-based Racetrack Memory by Overcoming Clogging and Annihilation of Skyrmion Signals. G. Zhao1 1. Physics, Sichuan Normal University, Chengdu, China
Session HU
PERMANENT MAGNET AND RELUCTANCE MACHINES VI
(Poster Session)

Ming Liu, Chair
Xi’an Jiaotong University, Xian, China

HU-01. 3D Structure Line Start Synchronous Reluctance Motor Design Based on Selective Laser Melting of 3D Printing. P. Huang², M. Tsai¹ and I. Jiang² ¹. Mechanical Engineering Department, National Cheng Kung University, Tainan, Taiwan; ². Electrical Motor Technology Research Center, National Cheng Kung University, Tainan, Taiwan

HU-02. Quantitative Comparison of Interior Permanent Magnet Machines and Vernier Permanent Magnet Machines for Integrated Charging Applications. W. Li², T. Ching¹, Q. Li², X. Zhang¹ and L. Zhang² ¹. University of Macau, Taipa, Macao; ². The University of Hong Kong, Hong Kong; ³. Shenzhen In Drive Amperex Co. Ltd, Shenzhen, China; ⁴. Nanjing University of Science and Technology, Nanjing, China

HU-03. Novel Dual-Stator Permanent-Magnet Vernier Machines with Various Magnet Arrangements for Large Telescope Application. H. Wang¹², S. Fang¹, T. Jahns², H. Yang³, K. Wang¹ and H. Lin¹ ¹. School of Electrical Engineering, Southeast University, Nanjing, China; ². Wisconsin Electric Machines and Power Electronics Consortium (WEMPEC), University of Wisconsin-Madison, Ma, WI, United States

HU-04. A New Double-Winding Vernier Permanent Magnet Wind Power Generator for Hybrid AC/DC Microgrid Application. Q. Wang¹ and S. Niu¹ ¹. Department of Electrical Engineering, The Hong Kong Polytechnic University, Hung Hom, Hong Kong

HU-05. Ring-shaped surface-mounted permanent magnet generators with modular stator for small wind turbines – a comparison of topologies. J.A. Oliveira¹², A.F. Flores Filho³ and D.G. Dorrell³ ¹. Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil; ². Universidade Federal de Mato Grosso, Rondonopolis, Brazil; ³. Howard College Campus, University of KwaZulu-Natal, Durban, South Africa

HU-06. A novel doubly fed wind energy power split system with partial-scale converter and control strategy. X. Liu¹, M. Li¹ and S. Huang¹ ¹. Electrical and Information Engineering College, Hunan University, Changsha, China

HU-07. Partitioned Stator Hybrid Excitation Machine with Separated Field Sources and Armature Winding. Y. Du¹, W. Lu¹, X. Zhu¹, F. Xiao¹ and L. Quan¹ ¹. Jiangsu University, Zhenjiang, China
HU-08. Low-Loss Design and Analysis of Magnetic-Field Modulated Brushless Double-Rotor Machine. J. Bai1, J. Liu1, P. Zheng1 and Y. Liu1 1. Harbin Institute of Technology, Harbin, China

HU-09. Development of a New Stator Module Type Vernier Motor utilizing Amorphous Cut Core. H. Nakagawa1, T. Sato1 and T. Todaka1 1. Oita Univ., Oita, Japan

HU-10. Optimal Arrangement of Permanent Magnets in a Dual-permanent-magnet-excited Synchronous Motor. Y. Chen1 and W. Fu1 1. Department of Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong, Hong Kong

HU-11. Loss and efficiency of a flux-switching permanent-magnet double-rotor machine with high torque density. L. Mo1 1. Huaiyin Institute of Technology, Huaiian, China


HU-13. Investigation of Flux Modulation Effect on Double-Side-Excited Permanent Magnet Vernier Machine with Various Magnet Topologies. M. Jiang1 and X. Zhu1 1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China


HU-15. Hybrid Rectangular Bar Wave Windings to Minimize Winding Losses of Permanent Magnet Machines for EV/HEVs over a Driving Cycle. X. Fan1, D. Li1, R. Qu1, C. Wang1 and J. Li1 1. School of Electricity and Electronic Engineering, Huazhong University of Science and Technology, State Key Laboratory of Advanced Electromagnetic Engineering and Technology, Wuhan, China

HU-16. Reduction of Vibration and Acoustic Noise in Fractional-Slot Concentrated-Windings Permanent-Magnet Machine. S. Zhu1, W. Zhao1, J. Ji1 and J. Zheng1 1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China
Session HV

RECORDING SYSTEMS: CODING AND HEAD-DISK INTERFACE
(Poster Session)
Sergiu Ruta, Chair
University of York, York, United Kingdom

HV-01. SNR Improvement of Envelope Demodulation Using Two Temporal Magnetization Dynamics from Dual Spin-Torque Oscillator. Y. Nakamura¹, M. Nishikawa¹, H. Osawa¹, Y. Okamoto¹, T. Kanao² and R. Sato². 1. Graduate School of Science and Engineering, Ehime University, Matsuyama, Japan; 2. Corporate Research & Development Center, Toshiba Corporation, Kawasaki, Japan

HV-02. Two-dimensional Signal Processing Systems Using CRC-polar Coding and List Decoding for Bit-patterned Magnetic Recording. H. Saito¹. 1. School of Advanced Engineering, Kogakuin University, Tokyo, Japan

HV-03. Performance of Bit-Patterned Media Recording According to Island Patterns. S. Jeong¹, J. Kim¹ and J. Lee¹. Soongsil University, Seoul, The Republic of Korea

HV-04. A Rate-5/6 2D Modulation Code for Single-Reader/Two-Track Reading in BPMR Systems. K. Buahing¹, W. Busyatras² and C. Warisarn¹. 1. College of Advanced Manufacturing Innovation, King Mongkut’s Institute of Technology Ladkrabang, Bangkok, Thailand; 2. Faculty of Science and Technology, Rajamangala University of Technology Thanyaburi, Pathumthani, Thailand

HV-05. Control Scheme for Read/Write Head Positioning in Dual-Stage Magnetic Disk Drive Servo System. B. Shi¹², Y. Meng¹ and C. Jin¹. 1. School of Mechanical and Electrical Engineering, Shandong Jianzhu University, Jinan, China; 2. School of Mechanical Engineering, Hebei University of Technology, Tianjin, China

HV-06. Reduced-complexity window decoding of spatially coupled LDPC codes for magnetic recording systems. S. Khittiwitchayakul¹, W. Phakphisut¹ and P. Supmithi¹. 1. Faculty of Engineering, King Mongkut’s Institute of Technology Ladkrabang, Ladkrabang, Thailand

HV-07. A study on iterative decoding with LIR modulator by parity check information in SMR system. M. Nishikawa¹, Y. Nakamura¹, H. Osawa¹, Y. Okamoto¹, Y. Kana¹² and H. Muraoka³. 1. Ehime University, Matsuyama, Japan; 2. Niigata Institute of Technology, Kashihazaki, Japan; 3. Tohoku University, Sendai, Japan

HV-08. Thermal decomposition of the polymeric lubricant and the viscoelastic effects on the head-disk interface in heat-assisted magnetic recording. P. Chung¹. 1. Energy Engineering, Inje University, Gimhae-si, The Republic of Korea
HV-09. Numerical Study of Particle Rebound on the Slider Air Bearing Surface. F. Cui1, H. Li1, H. Shang1, S. Shen1, S. Wu1 and S. Liu2 1. School of Power and Mechanical Engineering, Wuhan University, Wuhan, China; 2. Department of Mechanical Engineering, Colorado School of Mines, Golden, CO, United States

HV-10. Frequency analysis of disturbance torque exerted on a carriage arm in hard disk drives using Hilbert-Huang Transform. S. Koganezawa1 1. Kansai University, Suita, Japan

HV-11. Dynamic Performance of Head-disk Interface in HAMR Using Molecular Dynamics Simulation Method. T. Shu1, H. Li1, S. Shen1, X. Dai2, W. Shen1 and F. Cui1 1. School of Power and Mechanical Engineering, Wuhan University, Wuhan, China

HV-12. Effect of Assembly Errors on Position Accuracy in a Rotary Magnetic Recording System. H. Hsiao1, L. Chen1, C. Sung1 and J. Chang1 1. Power Mechanical Engineering, National Tsing Hua University, Hsinchu, Taiwan

HV-13. Optimising dual layer recording using antiferromagnetic exchange coupling. S. Greaves1, T. Kikuchi1, Y. Kana2 and H. Muraoka1 1. Tohoku University, Sendai, Japan; 2. Niigata Institute of Technology, Kashiwazaki, Japan

HV-14. A General LDPC code Design Framework for High-density Magnetic Recording with 2D-ISI. L. Kong1 and X. Jiang2 1. Nanjing University of Posts & Telecommunications Nanjing, NANNING, China; 2. Donghua University, Shanghai, China

HV-15. Reduced Complexity Multi-track Joint Equalization and Detection of High Areal Density Magnetic Recording. L.M. Myint1, C. Warisarn2 and P. Supnithi3 1. School of Science and Technology, Shinawatra University, Pathum Thani, Thailand; 2. College of Advanced Manufacturing Innovation, King Mongkut’s Institute of Technology Ladkrabang (KMITL), Bangkok, Thailand; 3. Communications Engineering Department, King Mongkut’s Institute of Technology Ladkrabang (KMITL), Bangkok, Thailand

FRIDAY SIMPOR/ROSELLE BALLROOM

AFTERNOON 1:30

Session HW

MAGNETO-CALORIC MATERIALS II (Poster Session)

Jia Yan Law, Chair

Sevilla University, Sevilla, Spain

HW-01. Effect of Si doped on magnetic and magnetocaloric properties of Ni-Co-Mn-Sn alloys. S. Ghosh1, P. Sen2 and K. Mandal1 1. Condensed Matter Physics and Material Sciences, S.N.Bose National Centre for Basic Sciences, Kolkata, India; 2. Physics Group, Variable Energy Cyclotron Centre, Kolkata, India
HW-02. Magnetocaloric effect, large coercivity and exchange bias in melt-spin rare earth intermetallic compound SmNi.
J. Kurian1, A. Chelvane2, A. Morozkin3, A.K. Nigam4, S.K. Malik2 and N. R1
1. Physics, Indian Institute of Technology Madras, Chennai, India; 2. DMRL, Hyderabad, India;
3. Lomonosov Moscow State University, Moscow, Russian Federation; 4. TIFR, Mumbai, India; 5. UFRN, Natal, Brazil

HW-03. Burst-like superelasticity and elastocaloric effect in Ni-Fe-Ga-Co magnetic shape memory alloys.
J. Liu1 and D. Zhao1
1. Ningbo Institute of Materials Technology and Engineering, Ningbo, China

HW-04. Evaluation of different magnetocaloric heat exchanger stacks in a demonstrator with upcycled Nd-Fe-B permanent
magnets. D. Benke1, J. Wortmann1, M. Specht1, I.A. Radulov1, K. Skokov1, D. Prosperi1, P. Afiuni2, M. Zakotnik2 and
O. Gutfeisch1 1. Funktionale Materialien, TU Darmstadt, Darmstadt, Germany; 2. Urban Mining Company, Austin, TX, United States

HW-05. Design of an Efficient Magnetic Circuit for a Magnetocaloric Air-Conditioning System. C. Jäschke1, P. Schegner1 and
J. Seifert1 1. Technische Universität Dresden, Dresden, Germany

HW-06. Magnetic properties and magnetocaloric effect of Ni3Mn1+Sn1+Sn1+Heusler alloy thin films. H. Yako1, T. Shima1 and M. Doi1
1. Tohoku Gakuin University, Tagajo, Japan

HW-07. Influences of sintering temperature on the microstructure and magnetocaloric effect of Mn1.15Fe0.85P0.65Si0.13Ge0.2B0.02 prepared by spark plasma sintering. Z. Zhao1, T. Jing1, G. Wang2, B. Yang2 and X. Zhang1
1. School of Science, Inner Mongolia University of Science and Technology, Baotou, China; 2. Key Laboratory of Integrated Exploitation of Bayan Obo Multi-Metal Resources, Inner Mongolia University of Science and Technology, Baotou, China

HW-08. Customizing Magnetic and Structural Properties of Nanomaterials. A. Aslani1, M. Ghahremani2, M. Zhang3, L.H. Bennett1 and E. Della Torre1
1. Electrical and Computer Engineering, George Washington University, Washington, DC, United States; 2. Computer Science, Mathematics, and Engineering, Shepherd University, Shepherdstown, WV, United States; 3. Chemistry, George Washington University, Washington, DC, United States

HW-09. Magnetocaloric effect in La0.7Ca0.3MnO3 compounds with different pressure. W. Nan1, D. Pham1, S. Yu1, W. Shon2, J. Rhye3, S. Demyanov4, N. Kalanda5, M. Yarmolich6 and L. Kovalev6
1. Department of Physics, Chungbuk National University, Cheongju, Cheongju, The Republic of Korea; 2. Department of Applied Physics, Kyung Hee University, Yongin, The Republic of Korea; 3. Scientific-Practical Research Centre of NAS of Belarus, Minsk, Belarus
FRIDAY SIMPOR/ROSELLE BALLROOM
AFTERNOON 1:30

Session HX
POWER TRANSFORMERS
(Poster Session)
Kai Wang, Chair
Nanjing University of Aeronautics and Astronautics, Nanjing, China

HX-01. Calculation Method of Transformer Residual Flux by Using Hysteresis Loops of Different Frequencies. W. Yuan1, Y. Shangguan1 and J. Yuan1 1. Dept. of Electrical Engineering, Tsinghua University, Beijing, China


HX-03. An Optimized Strategy Based on backflow power of Dual-active-bridge Converters with Extending Dual-phase-shifting Control. Z. Feng1 and S. Chi1 1. Hebei University of Technology, Tianjin, China

HX-04. Study of Analysis and experiment for Ability to Withstand DC Bias in Power Transformers. D. Chen1, Z. Feng1, B. Bai1 and L. Fang1 1. School of Electrical Engineering, Shenyang University of Technology, Shenyang, China

HX-05. Vibration Research of Magnetically Controlled Saturated Reactors under AC and DC Excitations. Y. Gao2,3, R. Yan2,3, H. Liu2,3 and J. Chen2,3 2. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin, China; 3. Key Laboratory of Electromagnetic Field and Electrical Apparatus Reliability of Hebei Province, Hebei University of Technology, Tianjin, China

HX-06. Research on transformer core vibration Based on Thermal Analogy Method. B. Zhang1, J. Du1 and N. Yan1 1. Shenyang University of Technology, Shenyang, China

HX-07. Performance Optimization of a Novel Saturated Core Fault Current Limiter Considering Eddy current Loss of Permanent Magnet. L. Wei1,2, B. Chen1, Y. Liu1, H. Zhou1, Y. Zhong1, J. Yuan1, K. Muramatsu4 and C. Wang1 1. Wuhan University, Wuhan, China; 2. Department of Electrical Engineering, Kyoto University, Kyoto 606-8501, Japan; 3. Anhui Electric Power Research Institute, Hefei, China; 4. Department of Electrical and Electronic Engineering, Saga University, Saga, Japan
HX-08. Analysis of a Novel Near-Field Plate applied in Wireless Power Transmission System. X. Zhang¹ and Z. Zhang¹
1. Tianjin Normal University, Tianjin, China

HX-09. Research on Hot-spot Temperature of Nanofluid Filled Transformer. X. Yang¹, S. Ho¹, W. Fu¹, G. Xu² and D. Peng²
¹. Department of Electrical Engineering, Applied Electromagnetics Laboratory and Electrical Machine Laboratory, Hung Hom, Hong Kong; ². Hebei University of Technology, Tianjin, China
Belmeguenai, M. (HE-01) 167
Belmeguenai, M. (GW-02) 190
Belmeguenai, M. (HE-01) 125
Belmoubarik, M. (FC-12) 136
Belmoubarik, M. (FC-12) 134
Belo, J. (FD-06) 137
Belotolov, V. (AH-03) 104
Belotolov, V. (EB-10) 109
Belotolov, V. (EV-09) 159
Benabou, A. (AH-03) 204
Bender, S. (FF-07) 141
Benistant, F. (AI-07) 47
Benistant, F. (BH-06) 47
Benko, D. (DA-02) 92
Bennett, L.H. (DA-02) 92
Bennett, L.H. (HW-08) 220
Berganza, E. (BF-08) 42
Berganza, E. (BE-07) 115
Berges, U. (GW-10) 191
Bergman, A. (HP-09) 208
Berko, D. (EV-05) 127
Bernand-Mantel, A. (HE-01) 198
Bertos, R. (BE-01) 107
Bertos, R. (BD-10) 104
Bertos, R. (BE-10) 104
Berto, D. (AD-05) 7
Bernard-Mantel, A. (HE-01) 198
Bertacce, R. (BC-07) 37
Bertacce, R. (BE-09) 41
Bertacce, R. (BC-09) 41
Bertasch, P.F. (HP-09) 208
Bessaou, O. (BV-04) 60
Betto, D. (AD-05) 7
Betof, D. (FC-10) 135
Bhagavatula, V. (GI-01) 175
Bhatia, C.S. (AF-07) 11
Bhattacharjee, A. (BF-08) 42
Bhattacharya, A. (GI-01) 175
Bhattacharya, A. (BH-11) 194
Bhatt, S. (AA-02) 29
Bhattacharya, A. (GT-07) 185
Bhat, S. (GQ-08) 180
Bhos, A. (AQ-07) 20
Bhownick, D. (GD-02) 95
Bian, L. (HI-01) 15
Bhattacharjya, A. (HE-01) 198
Bhadra, M. (AI-01) 15
Bihlar, M. (FA-14) 131
Bimbin, Z. (ER-15) 121
Bircakova, Z. (CB-03) 64
Bird, I.J. (FG-04) 143
Bird, I.J. (FG-06) 143
Biro, O. (CE-01) 108
Biro, O. (FU-10) 157
Biljany, M. (AF-01) 15
Bisht, Y. (AG-04) 131
Blaier, Z. (ER-15) 121
Blicke, M. (GF-07) 143
Bloch, B. (HC-08) 114
Blanc, O. (HE-02) 199
Blanco-Lopez, M.C. (AP-01) 17
Blanter, Y. (GC-07) 166
Bloss, M. (BD-03) 14
Brock, C. (BF-08) 42
Biotic, A. (AC-06) 5
Blab, M. (DF-04) 98
Blair, G. (BC-01) 36
Blamire, M.G. (GE-02) 169
Blanchard, N. (FQ-11) 150
Blanco, A. (AD-05) 7
Blanc, O. (AH-03) 14
Bocklage, L. (AH-01) 198
Bocklage, L. (AH-01) 198
Bollard, J.C. (CP-14) 78
Bollaro, A. (GB-02) 163
Bollaro, A. (GB-05) 164
Bollaro, A. (HB-09) 194
Bollaro, A. (HH-10) 194
Bommadavara, V.R. (CV-13) 41
Bommadavara, V.R. (CU-13) 87
Bonet, E. (HA-05) 192
Bonfim, M. (GR-04) 181
Bonnilla, F.B. (AC-06) 5
Boone, T. (HC-08) 196
Borovkov, A. (KD-05) 7
Borkar, T. (GE-09) 170
Borri, J. (BE-07) 190
Bortolotti, P. (AI-09) 16
Bortolotti, P. (BD-06) 39
Bortolotti, P. (BV-04) 60
Bortolotti, P. (GF-09) 172
Borza, F. (DB-08) 94
Bosu, S. (SE-07) 110
Böttiger, R. (AE-02) 8
Böttiger, R. (FE-10) 140
Bouille, O. (GD-10) 168
Bouille, O. (HE-02) 199
Boulouassa, H. (CF-08) 72
Bourrel, A. (HP-07) 208
Bouzouhoua, K. (CA-01) 62
Bouzouhoua, K. (CA-01) 8
Bouzouhoua, K. (HE-04) 108
Bouzouhoua, K. (HE-04) 108
Boving, J. (HC-08) 47
Bovzuk, D.A. (FF-04) 141
Bovzuk, D.A. (FF-05) 141
Brücher, T. (FF-04) 141
Brücher, T. (FF-11) 142
Brücher, T. (VV-07) 158
Bräcker, M. (NH-02) 144
Brant, C. (BF-07) 14
Brant, C. (BF-08) 42
Bratasa, A. (FF-07) 141
Bravendiek, G. (EE-02) 109
Breese, M.B. (CR-07) 8
Breining, P. (GH-06) 174
Brenholm, M. (GE-03) 169
Bremer, S.J. (HF-11) 122
Broch, K. (HD-05) 197
Bromley, D. (DB-03) 93
Brückel, T. (AF-05) 10
Brückel, T. (DD-06) 94
Brueckner, F. (BH-01) 46
Brueckner, F. (GB-09) 164
Brueckner, F. (HC-07) 196
Brum, M. (HC-47) 47
Brun, H. (DB-02) 93
Bu, R. (EW-15) 131
Bu, Y. (FP-07) 148
Bu, Y. (GU-06) 186
Bu, Y. (HI-07) 206
Bushee, K. (HV-04) 218
Buchelikov, V. (GB-08) 47
Buchelikov, V. (HP-03) 207
Buda-Pejbeiana, L.D. (HE-02) 199
Buettner, F. (BA-06) 33
Buhmman, R. (GA-05) 163
Bujoreanu, L. (DB-08) 94
Bukhari, S. (GP-10) 178
Bukhari, S. (GP-10) 178
Bujoreanu, L. (DB-08) 94
Bukhari, S. (GP-10) 178
Bukhari, S. (GP-10) 178
Bukhari, S. (GP-10) 178
Bukhari, S. (GP-10) 178
Bukhari, S. (GP-10) 178
Bukhari, S. (GP-10) 178
Bukhari, S. (GP-10) 178
Bukhari, S. (GP-10) 178
Bukhari, S. (GP-10) 178
<table>
<thead>
<tr>
<th>Author</th>
<th>Code</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Castro, N.</td>
<td>DA-03</td>
<td>92</td>
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<td>Cagnon, L.</td>
<td>CD-06</td>
<td>68</td>
</tr>
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<td>Cai, C.</td>
<td>CG-10</td>
<td>74</td>
</tr>
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<td>Cai, H.</td>
<td>GP-13</td>
<td>178</td>
</tr>
<tr>
<td>Cai, H.</td>
<td>GP-15</td>
<td>179</td>
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<td>Callegari, L.B.</td>
<td>BC-09</td>
<td>37</td>
</tr>
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<td>Calvayrac, F.</td>
<td>CS-02</td>
<td>83</td>
</tr>
<tr>
<td>Camarero, J.</td>
<td>JB-02</td>
<td>163</td>
</tr>
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<td>Camarero, J.</td>
<td>HB-10</td>
<td>194</td>
</tr>
<tr>
<td>Cansever, H.</td>
<td>CF-09</td>
<td>72</td>
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<td>124</td>
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<td>BG-11</td>
<td>44</td>
</tr>
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<td>HG-01</td>
<td>202</td>
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<td>174</td>
</tr>
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<td>BV-09</td>
<td>61</td>
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<td>CQ-02</td>
<td>78</td>
</tr>
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<td>Cao, J.</td>
<td>HS-02</td>
<td>213</td>
</tr>
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<td>Cao, K.</td>
<td>FC-11</td>
<td>135</td>
</tr>
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<td>Cao, S.</td>
<td>EG-03</td>
<td>111</td>
</tr>
<tr>
<td>Cao, S.</td>
<td>FS-01</td>
<td>152</td>
</tr>
<tr>
<td>Cao, S.</td>
<td>FS-03</td>
<td>152</td>
</tr>
<tr>
<td>Cao, S.</td>
<td>HR-04</td>
<td>211</td>
</tr>
<tr>
<td>Cao, S.</td>
<td>HS-01</td>
<td>158</td>
</tr>
<tr>
<td>Cao, Y.</td>
<td>BP-04</td>
<td>48</td>
</tr>
<tr>
<td>Cao, Y.</td>
<td>EV-01</td>
<td>127</td>
</tr>
<tr>
<td>Cao, Y.</td>
<td>FD-12</td>
<td>138</td>
</tr>
<tr>
<td>Cao, Y.</td>
<td>FV-14</td>
<td>159</td>
</tr>
<tr>
<td>Cao, Z.</td>
<td>EW-13</td>
<td>130</td>
</tr>
<tr>
<td>Captopi, P.</td>
<td>AS-14</td>
<td>25</td>
</tr>
<tr>
<td>Cardalis, R.</td>
<td>HP-09</td>
<td>208</td>
</tr>
<tr>
<td>Cardoso de Freitas, S. (BC-01)</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>Cardoso de Freitas, S. (BC-08)</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>Cardoso de Freitas, S. (BH-01)</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>Cardoso de Freitas, S. (CV-07)</td>
<td>88</td>
<td></td>
</tr>
<tr>
<td>Cardoso de Freitas, S. (DA-04)</td>
<td>92</td>
<td></td>
</tr>
<tr>
<td>Carman, G.P.</td>
<td>CE-08</td>
<td>70</td>
</tr>
<tr>
<td>Carman, G.P.</td>
<td>ED-01</td>
<td>107</td>
</tr>
<tr>
<td>Carman, G.P.</td>
<td>HIT-10</td>
<td>215</td>
</tr>
<tr>
<td>Carpentieri, M.</td>
<td>CE-09</td>
<td>79</td>
</tr>
<tr>
<td>Carpentieri, M.</td>
<td>CQ-05</td>
<td>79</td>
</tr>
<tr>
<td>Carpentieri, M.</td>
<td>DE-06</td>
<td>97</td>
</tr>
<tr>
<td>Carretta, S.</td>
<td>HA-04</td>
<td>192</td>
</tr>
<tr>
<td>Casareso, L.</td>
<td>DA-04</td>
<td>92</td>
</tr>
<tr>
<td>Casasone, M.</td>
<td>AC-06</td>
<td>5</td>
</tr>
<tr>
<td>Casoli, F.</td>
<td>EB-05</td>
<td>103</td>
</tr>
<tr>
<td>Castro, N.</td>
<td>DA-03</td>
<td>92</td>
</tr>
</tbody>
</table>

**C -**

*Best student presentation award finalist*
<table>
<thead>
<tr>
<th>Name</th>
<th>Code</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chiriac, H. (BB-12)</td>
<td></td>
<td>35</td>
</tr>
<tr>
<td>Ching, T. (HU-02)</td>
<td></td>
<td>216</td>
</tr>
<tr>
<td>Ching, T. (BG-09)</td>
<td></td>
<td>44</td>
</tr>
<tr>
<td>Chin, Y. (HC-08)</td>
<td></td>
<td>196</td>
</tr>
<tr>
<td>Chin, J. (GU-05)</td>
<td></td>
<td>186</td>
</tr>
<tr>
<td>Chicharo, A. (BC-02)</td>
<td></td>
<td>36</td>
</tr>
<tr>
<td>Chiba, A. (CV-10)</td>
<td></td>
<td>89</td>
</tr>
<tr>
<td>Chiang, Y. (CW-10)</td>
<td></td>
<td>91</td>
</tr>
<tr>
<td>Chi, S. (GP-08)</td>
<td></td>
<td>178</td>
</tr>
<tr>
<td>Chernov, A. (FV-09)</td>
<td></td>
<td>159</td>
</tr>
<tr>
<td>Chérif, S.M. (HE-01)</td>
<td></td>
<td>198</td>
</tr>
<tr>
<td>Chérif, S.M. (GW-02)</td>
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</tr>
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</tr>
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<td></td>
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<td>Choudhary, R.J. (CR-01)</td>
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<td></td>
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<td></td>
<td>19</td>
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<td></td>
<td>63</td>
</tr>
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<td>Cheng, X. (ET-06)</td>
<td></td>
<td>124</td>
</tr>
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<td>Cheng, Y. (EI-10)</td>
<td></td>
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<td>Cheng, Z. (EF-02)</td>
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<td>Chérif, S. (SM-02)</td>
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<td>Chi, S. (GP-08)</td>
<td></td>
<td>178</td>
</tr>
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<td>Chernov, A. (FV-09)</td>
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</tr>
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<td>Cheung, N. (CT-14)</td>
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<td>85</td>
</tr>
<tr>
<td>Chi, S. (GP-08)</td>
<td></td>
<td>178</td>
</tr>
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<td>Ching, T. (BG-09)</td>
<td></td>
<td>44</td>
</tr>
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<td>Ching, T. (HU-02)</td>
<td></td>
<td>216</td>
</tr>
<tr>
<td>Chi, S. (HS-12)</td>
<td></td>
<td>35</td>
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<tr>
<td>Chiriac, H. (CQ-09)</td>
<td></td>
<td>79</td>
</tr>
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<td>Chiriac, H. (EU-11)</td>
<td></td>
<td>127</td>
</tr>
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<td>130</td>
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<td>Chirtesov, A. (BH-02)</td>
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<td></td>
<td>122</td>
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<td></td>
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<td>116</td>
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<td>Cho, J. (AW-08)</td>
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<td>32</td>
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<td>129</td>
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<td>211</td>
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<td>Choe, G. (CT-04)</td>
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<td>183</td>
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<td></td>
<td>117</td>
</tr>
<tr>
<td>Cho, Y. (CR-08)</td>
<td></td>
<td>81</td>
</tr>
<tr>
<td>Choudhary, P. (EP-10)</td>
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<td>117</td>
</tr>
<tr>
<td>Choi, Y. (EW-02)</td>
<td></td>
<td>129</td>
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<tr>
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<td></td>
<td>183</td>
</tr>
<tr>
<td>Chou, Y. (HR-01)</td>
<td></td>
<td>211</td>
</tr>
<tr>
<td>Choudhary, R.J. (CR-01)</td>
<td></td>
<td>80</td>
</tr>
</tbody>
</table>

*Best student presentation award finalist*
Della Torre, E. (HH-08) ..........   205
Della Torre, E. (HW-08) .........   220
Delshadi, S. (BC-01) ..........   36
Deman, A. (AP-02) ...........   17
Demidov, V.E. (BE-01) ........   40
Demidov, V.E. (BV-01) ........   158
Demidov, V.E. (FV-01) ........   170
Demir, Y. (AG-04) .............   12
Demir, Y. (GH-03) ............   174
Demokritos, S.O. (BE-01) .....   40
Demokritos, S.O. (BV-04) .....   69
Demokritos, S.O. (FV-01) .....   158
Dempsey, N. (BC-01) ........   36
Dempsey, N. (BE-01) ..........   41
Dempsey, N. (FB-11) ..........   133
Dempsey, N. (FQ-11) ..........   150
Dempsey, N. (GR-04) ..........   181
Demyanyov, S. (HW-09) ........   229
Deng, J. (AD-15) ..............   8
Deng, J. (BQ-06) .............   139
Deng, J. (DE-03) ............    97
Deng, J. (FW-10) .............   161
Deng, J. (GD-11) ............   168
Deng, L. (BB-10) .............   35
Dergachev, P. (GH-11) ........   175
Desfeux, R. (FF-07) ..........   141
Devolder, T. (AE-01) ........   106
Devolder, T. (FF-01) ..........   140
Dhens, M. (BG-10) ...........   44
Dhagat, P. (EV-08) ..........   128
Dhagat, P. (FF-12) ............   142
Dhau, A. (HB-11) .............   194
Dhau, S. (FE-07) .............   194
Dhau, R. (HE-02) .............   199
Dhiulton, S. (AI-09) ..........   16
Dhiultpin, H. (AG-12) .......   135
Dhiultpin, H. (FT-16) .......   155
Dhiultpin, H. (HR-15) ......   212
Di Giorgio, C. (EV-03) .......   127
Di Santie, D. (BE-09) ........   41
Di, J. (BU-04) ...............   139
Di, J. (BU-05) ...............   59
Diao, J. (HS-11) ............   214
Diao, K. (AU-05) .............   27
Diao, X. (GP-06) .............   178
Dias, A. (GR-04) .............   181
Dias, B. (HB-11) .............   194
Dias, R. (BF-01) .............   45
Diquez, L. (BC-02) ..........   36
Diyen, B. (BD-03) ............   98
Diyen, B. (HC-06) ...........   195
Diyerler, G. (FF-05) ........   141
Diguett, G. (EB-02) ........   103
Diko, P. (EB-12) .............   104
Ding, G. (BU-11) .............   59
Ding, H. (BE-01) ............   45
Ding, J. (ER-10) .............   121
Ding, J. (FE-08) ............   139
Ding, J. (HR-14) ............   212
Ding, L.S. (AB-02) ..........   3
Ding, S. (EP-13) ............   117
Ding, W. (CP-13) ............   78
Ding, W. (HC-05) ............   203
Ding, X. (EW-06) ............   130
Ding, Y. (EF-06) .............   110
Diyer, L. (AI-09) ...........   16
Divieto, C. (EI-05) ........   115
Divinsky, B. (BE-01) ........   40
Divinsky, B. (FV-01) ........   158
Dixit, H. (AI-07) ............   60
Dixit, H. (BI-06) ............   47

*D best student presentation award finalist

Index 229
<table>
<thead>
<tr>
<th>Author</th>
<th>Code</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gao, C.</td>
<td>(FR-09)</td>
<td>151</td>
</tr>
<tr>
<td>Gao, C.</td>
<td>(FS-08)</td>
<td>153</td>
</tr>
<tr>
<td>Gao, C.</td>
<td>(FS-10)</td>
<td>153</td>
</tr>
<tr>
<td>Gao, F.</td>
<td>(EQ-05)</td>
<td>119</td>
</tr>
<tr>
<td>Gao, F.</td>
<td>(ES-15)</td>
<td>123</td>
</tr>
<tr>
<td>Gao, F.</td>
<td>(GR-10)</td>
<td>127</td>
</tr>
<tr>
<td>Gao, G.</td>
<td>(GG-09)</td>
<td>180</td>
</tr>
<tr>
<td>Gao, H.</td>
<td>(HI-08)</td>
<td>206</td>
</tr>
<tr>
<td>Gao, H.</td>
<td>(HH-09)</td>
<td>206</td>
</tr>
<tr>
<td>Gao, J.</td>
<td>(AC-08)</td>
<td>6</td>
</tr>
<tr>
<td>Gao, J.</td>
<td>(JE-06)</td>
<td>111</td>
</tr>
<tr>
<td>Gao, J.</td>
<td>(JE-09)</td>
<td>112</td>
</tr>
<tr>
<td>Gao, J.</td>
<td>(ER-09)</td>
<td>112</td>
</tr>
<tr>
<td>Gao, J.</td>
<td>(GG-12)</td>
<td>174</td>
</tr>
<tr>
<td>Gao, J.</td>
<td>(GP-09)</td>
<td>178</td>
</tr>
<tr>
<td>Gao, K.</td>
<td>(AF-06)</td>
<td>11</td>
</tr>
<tr>
<td>Gao, K.</td>
<td>(FQ-12)</td>
<td>150</td>
</tr>
<tr>
<td>Gao, L.</td>
<td>(EF-06)</td>
<td>110</td>
</tr>
<tr>
<td>Gao, T.</td>
<td>(GE-08)</td>
<td>170</td>
</tr>
<tr>
<td>Gao, X.</td>
<td>(AT-05)</td>
<td>26</td>
</tr>
<tr>
<td>Gao, X.</td>
<td>(CT-09)</td>
<td>85</td>
</tr>
<tr>
<td>Gao, Y.</td>
<td>(AG-08)</td>
<td>13</td>
</tr>
<tr>
<td>Gao, Y.</td>
<td>(CE-04)</td>
<td>69</td>
</tr>
<tr>
<td>Gao, Y.</td>
<td>(CG-06)</td>
<td>73</td>
</tr>
<tr>
<td>Gao, Y.</td>
<td>(CG-11)</td>
<td>74</td>
</tr>
<tr>
<td>Gao, Y.</td>
<td>(CH-09)</td>
<td>75</td>
</tr>
<tr>
<td>Gao, Y.</td>
<td>(EQ-08)</td>
<td>119</td>
</tr>
<tr>
<td>Gao, Y.</td>
<td>(FQ-07)</td>
<td>149</td>
</tr>
<tr>
<td>Gao, Y.</td>
<td>(FW-09)</td>
<td>161</td>
</tr>
<tr>
<td>Gao, Y.</td>
<td>(HJ-05)</td>
<td>158</td>
</tr>
<tr>
<td>Gao, Y.</td>
<td>(HP-05)</td>
<td>208</td>
</tr>
<tr>
<td>Gao, Y.</td>
<td>(HQ-04)</td>
<td>209</td>
</tr>
<tr>
<td>Gao, Y.</td>
<td>(HS-03)</td>
<td>213</td>
</tr>
<tr>
<td>Gao, Y.</td>
<td>(HS-08)</td>
<td>213</td>
</tr>
<tr>
<td>Gao, Y.</td>
<td>(HX-05)</td>
<td>221</td>
</tr>
<tr>
<td>Garcia Gonzalez</td>
<td>(HG-02)</td>
<td>202</td>
</tr>
<tr>
<td>Garcia-Arribas</td>
<td>(EA-05)</td>
<td>115</td>
</tr>
<tr>
<td>Garcia-Hernandez,</td>
<td>(BV-04)</td>
<td>60</td>
</tr>
<tr>
<td>Garcia-Hernández</td>
<td>(GB-02)</td>
<td>163</td>
</tr>
<tr>
<td>Garcia-Sánchez,</td>
<td>(FE-06)</td>
<td>139</td>
</tr>
<tr>
<td>Garcia, J.</td>
<td>(EV-08)</td>
<td>128</td>
</tr>
<tr>
<td>Garcia, K.</td>
<td>(CA-01)</td>
<td>62</td>
</tr>
<tr>
<td>Garrello, K.</td>
<td>(GD-06)</td>
<td>168</td>
</tr>
<tr>
<td>Garg, C.</td>
<td>(CF-07)</td>
<td>72</td>
</tr>
<tr>
<td>Gargiani, P.</td>
<td>(DB-03)</td>
<td>93</td>
</tr>
<tr>
<td>Gaspar, J.</td>
<td>(BH-01)</td>
<td>45</td>
</tr>
<tr>
<td>Gatel, C.</td>
<td>(AC-06)</td>
<td>5</td>
</tr>
<tr>
<td>Gaudin, G.</td>
<td>(CD-10)</td>
<td>68</td>
</tr>
<tr>
<td>Gaudin, G.</td>
<td>(ED-06)</td>
<td>107</td>
</tr>
<tr>
<td>Gaudin, G.</td>
<td>(GD-10)</td>
<td>168</td>
</tr>
<tr>
<td>Gaudin, G.</td>
<td>(GE-02)</td>
<td>199</td>
</tr>
<tr>
<td>Gauthier, E.</td>
<td>(IO-03)</td>
<td>72</td>
</tr>
<tr>
<td>Gaviria, H.</td>
<td>(AV-09)</td>
<td>29</td>
</tr>
<tr>
<td>Ge, H. (AS-13)</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Ge, H. (BW-05)</td>
<td>52</td>
<td></td>
</tr>
<tr>
<td>Ge, H. (CS-04)</td>
<td>83</td>
<td></td>
</tr>
<tr>
<td>Ge, H. (GB-08)</td>
<td>164</td>
<td></td>
</tr>
<tr>
<td>Ge, L. (BT-06)</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td>Ge, W. (AW-09)</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Gemming, A.</td>
<td>(AE-02)</td>
<td>64</td>
</tr>
<tr>
<td>Geng, G.</td>
<td>(GU-02)</td>
<td>186</td>
</tr>
<tr>
<td>Geng, W.</td>
<td>(DH-03)</td>
<td>100</td>
</tr>
<tr>
<td>George, J.</td>
<td>(AI-01)</td>
<td>15</td>
</tr>
<tr>
<td>George, J.</td>
<td>(AI-09)</td>
<td>16</td>
</tr>
<tr>
<td>Gerada, C.</td>
<td>(CU-09)</td>
<td>87</td>
</tr>
<tr>
<td>Gerada, C.</td>
<td>(GS-03)</td>
<td>183</td>
</tr>
<tr>
<td>Gerada, C.</td>
<td>(CU-09)</td>
<td>87</td>
</tr>
<tr>
<td>Gerady, N.</td>
<td>(GW-06)</td>
<td>190</td>
</tr>
<tr>
<td>Gerber, A.</td>
<td>(EW-01)</td>
<td>129</td>
</tr>
<tr>
<td>Gerhard, J.</td>
<td>(EC-02)</td>
<td>105</td>
</tr>
<tr>
<td>Gerken, M.</td>
<td>(MC-05)</td>
<td>5</td>
</tr>
<tr>
<td>Germick, J.R.</td>
<td>(CP-06)</td>
<td>77</td>
</tr>
<tr>
<td>Germick, J.R.</td>
<td>(CR-07)</td>
<td>77</td>
</tr>
<tr>
<td>Ghahremani, M.</td>
<td>(FD-09)</td>
<td>137</td>
</tr>
<tr>
<td>Ghahremani, M.</td>
<td>(HW-08)</td>
<td>220</td>
</tr>
</tbody>
</table>

*Best student presentation award finalist
<table>
<thead>
<tr>
<th>Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hilliard, D. (FE-10)</td>
<td>140</td>
</tr>
<tr>
<td>Hillebrands, B. (FV-07)</td>
<td>158</td>
</tr>
<tr>
<td>Hillebrands, B. (FF-11)</td>
<td>142</td>
</tr>
<tr>
<td>Hildebrandt, E. (HB-06)</td>
<td>193</td>
</tr>
<tr>
<td>Higuchi, T. (AU-01)</td>
<td>27</td>
</tr>
<tr>
<td>Hickey, B. (DB-03)</td>
<td>93</td>
</tr>
<tr>
<td>Heyns, M. (FF-01)</td>
<td>140</td>
</tr>
<tr>
<td>Heya, A. (CG-07)</td>
<td>73</td>
</tr>
<tr>
<td>Heya, M. (FF-01)</td>
<td>140</td>
</tr>
<tr>
<td>Hong, J. (AF-03)</td>
<td>10</td>
</tr>
<tr>
<td>Hong, I. (CQ-11)</td>
<td>79</td>
</tr>
<tr>
<td>Hong, H. (CU-16)</td>
<td>87</td>
</tr>
<tr>
<td>Hong, C. (ET-05)</td>
<td>124</td>
</tr>
<tr>
<td>Hong, D. (GS-06)</td>
<td>183</td>
</tr>
<tr>
<td>Hong, H. (CU-16)</td>
<td>87</td>
</tr>
<tr>
<td>Hong, I. (CQ-11)</td>
<td>79</td>
</tr>
<tr>
<td>Hong, I. (HT-01)</td>
<td>214</td>
</tr>
<tr>
<td>Hong, J. (AC-04)</td>
<td>5</td>
</tr>
<tr>
<td>Hong, J. (DF-05)</td>
<td>30</td>
</tr>
<tr>
<td>Hong, J. (AW-11)</td>
<td>32</td>
</tr>
<tr>
<td>Hong, J. (BS-13)</td>
<td>56</td>
</tr>
<tr>
<td>Hong, J. (CG-09)</td>
<td>74</td>
</tr>
<tr>
<td>Hong, J. (CQ-15)</td>
<td>80</td>
</tr>
<tr>
<td>Hong, J. (FQ-09)</td>
<td>150</td>
</tr>
<tr>
<td>Hong, J. (GH-01)</td>
<td>174</td>
</tr>
<tr>
<td>Hong, J. (GP-12)</td>
<td>178</td>
</tr>
<tr>
<td>Hong, J. (GR-05)</td>
<td>186</td>
</tr>
<tr>
<td>Hong, J. (GV-06)</td>
<td>188</td>
</tr>
<tr>
<td>Hong, J. (HI-08)</td>
<td>206</td>
</tr>
<tr>
<td>Hong, J. (HI-09)</td>
<td>206</td>
</tr>
<tr>
<td>Hong, K. (CT-05)</td>
<td>84</td>
</tr>
<tr>
<td>Hongjo, H. (HC-05)</td>
<td>195</td>
</tr>
<tr>
<td>Hongo, K. (AE-04)</td>
<td>10</td>
</tr>
<tr>
<td>Hono, K. (BI-10)</td>
<td>48</td>
</tr>
<tr>
<td>Hono, K. (BQ-10)</td>
<td>50</td>
</tr>
<tr>
<td>Hono, K. (CF-05)</td>
<td>71</td>
</tr>
<tr>
<td>Hono, K. (DF-03)</td>
<td>98</td>
</tr>
<tr>
<td>Hono, K. (EA-03)</td>
<td>102</td>
</tr>
<tr>
<td>Hono, K. (EC-01)</td>
<td>110</td>
</tr>
<tr>
<td>Hono, K. (EF-04)</td>
<td>110</td>
</tr>
<tr>
<td>Hono, K. (EF-07)</td>
<td>110</td>
</tr>
<tr>
<td>Hono, K. (FC-03)</td>
<td>134</td>
</tr>
<tr>
<td>Hono, K. (FC-09)</td>
<td>135</td>
</tr>
<tr>
<td>Hono, K. (FC-12)</td>
<td>136</td>
</tr>
<tr>
<td>Hono, K. (GW-09)</td>
<td>191</td>
</tr>
<tr>
<td>Hono, K. (HB-01)</td>
<td>193</td>
</tr>
<tr>
<td>Hono, K. (HB-02)</td>
<td>215</td>
</tr>
<tr>
<td>Hono, K. (HT-07)</td>
<td>215</td>
</tr>
<tr>
<td>Horaguchi, T. (CQ-06)</td>
<td>79</td>
</tr>
<tr>
<td>Horibe, Y. (AV-14)</td>
<td>31</td>
</tr>
<tr>
<td>Horie, Y. (BQ-12)</td>
<td>51</td>
</tr>
<tr>
<td>Horino, T. (CV-12)</td>
<td>89</td>
</tr>
<tr>
<td>Horita, T. (CS-09)</td>
<td>83</td>
</tr>
<tr>
<td>Hosui, K. (BV-15)</td>
<td>61</td>
</tr>
<tr>
<td>Hossennia, M. (FD-09)</td>
<td>137</td>
</tr>
<tr>
<td>Hou, C. (CB-03)</td>
<td>36</td>
</tr>
<tr>
<td>Hou, D. (CT-07)</td>
<td>85</td>
</tr>
<tr>
<td>Hou, D. (HP-01)</td>
<td>207</td>
</tr>
<tr>
<td>Hou, W. (EQ-07)</td>
<td>119</td>
</tr>
<tr>
<td>Hou, Y. (DO-03)</td>
<td>96</td>
</tr>
<tr>
<td>Houssameddine, D. (AI-07)</td>
<td>16</td>
</tr>
<tr>
<td>Hovorka, O. (BI-07)</td>
<td>47</td>
</tr>
<tr>
<td>Hovorka, O. (BQ-08)</td>
<td>89</td>
</tr>
<tr>
<td>Hoyer-Hansen, M. (FW-02)</td>
<td>160</td>
</tr>
<tr>
<td>Hoyer-Hansen, M. (FW-06)</td>
<td>161</td>
</tr>
<tr>
<td>Hrkac, G. (CS-08)</td>
<td>83</td>
</tr>
<tr>
<td>Hsiao, C. (EV-12)</td>
<td>128</td>
</tr>
<tr>
<td>Hsiao, H. (HV-12)</td>
<td>219</td>
</tr>
<tr>
<td>Hirsch, C. (CT-12)</td>
<td>85</td>
</tr>
<tr>
<td>Hirsch, M. (GV-10)</td>
<td>106</td>
</tr>
<tr>
<td>Hsui, M. (HG-09)</td>
<td>205</td>
</tr>
<tr>
<td>Hsui, C. (CR-12)</td>
<td>82</td>
</tr>
<tr>
<td>Hsui, C. (CW-03)</td>
<td>90</td>
</tr>
<tr>
<td>Hsui, C. (GU-11)</td>
<td>187</td>
</tr>
<tr>
<td>Hsui, K. (FB-04)</td>
<td>132</td>
</tr>
<tr>
<td>Hsui, K. (FB-08)</td>
<td>133</td>
</tr>
<tr>
<td>Hsui, P. (HF-01)</td>
<td>200</td>
</tr>
<tr>
<td>Hsui, T. (AS-07)</td>
<td>239</td>
</tr>
<tr>
<td>Hsui, T. (CR-11)</td>
<td>82</td>
</tr>
<tr>
<td>Hsui, W. (BD-05)</td>
<td>38</td>
</tr>
<tr>
<td>Hsui, Y. (EP-05)</td>
<td>116</td>
</tr>
<tr>
<td>Hu, B. (EA-05)</td>
<td>102</td>
</tr>
<tr>
<td>Hu, C. (AR-01)</td>
<td>21</td>
</tr>
<tr>
<td>Hu, C. (CT-12)</td>
<td>85</td>
</tr>
<tr>
<td>Hu, C. (EU-01)</td>
<td>126</td>
</tr>
<tr>
<td>Hu, C. (GC-08)</td>
<td>217</td>
</tr>
<tr>
<td>Hu, F. (EP-12)</td>
<td>117</td>
</tr>
<tr>
<td>Hu, F. (ET-08)</td>
<td>125</td>
</tr>
<tr>
<td>Hu, F. (FR-05)</td>
<td>181</td>
</tr>
<tr>
<td>Hu, B. (BG-11)</td>
<td>44</td>
</tr>
<tr>
<td>Hu, J. (BQ-06)</td>
<td>50</td>
</tr>
<tr>
<td>Hu, J. (BV-14)</td>
<td>61</td>
</tr>
<tr>
<td>Hu, J. (CE-08)</td>
<td>70</td>
</tr>
<tr>
<td>Hu, J. (HR-02)</td>
<td>47</td>
</tr>
<tr>
<td>Hu, W. (BT-16)</td>
<td>58</td>
</tr>
<tr>
<td>Hu, X. (AB-04)</td>
<td>3</td>
</tr>
<tr>
<td>Hu, X. (CG-05)</td>
<td>173</td>
</tr>
<tr>
<td>Hu, Y. (AU-12)</td>
<td>28</td>
</tr>
<tr>
<td>Hu, Y. (FU-04)</td>
<td>156</td>
</tr>
<tr>
<td>Hu, Y. (TG-05)</td>
<td>203</td>
</tr>
<tr>
<td>Hu, Z. (BP-05)</td>
<td>49</td>
</tr>
<tr>
<td>Hu, Z. (BW-01)</td>
<td>51</td>
</tr>
<tr>
<td>Hu, Z. (CW-08)</td>
<td>91</td>
</tr>
<tr>
<td>Hu, Z. (CW-09)</td>
<td>91</td>
</tr>
<tr>
<td>Hua, W. (AU-07)</td>
<td>28</td>
</tr>
<tr>
<td>Hua, W. (FQ-06)</td>
<td>149</td>
</tr>
<tr>
<td>Hua, W. (HQ-09)</td>
<td>210</td>
</tr>
<tr>
<td>Hua, W. (HR-13)</td>
<td>212</td>
</tr>
<tr>
<td>Hua, Y. (GA-04)</td>
<td>163</td>
</tr>
</tbody>
</table>

*Best student presentation award finalist*
Ibrahim, I. (FT-07) .................. 154
Ichikawa, N. (FC-06) ............. 134
Ichihayami, Y. (EI-01) ............ 114
Iide, T. (EI-01) ................... 114
Iiometo, S. (GW-16) .......... 191
Igarashi, H. (CH-10) .......... 176
Igarashi, J. (H-10) ............ 196
Iida, Y. (GW-11) ........... 191
Iijima, Y. (GU-01) .......... 187
Ikeda, S. (HC-05) ........... 195
Ikegami, K. (BD-01) ....... 105
Ikura, T. (EC-01) ........... 105
Iklhas, M. (CD-02) ........ 67
Ikuhara, Y. (AC-02) ....... 5
Ilse, S. (FE-09) ............ 140
Im, M. (AC-04) ........ 5
IM, S. (FP-05) .......... 147
IM, S. (ST-06) .......... 185
Imamura, H. (AI-08) .... 16
Imamura, H. (BE-06) .... 40
Imamura, H. (EC-01) ... 105
Imamura, H. (FC-04) .... 134
Imamura, H. (FR-02) ... 191
Imamura, M. (FR-06) .... 152
Inubushi, K. (EC-08) .... 106
Inui, T. (ER-08) ........... 121
Itono, D. (BS-16) ........... 56
Itono, D. (FU-12) ........ 157
Ionescu, M. (BA-03) ..... 33
Ipatov, M. (AC-12) ....... 4
Ipatov, M. (BB-04) ....... 34
Irakum, K. (CP-01) ........ 76
Irfan, M. (AS-03) .......... 24
Irfan, M. (GR-11) ........... 182
Iriyama, T. (UB-01) ...... 132
Ishiguro, H. (BG-05) ....... 44
Ishihara, M. (GU-09) .... 187
Ishikawa, M. (BD-04) ...... 38
Ishikawa, M. (BP-01) ...... 48
Ishikawa, M. (MD-07) .... 108
Ishikawa, M. (GA-06) .... 163
Ishikawa, M. (HD-07) .... 197
Ishikawa, T. (BI-02) ...... 47
Ishikawa, T. (BT-13) .... 57
Ishitani, Y. (EB-11) .... 104
Ishiya, K. (CW-07) .............. 14
Ishiya, S. (EB-11) ........... 104
Islam, M. (CT-08) ...... 85
Isogami, S. (ED-04) ...... 107
Isshiki, H. (HD-01) ...... 196
Ishibashi, Y. (EB-08) .... 104
Itagaki, R. (BD-11) ...... 39
Itahashi, T. (CB-02) ...... 49
Ito, J. (BD-11) .......... 39
Itoh, T. (AG-10) .......... 20
Itoh, T. (CE-01) .......... 69
Ivanov, I. (EC-02) ....... 105
Iwahashi, M. (CP-01) ...... 76
Iwai, M. (AP-10) ....... 18
Iwai, M. (AP-11) ...... 18
Iwamoto, F. (FT-09) ...... 155
Iwamoto, F. (FG-03) ...... 32
Iwano, K. (BI-02) ...... 47
Iwano, K. (HT-09) ...... 215
Iwasa, M. (CP-11) ...... 77
Iwasa, M. (EV-11) ...... 128
Iwasa, M. (FR-15) ...... 151
Iwasa, M. (FR-12) ...... 151
Iwasa, M. (FR-16) ...... 152
Iwata-Haruma, J. (GA-63) ...... 163

*Best student presentation award finalist
<table>
<thead>
<tr>
<th>Name</th>
<th>Code</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jin, C.</td>
<td>BU-06</td>
<td>59</td>
</tr>
<tr>
<td>Jin, C.</td>
<td>BW-11</td>
<td>52</td>
</tr>
<tr>
<td>Jin, C.</td>
<td>EU-02</td>
<td>126</td>
</tr>
<tr>
<td>Jin, C.</td>
<td>HV-05</td>
<td>218</td>
</tr>
<tr>
<td>Jin, F.</td>
<td>EQ-04</td>
<td>124</td>
</tr>
<tr>
<td>Jin, F.</td>
<td>FW-12</td>
<td>161</td>
</tr>
<tr>
<td>Jin, P.</td>
<td>GR-14</td>
<td>182</td>
</tr>
<tr>
<td>Jin, P.</td>
<td>HR-08</td>
<td>211</td>
</tr>
<tr>
<td>Jin, Q.</td>
<td>EP-14</td>
<td>118</td>
</tr>
<tr>
<td>Jin, T.</td>
<td>CQ-02</td>
<td>78</td>
</tr>
<tr>
<td>Jin, T.</td>
<td>CQ-03</td>
<td>78</td>
</tr>
<tr>
<td>Jin, Y.</td>
<td>GV-05</td>
<td>188</td>
</tr>
<tr>
<td>Jin, Z.</td>
<td>AQ-08</td>
<td>26</td>
</tr>
<tr>
<td>Jin, Z.</td>
<td>CV-04</td>
<td>88</td>
</tr>
<tr>
<td>Jin, Z.</td>
<td>CV-14</td>
<td>89</td>
</tr>
<tr>
<td>Jin, Z.</td>
<td>FP-02</td>
<td>147</td>
</tr>
<tr>
<td>Jing, T.</td>
<td>HW-07</td>
<td>220</td>
</tr>
<tr>
<td>Jing, Y.</td>
<td>EQ-11</td>
<td>119</td>
</tr>
<tr>
<td>Jing, Z.</td>
<td>GB-06</td>
<td>164</td>
</tr>
<tr>
<td>Jinmai, B.</td>
<td>BD-02</td>
<td>38</td>
</tr>
<tr>
<td>Jinmai, B.</td>
<td>BC-03</td>
<td>195</td>
</tr>
<tr>
<td>Jinmai, B.</td>
<td>BC-11</td>
<td>76</td>
</tr>
<tr>
<td>Jo, Y.</td>
<td>CP-03</td>
<td>76</td>
</tr>
<tr>
<td>Jongsawat, N.</td>
<td>GI-02</td>
<td>176</td>
</tr>
<tr>
<td>Joo, K.</td>
<td>CU-12</td>
<td>87</td>
</tr>
<tr>
<td>Joppich, J.</td>
<td>HE-14</td>
<td>130</td>
</tr>
<tr>
<td>Joseph, J.</td>
<td>BR-07</td>
<td>53</td>
</tr>
<tr>
<td>Ju, G.</td>
<td>AF-01</td>
<td>18</td>
</tr>
<tr>
<td>Ju, G.</td>
<td>BQ-06</td>
<td>50</td>
</tr>
<tr>
<td>Ju, G.</td>
<td>BQ-08</td>
<td>50</td>
</tr>
<tr>
<td>Ju, G.</td>
<td>DF-04</td>
<td>98</td>
</tr>
<tr>
<td>Ju, G.</td>
<td>GF-06</td>
<td>110</td>
</tr>
<tr>
<td>Ju, G.</td>
<td>GF-08</td>
<td>110</td>
</tr>
<tr>
<td>Joubert, P.</td>
<td>EP-02</td>
<td>109</td>
</tr>
<tr>
<td>Jugal, R.</td>
<td>HE-02</td>
<td>195</td>
</tr>
<tr>
<td>Jullien, M.</td>
<td>GW-08</td>
<td>191</td>
</tr>
<tr>
<td>Jun, H.</td>
<td>FW-03</td>
<td>160</td>
</tr>
<tr>
<td>Jun, H.</td>
<td>GV-12</td>
<td>189</td>
</tr>
<tr>
<td>Jun, H.</td>
<td>HW-14</td>
<td>217</td>
</tr>
<tr>
<td>Jung, D.</td>
<td>FT-14</td>
<td>155</td>
</tr>
<tr>
<td>Jung, D.</td>
<td>GS-12</td>
<td>184</td>
</tr>
<tr>
<td>Jung, D.</td>
<td>GV-12</td>
<td>189</td>
</tr>
<tr>
<td>Jung, D.</td>
<td>HS-06</td>
<td>213</td>
</tr>
<tr>
<td>Jung, D.</td>
<td>AO-04</td>
<td>20</td>
</tr>
<tr>
<td>Jung, J.</td>
<td>AS-10</td>
<td>24</td>
</tr>
<tr>
<td>Jung, J.</td>
<td>CF-05</td>
<td>71</td>
</tr>
<tr>
<td>Jung, J.</td>
<td>FQ-09</td>
<td>150</td>
</tr>
<tr>
<td>Jung, J.</td>
<td>GP-12</td>
<td>178</td>
</tr>
<tr>
<td>Jung, K.</td>
<td>AT-16</td>
<td>27</td>
</tr>
<tr>
<td>Jung, K.</td>
<td>HQ-08</td>
<td>209</td>
</tr>
<tr>
<td>Jung, M.</td>
<td>AC-04</td>
<td>5</td>
</tr>
<tr>
<td>Jung, S.</td>
<td>AT-15</td>
<td>27</td>
</tr>
<tr>
<td>Jung, S.</td>
<td>BS-11</td>
<td>55</td>
</tr>
<tr>
<td>Jung, S.</td>
<td>ES-03</td>
<td>122</td>
</tr>
<tr>
<td>Jung, S.</td>
<td>ES-08</td>
<td>123</td>
</tr>
<tr>
<td>Jung, S.</td>
<td>FQ-03</td>
<td>149</td>
</tr>
<tr>
<td>Jung, S.</td>
<td>GQ-06</td>
<td>180</td>
</tr>
<tr>
<td>Jung, S.</td>
<td>HS-06</td>
<td>213</td>
</tr>
<tr>
<td>Jungfleisch, M.</td>
<td>MA-05</td>
<td>2</td>
</tr>
<tr>
<td>Jungfleisch, M.</td>
<td>CA-04</td>
<td>63</td>
</tr>
<tr>
<td>Jungmayr, G.</td>
<td>GF-03</td>
<td>142</td>
</tr>
<tr>
<td>Jwangwirth, T.</td>
<td>AA-03</td>
<td>20</td>
</tr>
<tr>
<td>Jwangwirth, T.</td>
<td>AA-04</td>
<td>2</td>
</tr>
<tr>
<td>Jwangwirth, T.</td>
<td>TU-03</td>
<td>1</td>
</tr>
<tr>
<td>Jyun, I.K.</td>
<td>GR-03</td>
<td>181</td>
</tr>
</tbody>
</table>

*Best student presentation award finalist*
<table>
<thead>
<tr>
<th>Name</th>
<th>Index</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lai, C. (CF-03)</td>
<td>71</td>
<td>81</td>
</tr>
<tr>
<td>Lai, C. (CF-10)</td>
<td>72</td>
<td></td>
</tr>
<tr>
<td>Lai, D. (CR-05)</td>
<td>81</td>
<td></td>
</tr>
<tr>
<td>Lai, H. (FQ-01)</td>
<td>149</td>
<td></td>
</tr>
<tr>
<td>Lai, N. (FV-08)</td>
<td>158</td>
<td></td>
</tr>
<tr>
<td>Lai, P. (CC-09)</td>
<td>66</td>
<td></td>
</tr>
<tr>
<td>Lai, P. (CQ-01)</td>
<td>78</td>
<td></td>
</tr>
<tr>
<td>Lai, P. (EH-04)</td>
<td>113</td>
<td></td>
</tr>
<tr>
<td>Lai, P. (EV-01)</td>
<td>127</td>
<td></td>
</tr>
<tr>
<td>Lai, S. (CR-07)</td>
<td>81</td>
<td></td>
</tr>
<tr>
<td>Lai, Y. (AB-02)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Lambert, C.A. (BQ-13)</td>
<td>71</td>
<td>51</td>
</tr>
<tr>
<td>Lambert, C.A. (BQ-13)</td>
<td>51</td>
<td></td>
</tr>
<tr>
<td>Lan, H. (AU-13)</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>Lan, H. (EQ-05)</td>
<td>192</td>
<td>119</td>
</tr>
<tr>
<td>Lan, H. (GR-10)</td>
<td>182</td>
<td></td>
</tr>
<tr>
<td>Lan, H. (HQ-01)</td>
<td>209</td>
<td></td>
</tr>
<tr>
<td>Lan, H. (HQ-02)</td>
<td>209</td>
<td></td>
</tr>
<tr>
<td>Lan, H. (HQ-07)</td>
<td>73</td>
<td></td>
</tr>
<tr>
<td>Lan, X. (CG-01)</td>
<td>73</td>
<td></td>
</tr>
<tr>
<td>Lan, Z. (EH-07)</td>
<td>119</td>
<td></td>
</tr>
<tr>
<td>Lan, Z. (EQ-01)</td>
<td>118</td>
<td></td>
</tr>
<tr>
<td>Lan, Z. (EQ-13)</td>
<td>119</td>
<td></td>
</tr>
<tr>
<td>Lan, Z. (HH-12)</td>
<td>194</td>
<td></td>
</tr>
<tr>
<td>Lanceros-Mendez, S. (DA-03)</td>
<td>92</td>
<td></td>
</tr>
<tr>
<td>Lanceros-Mendez, S. (EB-01)</td>
<td>103</td>
<td></td>
</tr>
<tr>
<td>Lang, J. (BA-01)</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>Lange, A. (FH-04)</td>
<td>144</td>
<td></td>
</tr>
<tr>
<td>Langer, J. (FC-11)</td>
<td>135</td>
<td></td>
</tr>
<tr>
<td>Langeridge, S. (FI-02)</td>
<td>146</td>
<td></td>
</tr>
<tr>
<td>Laszcz, A. (FP-01)</td>
<td>147</td>
<td></td>
</tr>
<tr>
<td>Latifih, H. (BF-05)</td>
<td>41</td>
<td></td>
</tr>
<tr>
<td>Latifih, H. (EF-14)</td>
<td>129</td>
<td></td>
</tr>
<tr>
<td>Lav, Y. (AA-02)</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Lav, Y. (AD-05)</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Lav, Y. (FC-10)</td>
<td>135</td>
<td></td>
</tr>
<tr>
<td>Lau, V. (FF-11)</td>
<td>142</td>
<td></td>
</tr>
<tr>
<td>Laukhi, H. (FS-12)</td>
<td>153</td>
<td></td>
</tr>
<tr>
<td>Law, J. (FD-01)</td>
<td>136</td>
<td></td>
</tr>
<tr>
<td>Law, J. (FD-07)</td>
<td>137</td>
<td></td>
</tr>
<tr>
<td>Lawali Ali, H. (GG-06)</td>
<td>173</td>
<td></td>
</tr>
<tr>
<td>Le Roy, D. (AP-02)</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>Le Roy, D. (FB-11)</td>
<td>133</td>
<td></td>
</tr>
<tr>
<td>Le Roy, D. (FQ-11)</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td>Le, C. (AU-08)</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>Le, C. (EW-02)</td>
<td>129</td>
<td></td>
</tr>
<tr>
<td>Lee, H. (AW-08)</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Lee, C. (GP-02)</td>
<td>177</td>
<td></td>
</tr>
<tr>
<td>Lee, D. (BS-05)</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>Lee, D. (BD-11)</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>Lee, D. (BT-12)</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td>Lee, D. (CF-04)</td>
<td>71</td>
<td></td>
</tr>
<tr>
<td>Lee, D. (CG-08)</td>
<td>132</td>
<td></td>
</tr>
<tr>
<td>Lee, D. (FB-12)</td>
<td>133</td>
<td></td>
</tr>
<tr>
<td>Lee, D. (FC-11)</td>
<td>136</td>
<td></td>
</tr>
<tr>
<td>Lee, H. (CC-06)</td>
<td>86</td>
<td></td>
</tr>
<tr>
<td>Lee, H. (FC-12)</td>
<td>136</td>
<td></td>
</tr>
<tr>
<td>Lee, H. (GP-02)</td>
<td>177</td>
<td></td>
</tr>
<tr>
<td>Lee, H. (HQ-02)</td>
<td>179</td>
<td></td>
</tr>
<tr>
<td>Lee, H. (GS-12)</td>
<td>184</td>
<td></td>
</tr>
<tr>
<td>Lee, H. (GT-16)</td>
<td>186</td>
<td></td>
</tr>
<tr>
<td>Lee, H. (GV-15)</td>
<td>189</td>
<td></td>
</tr>
<tr>
<td>Lee, H. (HQ-07)</td>
<td>285</td>
<td></td>
</tr>
<tr>
<td>Lee, H. (HR-06)</td>
<td>211</td>
<td></td>
</tr>
<tr>
<td>Lee, J. (BT-12)</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td>Lee, J. (CS-05)</td>
<td>83</td>
<td></td>
</tr>
<tr>
<td>Lee, J. (CU-12)</td>
<td>87</td>
<td></td>
</tr>
<tr>
<td>Lee, J. (CU-16)</td>
<td>87</td>
<td></td>
</tr>
<tr>
<td>Lee, J. (CU-12)</td>
<td>87</td>
<td></td>
</tr>
<tr>
<td>Lee, J. (DE-02)</td>
<td>96</td>
<td></td>
</tr>
<tr>
<td>Lee, J. (ES-11)</td>
<td>123</td>
<td></td>
</tr>
<tr>
<td>Lee, J. (FB-03)</td>
<td>132</td>
<td></td>
</tr>
</tbody>
</table>

*Best student presentation award finalist*
Lee, J. (FQ-02) .................. 149
Lee, J. (FT-01) .................. 154
Lee, J. (GC-02) .................. 165
Lee, J. (GQ-05) .................. 180
Lee, J. (GS-12) .................. 184
Lee, J. (AC-04) .................. 199
Lee, J. (GV-15) .................. 189
Lee, J. (HQ-03) .................. 209
Lee, J. (HQ-10) ................. 210
Lee, J. (HQ-11) ................. 210
Lee, J. (HQ-14) ................. 210
Lee, J. (HV-03) .................. 218
Lee, J. (IC-03) ................. 21
Lee, K. (BD-09) .................. 39
Lee, K. (BS-07) ................. 55
Lee, K. (BV-05) .................. 60
Lee, K. (CF-04) ................. 71
Lee, K. (CQ-08) ................. 79
Lee, K. (CQ-11) ................. 79
Lee, K. (CS-03) .................. 83
Lee, K. (CU-08) ................. 87
Lee, K. (DD-06) .................. 96
Lee, K. (ES-03) ................. 122
Lee, K. (FV-05) .................. 158
Lee, K. (GA-02) .................. 162
Lee, K. (GD-08) ................. 168
Lee, K. (HQ-10) ................. 210
Lee, K. (HT-01) ................. 214
Lee, L. (NH-04) ................. 21
Lee, N. (CR-08) .................. 81
Lee, O. (AF-03) ................. 10
Lee, O. (CF-04) .................. 10
Lee, P. (FR-14) ................. 152
Lee, S. (AQ-11) .................. 20
Lee, S. (AS-11) ................. 24
Lee, S. (AT-04) .................. 26
Lee, S. (BS-05) .................. 55
Lee, S. (BS-06) .................. 55
Lee, S. (BT-12) .................. 57
Lee, S. (CS-11) .................. 84
Lee, S. (CU-08) ................. 87
Lee, S. (DB-03) ................. 93
Lee, S. (EP-10) ................. 117
Lee, S. (ES-03) ................. 122
Lee, S. (FV-05) .................. 158
Lee, S. (GO-02) .................. 179
Lee, S. (GR-12) .................. 182
Lee, S. (HQ-11) ................. 210
Lee, S. (HQ-14) ................. 210
Lee, T. (AR-07) ................. 22
Lee, W. (CU-03) ................. 86
Lee, W. (CR-14) ................. 93
Lee, W. (GR-03) ................. 181
Lee, W.T. (CR-05) ................ 81
Lee, Y. (BU-10) .................. 59
Lee, Y. (CS-06) ................. 83
Lee, Y. (GA-03) ................. 163
Lees, M.R. (CR-05) ............... 81
Legrand, W. (CA-01) ............. 62
Legrand, W. (HP-14) ............ 199
Lei, G. (AG-05) .................. 12
Lei, G. (AU-05) .................. 27
Lei, G. (BG-08) .................. 44
Lei, G. (HQ-13) .................. 210
Lei, W. (AB-04) ................ 3
Leibfried, T. (CH-06) ............ 75
Leliaert, J. (DA-01) ............. 92
Leliaert, J. (HT-10) ............ 199
Lenke, C. (CF-09) ............... 72
Lenzing, N. (FT-03) ............ 140
Leone, D. (EB-03) .............. 103
Leone, D. (FS-05) .............. 153
Leong, Z. (AV-16) .............. 31
Leong, Z. (CB-04) .............. 64
Leong, Z. (CV-03) .............. 88
Lecoquex, S. (BD-03) ........... 38
Lervik, J. (FW-02) .............. 160
Lervik, J. (FW-08) .............. 161
Lesme, E. (AI-01) .............. 15
Léung, J. (AE-01)* .............. 8
Leeung, C. (BP-02) .............. 48
Leeung, C. (FS-12) .............. 73
Leunging, N. (AV-13) ........... 30
Leunging, N. (CB-08) .......... 64
Leunging, N. (EE-02) .......... 109
Leutens, H. (DB-03) .......... 93
Lew, W. (AD-11) .............. 8
Lew, W. (BV-12) .............. 61
Lew, W. (CQ-02) .............. 78
Lew, W. (CQ-03) .............. 78
Lew, W. (HE-09) .............. 200
Lewis, C.M. (DA-04) .......... 92
L. A. (AQ-15) .................. 21
Li, A. (HI-11) ................. 207
Li, C. (BC-03) .................. 36
Li, C. (BT-08) .................. 57
Li, C. (EU-05) .................. 126
Li, C. (FW-10) ................. 161
Li, C. (GG-12) .................. 174
Li, C. (GV-10) .................. 189
Li, C. (HR-10) ................. 212
Li, D. (AH-02) ................. 14
Li, D. (BW-11) ................. 52
Li, D. (CC-07) ................. 66
Li, D. (EG-08) ................. 112
Li, D. (HQ-05) ................. 213
Li, D. (HS-02) ................. 213
Li, D. (HS-03) ................. 213
Li, D. (HS-10) ................. 213
Li, D. (HU-15) ................. 217
Li, F. (DH-05) ................. 100
Li, H. (AG-07) ................. 12
Li, H. (AT-01) ................. 55
Li, H. (AT-14) ................. 26
Li, H. (BQ-06) ................. 50
Li, H. (BT-11) ................. 57
Li, H. (BU-03) ................. 58
Li, H. (ES-12) ................. 123
Li, H. (EU-05) ................. 126
Li, H. (EU-06) ................. 126
Li, H. (GP-09) ................. 178
Li, H. (GQ-12) ................. 180
Li, H. (GR-01) ................. 181
Li, H. (HS-07) ................. 213
Li, H. (HV-09) ................. 219
Li, H. (HV-11) ................. 219
Li, J. (AU-13) ................. 28
Li, J. (AW-08) ................. 42
Li, J. (BE-08) ................. 41
Li, J. (BW-05) ................. 52
Li, J. (CG-09) ................. 74
Li, J. (CS-04) ................. 83
Li, J. (ET-14) ................. 125
Li, J. (FU-06) ................. 156
Li, J. (FW-10) ................. 161
Li, J. (GH-14) ................. 25
Li, J. (GT-15) ................. 185
Li, J. (HG-12) ................. 204
Li, J. (Hl-08) ................. 206
Li, J. (HI-09) ................. 206
Li, J. (HS-02) ................. 213
Li, J. (HU-15) ................. 217
Li, K. (AB-02) ................. 3
Li, K. (EG-13) ................. 3
Li, K. (EP-13) ................. 117
Li, K. (EQ-01) ................. 118
Li, L. (FP-02) ................. 147
Li, L. (HH-03) ................. 204
Li, L. (HH-06) ................. 205
Li, L. (HS-02) ................. 213
Li, M. (BU-06) ................. 59
Li, M. (ET-05) ................. 124

*Best student presentation award finalist
Li, Y. (GB-06) ..................   164
Li, Y. (GP-13) ..................   178
Li, Y. (GP-15) ..................   179
Li, Y. (HU-06) ..................   216
Li, N. (AP-04) .................   18
Li, N. (AP-12) ..................   18
Li, N. (BS-12) ..................   56
Li, N. (EV-13) ..................   129
Li, P. (AH-11) ..................   15
Li, P. (CC-07) ..................   66
Li, P. (GI-01) ..................   175
Li, P. (HI-01) ..................   205
Li, Q. (AQ-02) ..................   19
Li, Q. (BT-02) ..................   56
Li, Q. (BT-05) ..................   57
Li, R. (BQ-06) ..................   50
Li, R. (EH-08) ..................   113
Li, R. (FS-02) ..................   152
Li, R. (GR-05) ..................   181
Li, S. (AD-11) ..................   8
Li, S. (AQ-08) ..................   20
Li, S. (BV-12) .................   61
Li, S. (EI-07) ..................   115
Li, S. (GP-14) ..................   179
Li, S. (HE-07) ..................   199
Li, T. (FB-12) ..................   133
Li, W. (AS-06) ..................   24
Li, W. (BT-07) ..................   58
Li, W. (BS-01) ..................   54
Li, W. (BU-08) ..................   59
Li, W. (BV-06) ..................   61
Li, W. (EP-14) ..................   118
Li, W. (FB-10) ..................   133
Li, W. (FR-13) ..................   151
Li, W. (GT-06) ..................   164
Li, W. (GR-11) ..................   182
Li, W. (GR-15) ..................   182
Li, W. (HB-04) ..................   193
Li, W. (HR-02) ..................   211
Li, W. (HT-08) ..................   215
Li, W. (HU-02) ..................   216
Li, W.L. (HS-02) ...............   213
Li, X. (AH-02) ..................   3
Li, X. (AR-13) ..................   23
Li, X. (AT-07) ..................   26
Li, X. (EI-11) ..................   117
Li, X. (EP-13) ..................   117
Li, X. (ET-08) ..................   125
Li, X. (FB-07) ..................   133
Li, X. (FC-02) ..................   134
Li, X. (FC-04) ..................   135
Li, X. (FC-09) ..................   135
Li, X. (FS-06) ..................   153
Li, X. (GP-08) ..................   178
Li, X. (HD-04) ..................   197
Li, Y. (AP-04) .................   18
Li, Y. (AP-07) .................   18
Li, Y. (AP-12) .................   19
Li, Y. (AQ-14) .................   121
Li, Y. (EI-09) ..................   116
Li, Y. (EQ-03) ..................   118
Li, Y. (EQ-11) ..................   119
Li, Y. (ET-14) ..................   125
Li, Y. (EU-06) ..................   126
Li, Y. (EV-13) ..................   129
Li, Y. (FB-02) ..................   132
Li, Y. (FF-10) ..................   142
Li, Y. (FH-07) ..................   145
Li, Y. (FR-15) ..................   152
Li, Y. (FS-08) ..................   153
Li, Y. (FS-10) ..................   153
Li, Y. (GH-05) ..................   174
Li, Y. (GQ-07) ..................   180
Li, Y. (GQ-10) ..................   180
Li, Y. (GR-01) ..................   181
Li, Y. (GS-05) ..................   183
Li, Y. (GS-09) ..................   183
Li, Y. (GT-08) ..................   185
Li, Y. (GT-15) ..................   185
Li, Y. (HF-08) ..................   201
Li, Y. (HI-06) ..................   203
Li, Y. (HI-07) ..................   207
Li, Y. (HI-11) ..................   207
Li, Y. (HJ-01) ..................   210
Li, Y. (HQ-12) ..................   210
Li, Y. (HR-02) .................   211
Li, Z. (AQ-01) ..................   19
Li, Z. (BU-12) ..................   705
Li, Z. (BV-03) ..................   69
Li, Z. (FT-02) ..................   154
Li, Z. (GT-01) ..................   184
Li, Z. (GU-15) ..................   187
Li, Z. (HJ-01) ..................   215
Li, J. (AH-08) ..................   14
Li, J. (BU-03) ..................   58
Li, J. (CW-11) ..................   44
Li, L. (EW-10) ..................   130
Li, J. (GR-01) ..................   181
Li, P. (CG-08) ..................   74
Li, S. (AV-07) ..................   30
Li, S. (HD-04) ..................   197
Li, S. (HP-04) ..................   208
Li, X. (PW-06) ..................   160
Li, X. (GP-16) ..................   171
Li, X. (HR-12) ..................   212
Li, X. (YW-01) ..................   160
Liao, J. (BF-05) ...............   42
Liao, J. (HF-11) ...............   202
Liao, J. (BU-09) ...............   59
Liao, X. (FT-12) ...............   155
Liao, X. (GR-15) ...............   182
Lim, G. (CU-11) ...............   87
Lim, G.J. (BV-12) .............   61
Lim, J. (CT-04) ...............   84
Lim, J. (CT-06) ...............   85
Lim, J. (CU-11) ...............   87
Lim, J. (CU-12) ...............   87
Lim, J. (ER-03) ...............   120
Lim, J. (GA-02) ...............   162
Lim, J. (GV-14) ...............   187
Lim, M. (FQ-09) ...............   150
Lim, M. (GP-12) ...............   178
Lim, M. (GU-05) ...............   186
Lim, P.B. (EB-08) ............   104
Lim, S. (BD-07) ...............   39
Lim, S. (BV-05) ...............   60
Lim, S. (EC-05) ...............   106
Lim, T. (AU-14) ...............   116
Lin, C. (EI-10) ...............   116
Lin, D. (GG-09) ...............   173
Lin, H. (AG-10) ...............   13
Lin, H. (AQ-08) ...............   20
Lin, H. (ED-08) ...............   108
Lin, H. (FH-03) ...............   144
Lin, H. (HU-03) ...............   216
Lin, J. (EP-05) ...............   116

*Best student presentation award finalist
<table>
<thead>
<tr>
<th>Name</th>
<th>Number</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liu, K.</td>
<td>(GH-07)</td>
<td>61</td>
</tr>
<tr>
<td>Liu, K.</td>
<td>(GH-04)</td>
<td>174</td>
</tr>
<tr>
<td>Liu, K.</td>
<td>(CT-07)</td>
<td>175</td>
</tr>
<tr>
<td>Liu, K.</td>
<td>(AU-03)</td>
<td>27</td>
</tr>
<tr>
<td>Liu, K.</td>
<td>(AI-04)</td>
<td>16</td>
</tr>
<tr>
<td>Liu, J.</td>
<td>(HW-03)</td>
<td>220</td>
</tr>
<tr>
<td>Liu, J.</td>
<td>(HU-08)</td>
<td>217</td>
</tr>
<tr>
<td>Liu, J.</td>
<td>(HR-03)</td>
<td>211</td>
</tr>
<tr>
<td>Liu, J.</td>
<td>(FB-07)</td>
<td>133</td>
</tr>
<tr>
<td>Liu, J.</td>
<td>(EB-07)</td>
<td>104</td>
</tr>
<tr>
<td>Liu, J.</td>
<td>(EA-02)</td>
<td>102</td>
</tr>
<tr>
<td>Liu, H.</td>
<td>(HX-05)</td>
<td>221</td>
</tr>
<tr>
<td>Liu, H.</td>
<td>(HQ-02)</td>
<td>209</td>
</tr>
<tr>
<td>Liu, H.</td>
<td>(GD-11)</td>
<td>198</td>
</tr>
<tr>
<td>Liu, H.</td>
<td>(GA-03)</td>
<td>163</td>
</tr>
<tr>
<td>Liu, H.</td>
<td>(EQ-01)</td>
<td>118</td>
</tr>
<tr>
<td>Liu, F.</td>
<td>(HQ-01)</td>
<td>171</td>
</tr>
<tr>
<td>Liu, F.</td>
<td>(GU-04)</td>
<td>186</td>
</tr>
<tr>
<td>Liu, F.</td>
<td>(BG-09)</td>
<td>44</td>
</tr>
<tr>
<td>Liu, F.</td>
<td>(BT-01)</td>
<td>35</td>
</tr>
<tr>
<td>Liu, E.</td>
<td>(HC-02)</td>
<td>25</td>
</tr>
<tr>
<td>Liu, C.</td>
<td>(CM-08)</td>
<td>217</td>
</tr>
<tr>
<td>Liu, C.</td>
<td>(CV-01)</td>
<td>209</td>
</tr>
<tr>
<td>Liu, C.</td>
<td>(CV-02)</td>
<td>211</td>
</tr>
<tr>
<td>Liu, C.</td>
<td>(CU-07)</td>
<td>203</td>
</tr>
<tr>
<td>Liu, C.</td>
<td>(CU-06)</td>
<td>156</td>
</tr>
<tr>
<td>Liu, C.</td>
<td>(CB-09)</td>
<td>117</td>
</tr>
<tr>
<td>Liu, B.</td>
<td>(BG-08)</td>
<td>44</td>
</tr>
<tr>
<td>Liu, B.</td>
<td>(BG-07)</td>
<td>56</td>
</tr>
<tr>
<td>Liu, B.</td>
<td>(BD-07)</td>
<td>220</td>
</tr>
<tr>
<td>Liu, B.</td>
<td>(AE-02)</td>
<td>198</td>
</tr>
<tr>
<td>Liu, B.</td>
<td>(AS-15)</td>
<td>44</td>
</tr>
<tr>
<td>Liu, A.</td>
<td>(AG-02)</td>
<td>126</td>
</tr>
<tr>
<td>Liu, A.</td>
<td>(AF-01)</td>
<td>117</td>
</tr>
<tr>
<td>Liu, A.</td>
<td>(AQ-01)</td>
<td>203</td>
</tr>
<tr>
<td>Liu, A.</td>
<td>(AE-01)</td>
<td>19</td>
</tr>
<tr>
<td>Liu, A.</td>
<td>(AD-02)</td>
<td>26</td>
</tr>
<tr>
<td>Liu, A.</td>
<td>(AC-01)</td>
<td>125</td>
</tr>
<tr>
<td>Liu, A.</td>
<td>(AB-05)</td>
<td>61</td>
</tr>
<tr>
<td>Liu, A.</td>
<td>(AA-01)</td>
<td>124</td>
</tr>
<tr>
<td>Liu, A.</td>
<td>(AT-08)</td>
<td>26</td>
</tr>
<tr>
<td>Liu, A.</td>
<td>(AT-07)</td>
<td>203</td>
</tr>
<tr>
<td>Liu, A.</td>
<td>(AU-08)</td>
<td>50</td>
</tr>
</tbody>
</table>

*Best student presentation award finalist*
<table>
<thead>
<tr>
<th>Name</th>
<th>Code</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ohno, H. (ED-10)</td>
<td></td>
<td>108</td>
</tr>
<tr>
<td>Ohno, H. (BD-02)</td>
<td></td>
<td>38</td>
</tr>
<tr>
<td>Ohldag, H. (BA-02)</td>
<td></td>
<td>33</td>
</tr>
<tr>
<td>Ohkubo, T. (FC-09)</td>
<td></td>
<td>135</td>
</tr>
<tr>
<td>Ohkubo, T. (EC-01)</td>
<td></td>
<td>105</td>
</tr>
<tr>
<td>Ohkubo, T. (CF-05)</td>
<td></td>
<td>71</td>
</tr>
<tr>
<td>Ohe, J. (BV-15)</td>
<td></td>
<td>61</td>
</tr>
<tr>
<td>Ohashi, S. (FG-02)</td>
<td></td>
<td>142</td>
</tr>
<tr>
<td>Ohashi, S. (ER-08)</td>
<td></td>
<td>121</td>
</tr>
<tr>
<td>Ohashi, S. (ER-01)</td>
<td></td>
<td>120</td>
</tr>
<tr>
<td>Oh, Y. (GV-15)</td>
<td></td>
<td>189</td>
</tr>
<tr>
<td>Oh, Y. (GP-07)</td>
<td></td>
<td>178</td>
</tr>
<tr>
<td>Oh, S. (HQ-03)</td>
<td></td>
<td>209</td>
</tr>
<tr>
<td>Oh, S. (GV-15)</td>
<td></td>
<td>189</td>
</tr>
<tr>
<td>Oh, S. (GP-07)</td>
<td></td>
<td>178</td>
</tr>
<tr>
<td>Oh, S. (FW-03)</td>
<td></td>
<td>160</td>
</tr>
<tr>
<td>Ohe, J. (CR-08)</td>
<td></td>
<td>81</td>
</tr>
<tr>
<td>Ohe, J. (CU-16)</td>
<td></td>
<td>87</td>
</tr>
<tr>
<td>Ohe, S. (FW-03)</td>
<td></td>
<td>160</td>
</tr>
<tr>
<td>Ohe, S. (GP-07)</td>
<td></td>
<td>178</td>
</tr>
<tr>
<td>Ohe, S. (GV-15)</td>
<td></td>
<td>189</td>
</tr>
<tr>
<td>Ohe, S. (HB-07)</td>
<td></td>
<td>194</td>
</tr>
<tr>
<td>Ohe, J. (EV-05)</td>
<td></td>
<td>128</td>
</tr>
<tr>
<td>Ohe, J. (HV-07)</td>
<td></td>
<td>218</td>
</tr>
<tr>
<td>Ohe, J. (BV-15)</td>
<td></td>
<td>61</td>
</tr>
<tr>
<td>Ohkubo, H. (PL-01)</td>
<td></td>
<td>196</td>
</tr>
<tr>
<td>Ohkubo, H. (CP-09)</td>
<td></td>
<td>77</td>
</tr>
<tr>
<td>Ohkubo, H. (CP-05)</td>
<td></td>
<td>76</td>
</tr>
<tr>
<td>Ohkubo, H. (CP-01)</td>
<td></td>
<td>77</td>
</tr>
<tr>
<td>Ohkubo, H. (CF-05)</td>
<td></td>
<td>71</td>
</tr>
<tr>
<td>Ohkubo, H. (BD-02)</td>
<td></td>
<td>38</td>
</tr>
<tr>
<td>Ohno, H. (FC-06)</td>
<td></td>
<td>134</td>
</tr>
<tr>
<td>Ohno, H. (GD-03)</td>
<td></td>
<td>167</td>
</tr>
<tr>
<td>Ohno, H. (HC-03)</td>
<td></td>
<td>195</td>
</tr>
<tr>
<td>Ohno, H. (HC-05)</td>
<td></td>
<td>195</td>
</tr>
<tr>
<td>Ohno, H. (HC-10)</td>
<td></td>
<td>190</td>
</tr>
<tr>
<td>Ohno, H. (PL-01)</td>
<td></td>
<td>104</td>
</tr>
<tr>
<td>Ohnuma, S. (BP-04)</td>
<td></td>
<td>48</td>
</tr>
<tr>
<td>Ohpresser, P. (AS-14)</td>
<td></td>
<td>25</td>
</tr>
<tr>
<td>Ohshaya, Y. (BD-04)</td>
<td></td>
<td>38</td>
</tr>
<tr>
<td>Ohshaya, Y. (BP-01)</td>
<td></td>
<td>48</td>
</tr>
<tr>
<td>Ohshaya, Y. (ED-07)</td>
<td></td>
<td>108</td>
</tr>
<tr>
<td>Ohshaya, Y. (GA-06)</td>
<td></td>
<td>163</td>
</tr>
<tr>
<td>Ohshaya, Y. (AF-01)</td>
<td></td>
<td>111</td>
</tr>
<tr>
<td>Ohshaya, Y. (AF-04)</td>
<td></td>
<td>103</td>
</tr>
<tr>
<td>Ohshaya, Y. (AF-09)</td>
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<td>76</td>
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<td>Ohshaya, Y. (AF-09)</td>
<td></td>
<td>77</td>
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<tr>
<td>Ohshaya, Y. (AF-03)</td>
<td></td>
<td>38</td>
</tr>
<tr>
<td>Ohshaya, Y. (AF-01)</td>
<td></td>
<td>108</td>
</tr>
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<td>Ohshaya, Y. (AF-01)</td>
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<td>163</td>
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<td>Ohshaya, Y. (AF-01)</td>
<td></td>
<td>156</td>
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<td>Ohshaya, Y. (AF-01)</td>
<td></td>
<td>170</td>
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<td>Ohshaya, Y. (AF-01)</td>
<td></td>
<td>191</td>
</tr>
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<td>Ohshaya, Y. (AF-01)</td>
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<td>108</td>
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<td>Ohshaya, Y. (AF-01)</td>
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<td>178</td>
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<td>Ohshaya, Y. (AF-01)</td>
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<td>160</td>
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<td>Ohshaya, Y. (AF-01)</td>
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<td>131</td>
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<td>Ohshaya, Y. (AF-01)</td>
<td></td>
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<td>Ohshaya, Y. (AF-01)</td>
<td></td>
<td>191</td>
</tr>
<tr>
<td>Ohshaya, Y. (AF-01)</td>
<td></td>
<td>52</td>
</tr>
<tr>
<td>Ohshaya, Y. (AF-01)</td>
<td></td>
<td>89</td>
</tr>
<tr>
<td>Ohshaya, Y. (AF-01)</td>
<td></td>
<td>47</td>
</tr>
<tr>
<td>Ohshaya, Y. (AF-01)</td>
<td></td>
<td>128</td>
</tr>
<tr>
<td>Ohshaya, Y. (AF-01)</td>
<td></td>
<td>68</td>
</tr>
<tr>
<td>Ohshaya, Y. (AF-01)</td>
<td></td>
<td>79</td>
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<tr>
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*Best student presentation award finalist*
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*Best student presentation award finalist*
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<td>Westmoreland, S (CS-08)</td>
<td>83</td>
<td></td>
</tr>
<tr>
<td>Westphal, C (GW-10)</td>
<td>191</td>
<td></td>
</tr>
<tr>
<td>Weismann, L (EP-03)</td>
<td>116</td>
<td></td>
</tr>
<tr>
<td>White, R.M (BE-07)</td>
<td>52</td>
<td></td>
</tr>
<tr>
<td>White, R.M (CE-03)</td>
<td>69</td>
<td></td>
</tr>
<tr>
<td>Wiebe, J (EP-07)</td>
<td>117</td>
<td></td>
</tr>
<tr>
<td>Wiebe, J (GE-03)</td>
<td>169</td>
<td></td>
</tr>
<tr>
<td>Wiesendanger, R (CA-02)</td>
<td>175</td>
<td></td>
</tr>
<tr>
<td>Wiesendanger, R (EP-07)</td>
<td>117</td>
<td></td>
</tr>
<tr>
<td>Wiesendanger, R (GE-03)</td>
<td>169</td>
<td></td>
</tr>
<tr>
<td>Wiesendanger, R (HF-01)</td>
<td>200</td>
<td></td>
</tr>
<tr>
<td>Wild, J (AE-04)</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Wilhelm, F (FB-11)</td>
<td>133</td>
<td></td>
</tr>
<tr>
<td>Wilhelm, F (FE-01)</td>
<td>138</td>
<td></td>
</tr>
<tr>
<td>Wilhelm, F (GW-03)</td>
<td>190</td>
<td></td>
</tr>
<tr>
<td>Williams, W (EV-05)</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Williamse, J (DD-05)</td>
<td>96</td>
<td></td>
</tr>
<tr>
<td>Williams, W (FG-06)</td>
<td>143</td>
<td></td>
</tr>
<tr>
<td>Willing, S (AH-05)</td>
<td>14</td>
<td></td>
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<tr>
<td>Willing, S (GW-15)</td>
<td>191</td>
<td></td>
</tr>
<tr>
<td>Willke, P (HA-06)</td>
<td>192</td>
<td></td>
</tr>
<tr>
<td>Wilson, R. (BQ-13)</td>
<td>51</td>
<td></td>
</tr>
<tr>
<td>Wintz, S. (AE-05)</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Wintz, S. (FF-05)</td>
<td>181</td>
<td></td>
</tr>
<tr>
<td>Witte, R. (CB-05)</td>
<td>64</td>
<td></td>
</tr>
<tr>
<td>Witteveen, J (GC-05)</td>
<td>166</td>
<td></td>
</tr>
<tr>
<td>Wittmann, A.D (HD-05)</td>
<td>197</td>
<td></td>
</tr>
<tr>
<td>Wittrock, S (BD-06)</td>
<td>39</td>
<td></td>
</tr>
<tr>
<td>Wolf, G (HC-08)</td>
<td>196</td>
<td></td>
</tr>
<tr>
<td>Won, J (GP-07)</td>
<td>178</td>
<td></td>
</tr>
<tr>
<td>Wong, D.H (FG-04)</td>
<td>143</td>
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<tr>
<td>Wong, D.H (GF-06)</td>
<td>143</td>
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</tr>
</tbody>
</table>

*Best student presentation award finalist*
<table>
<thead>
<tr>
<th>Author</th>
<th>Code</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wu, Y.</td>
<td>HF-05</td>
<td>201</td>
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<tr>
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<td>GD-01</td>
<td>167</td>
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<td>Wu, Y.</td>
<td>ED-09</td>
<td>108</td>
</tr>
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<td>Wu, Y.</td>
<td>BD-07</td>
<td>102</td>
</tr>
<tr>
<td>Wu, Y.</td>
<td>BU-10</td>
<td>59</td>
</tr>
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<td>Wongsathan, R.</td>
<td>GI-05</td>
<td>176</td>
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<td>Wongsuthavas, S.</td>
<td>BIQ-15</td>
<td>51</td>
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<td>Wongtrairat, W.</td>
<td>BIQ-15</td>
<td>51</td>
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<td>Woo, K.</td>
<td>FU-11</td>
<td>157</td>
</tr>
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<td>Wu, S.</td>
<td>GA-02</td>
<td>162</td>
</tr>
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<td>Wu, S.</td>
<td>HE-08</td>
<td>190</td>
</tr>
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<td>CC-07</td>
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<td>EP-09</td>
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<td>FV-12</td>
<td>159</td>
</tr>
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<td>GW-04</td>
<td>190</td>
</tr>
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<td>176</td>
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<td>CG-10</td>
<td>74</td>
</tr>
<tr>
<td>Wu, S.</td>
<td>DG-03</td>
<td>99</td>
</tr>
<tr>
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<td>FH-01</td>
<td>144</td>
</tr>
<tr>
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<td>GH-02</td>
<td>174</td>
</tr>
<tr>
<td>Wu, S.</td>
<td>GH-10</td>
<td>175</td>
</tr>
<tr>
<td>Wu, S.</td>
<td>HS-09</td>
<td>213</td>
</tr>
<tr>
<td>Wu, S.</td>
<td>HS-09</td>
<td>213</td>
</tr>
<tr>
<td>Wu, T.</td>
<td>AR-14</td>
<td>81</td>
</tr>
<tr>
<td>Wu, L.</td>
<td>CR-07</td>
<td>81</td>
</tr>
<tr>
<td>Wu, W.</td>
<td>AS-07</td>
<td>24</td>
</tr>
<tr>
<td>Wu, W.</td>
<td>CR-11</td>
<td>82</td>
</tr>
<tr>
<td>Wu, W.</td>
<td>GS-01</td>
<td>182</td>
</tr>
<tr>
<td>Wu, X.</td>
<td>BW-03</td>
<td>51</td>
</tr>
<tr>
<td>Wu, X.</td>
<td>CW-11</td>
<td>91</td>
</tr>
<tr>
<td>Wu, X.</td>
<td>EW-10</td>
<td>130</td>
</tr>
<tr>
<td>Xu, Y.</td>
<td>FX-10</td>
<td>153</td>
</tr>
<tr>
<td>Xu, Y.</td>
<td>GE-04</td>
<td>169</td>
</tr>
<tr>
<td>Wu, Y.</td>
<td>AD-01</td>
<td>6</td>
</tr>
<tr>
<td>Wu, Y.</td>
<td>AG-11</td>
<td>13</td>
</tr>
<tr>
<td>Xu, Y.</td>
<td>AH-07</td>
<td>14</td>
</tr>
<tr>
<td>Wu, Y.</td>
<td>BO-07</td>
<td>50</td>
</tr>
<tr>
<td>Wu, Y.</td>
<td>BR-06</td>
<td>53</td>
</tr>
<tr>
<td>Wu, Y.</td>
<td>BV-06</td>
<td>61</td>
</tr>
<tr>
<td>Wu, X.</td>
<td>FS-10</td>
<td>153</td>
</tr>
<tr>
<td>Wu, Y.</td>
<td>CP-12</td>
<td>77</td>
</tr>
<tr>
<td>Wu, Y.</td>
<td>DC-04</td>
<td>95</td>
</tr>
<tr>
<td>Wu, Y.</td>
<td>DE-02</td>
<td>96</td>
</tr>
<tr>
<td>Wu, Y.</td>
<td>EA-02</td>
<td>102</td>
</tr>
<tr>
<td>Wu, Y.</td>
<td>ED-09</td>
<td>108</td>
</tr>
<tr>
<td>Wu, Y.</td>
<td>GD-01</td>
<td>167</td>
</tr>
<tr>
<td>Wu, Y.</td>
<td>HC-02</td>
<td>195</td>
</tr>
<tr>
<td>Wu, Y.</td>
<td>HF-05</td>
<td>201</td>
</tr>
<tr>
<td>Wu, Z.</td>
<td>AT-11</td>
<td>26</td>
</tr>
<tr>
<td>Wu, Z.</td>
<td>FT-06</td>
<td>154</td>
</tr>
<tr>
<td>Wunderle, T.</td>
<td>DA-04</td>
<td>92</td>
</tr>
<tr>
<td>Wunderlich, J.</td>
<td>AA-04</td>
<td>2</td>
</tr>
<tr>
<td>Wunderlich, J.</td>
<td>CD-07</td>
<td>68</td>
</tr>
<tr>
<td>Wunsch, B.</td>
<td>HH-01</td>
<td>204</td>
</tr>
</tbody>
</table>

*X - X *

*Best student presentation award finalist*
Xu, M. (EB-09) .......................... 104
Xu, M. (ED-05) .......................... 107
Xu, Q. (FT-15) .......................... 155
Xu, Q. (HR-07) .......................... 211
Xu, R. (FE-04) .......................... 139
Xu, R. (HI-05) .......................... 204
Xu, W. (BS-02) .......................... 54
Xu, W. (EQ-03) .......................... 118
Xu, W. (ER-09) .......................... 121
Xu, W. (FW-06) .......................... 160
Xu, W. (GQ-09) .......................... 180
Xu, W. (GT-04) .......................... 185
Xu, W. (HH-05) .......................... 204
Xu, W. (HV-01) .......................... 211
Xu, W. (IC-03) .......................... 217
Xu, W. (ER-09) .......................... 121
Xu, W. (EQ-03) .......................... 118
Yamada, K. (BR-10) ..................... 54
Yamada, K. (CF-06) ...................... 71
Yamada, K. (CT-16) ...................... 125
Yamada, M. (AR-10) .................... 22
Yamada, M. (AT-09) .................... 26
Yamada, M. (ER-02) .................... 184
Yamada, M. (FR-07) .................... 151
Yamada, M. (GV-08) .................... 189
Yamada, M. (HD-07) .................... 192
Yamada, M. (HD-08) .................... 197
Yamada, S. (AR-10) .................... 22
Yamada, S. (HD-08) .................... 197
Yamada, S. (HD-09) .................... 198
Yamamoto, M. (EC-08) ................. 106
Yamamoto, S. (CB-01) ................. 63
Yamamoto, S. (CB-02) ................. 64
Yang, B. (HW-07) ....................... 220
Yang, B. (HF-07) ........................ 201
Yang, B. (ED-11) ....................... 108
Yang, B. (HF-07) ....................... 201
Yang, B. (HP-06) ....................... 208
Yang, B. (HW-07) ....................... 220

*Best student presentation award finalist
<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yu, G.</td>
<td>(AU-13)</td>
<td>28</td>
</tr>
<tr>
<td>Yu, C.</td>
<td>(GQ-03)</td>
<td>179</td>
</tr>
<tr>
<td>Youssef, J.B.</td>
<td>(BV-04)</td>
<td>60</td>
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<tr>
<td>You, L.</td>
<td>(CQ-04)</td>
<td>79</td>
</tr>
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<td>You, L.</td>
<td>(AR-13)</td>
<td>23</td>
</tr>
<tr>
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<td>(AF-03)</td>
<td>10</td>
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<td>(AQ-11)</td>
<td>20</td>
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<td>You, D.</td>
<td>(FT-11)</td>
<td>155</td>
</tr>
<tr>
<td>You, C.</td>
<td>(CQ-15)</td>
<td>80</td>
</tr>
<tr>
<td>You, C.</td>
<td>(AR-07)</td>
<td>22</td>
</tr>
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<td>Yoshimura, W.</td>
<td>(CV-05)</td>
<td>88</td>
</tr>
<tr>
<td>Yu, G.</td>
<td>(HQ-07)</td>
<td>209</td>
</tr>
<tr>
<td>Yu, H.</td>
<td>(BT-07)</td>
<td>57</td>
</tr>
<tr>
<td>Yu, H.</td>
<td>(BV-14)</td>
<td>61</td>
</tr>
<tr>
<td>Yu, H.</td>
<td>(CP-13)</td>
<td>77</td>
</tr>
<tr>
<td>Yu, H.</td>
<td>(CU-09)</td>
<td>87</td>
</tr>
<tr>
<td>Yu, H.</td>
<td>(ES-13)</td>
<td>123</td>
</tr>
<tr>
<td>Yu, H.</td>
<td>(GR-13)</td>
<td>182</td>
</tr>
<tr>
<td>Yu, H.</td>
<td>(GR-15)</td>
<td>182</td>
</tr>
<tr>
<td>Yu, J.</td>
<td>(AD-10)</td>
<td>8</td>
</tr>
<tr>
<td>Yu, J.</td>
<td>(BD-08)</td>
<td>39</td>
</tr>
<tr>
<td>Yu, J.</td>
<td>(CQ-07)</td>
<td>79</td>
</tr>
<tr>
<td>Yu, S.</td>
<td>(CS-05)</td>
<td>83</td>
</tr>
<tr>
<td>Yu, J.</td>
<td>(DE-03)</td>
<td>97</td>
</tr>
<tr>
<td>Yu, J.</td>
<td>(DH-11)</td>
<td>168</td>
</tr>
<tr>
<td>Yu, J.</td>
<td>(HG-08)</td>
<td>203</td>
</tr>
<tr>
<td>Yu, L.</td>
<td>(FP-05)</td>
<td>116</td>
</tr>
<tr>
<td>Yu, L.</td>
<td>(FG-09)</td>
<td>143</td>
</tr>
<tr>
<td>Yu, N.</td>
<td>(HB-04)</td>
<td>193</td>
</tr>
<tr>
<td>Yu, R.</td>
<td>(CC-03)</td>
<td>66</td>
</tr>
<tr>
<td>Yu, S.</td>
<td>(CR-02)</td>
<td>81</td>
</tr>
<tr>
<td>Yu, S.</td>
<td>(CR-03)</td>
<td>81</td>
</tr>
<tr>
<td>Yu, S.</td>
<td>(FU-08)</td>
<td>156</td>
</tr>
<tr>
<td>Yu, S.</td>
<td>(HI-01)</td>
<td>205</td>
</tr>
<tr>
<td>Yu, S.</td>
<td>(HW-09)</td>
<td>220</td>
</tr>
<tr>
<td>Yu, X.</td>
<td>(CR-07)</td>
<td>81</td>
</tr>
<tr>
<td>Yu, X.</td>
<td>(FP-03)</td>
<td>147</td>
</tr>
<tr>
<td>Yu, Y.</td>
<td>(HJ-12)</td>
<td>210</td>
</tr>
<tr>
<td>Yu, Z.</td>
<td>(EH-07)</td>
<td>113</td>
</tr>
<tr>
<td>Yu, Z.</td>
<td>(EQ-01)</td>
<td>118</td>
</tr>
<tr>
<td>Yu, Z.</td>
<td>(HB-12)</td>
<td>194</td>
</tr>
<tr>
<td>Yuan, F.</td>
<td>(AV-01)</td>
<td>29</td>
</tr>
<tr>
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<td>(HE-08)</td>
<td>200</td>
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<td>(AG-08)</td>
<td>13</td>
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<td>(BH-08)</td>
<td>46</td>
</tr>
<tr>
<td>Yuan, J.</td>
<td>(CG-06)</td>
<td>73</td>
</tr>
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<td>Yuan, J.</td>
<td>(CG-11)</td>
<td>74</td>
</tr>
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<td>(CD-11)</td>
<td>50</td>
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<td>(FP-08)</td>
<td>148</td>
</tr>
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<td>Yuan, J.</td>
<td>(FQ-07)</td>
<td>149</td>
</tr>
<tr>
<td>Yuan, J.</td>
<td>(FW-09)</td>
<td>161</td>
</tr>
<tr>
<td>Yuan, J.</td>
<td>(HI-04)</td>
<td>206</td>
</tr>
<tr>
<td>Yuan, J.</td>
<td>(HX-01)</td>
<td>221</td>
</tr>
<tr>
<td>Yuan, J.</td>
<td>(HX-07)</td>
<td>221</td>
</tr>
<tr>
<td>Yuan, W.</td>
<td>(HX-01)</td>
<td>221</td>
</tr>
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<td>Yuan, Y.</td>
<td>(FG-01)</td>
<td>142</td>
</tr>
<tr>
<td>Yuan, Y.</td>
<td>(FG-11)</td>
<td>143</td>
</tr>
<tr>
<td>Yuan, Y.</td>
<td>(GH-08)</td>
<td>175</td>
</tr>
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<td>(CW-04)</td>
<td>90</td>
</tr>
<tr>
<td>Yuan, Z.</td>
<td>(GC-03)</td>
<td>166</td>
</tr>
<tr>
<td>Yuan, Z.</td>
<td>(GQ-10)</td>
<td>180</td>
</tr>
<tr>
<td>Yuasa, S.</td>
<td>(AI-05)</td>
<td>16</td>
</tr>
<tr>
<td>Yuasa, S.</td>
<td>(AR-15)</td>
<td>23</td>
</tr>
</tbody>
</table>

*Best student presentation award finalist*
Zhang, C. (FB-12) .................................................. 133
Zhang, C. (FU-15) .................................................. 157
Zhang, C. (GG-05) .................................................. 173
Zhang, C. (GH-02) .................................................. 174
Zhang, C. (GH-05) .................................................. 174
Zhang, C. (GI-14) .................................................. 177
Zhang, C. (GR-07) .................................................. 181
Zhang, C. (HI-03) .................................................. 206
Zhang, C. (HJ-11) .................................................. 207
Zhang, C. (HR-11) .................................................. 212
Zhang, D. (BH-04) .................................................. 45
Zhang, D. (BU-12) .................................................. 59
Zhang, D. (BU-14) .................................................. 59
Zhang, D. (CT-10) .................................................. 85
Zhang, D. (CU-15) .................................................. 87
Zhang, D. (CV-01) .................................................. 88
Zhang, D. (DD-03) .................................................. 96
Zhang, D. (EQ-08) .................................................. 119
Zhang, D. (FB-02) .................................................. 132
Zhang, D. (GR-01) .................................................. 181
Zhang, D. (GT-09) .................................................. 185
Zhang, D. (HP-05) .................................................. 158
Zhang, E. (AF-09) .................................................. 11
Zhang, E. (CV-01) .................................................. 88
Zhang, F. (BR-02) .................................................. 53
Zhang, F. (FU-08) .................................................. 156
Zhang, H. (AQ-05) .................................................. 20
Zhang, H. (BT-09) .................................................. 57
Zhang, H. (BU-12) .................................................. 59
Zhang, H. (CT-15) .................................................. 85
Zhang, H. (CU-14) .................................................. 87
Zhang, H. (DG-03) .................................................. 99
Zhang, H. (DH-05) .................................................. 100
Zhang, H. (EQ-11) .................................................. 119
Zhang, H. (ER-13) .................................................. 121
Zhang, H. (GT-05) .................................................. 151
Zhang, H. (FB-02) .................................................. 132
Zhang, H. (FC-02) .................................................. 134
Zhang, H. (FD-11) .................................................. 138
Zhang, H. (FG-07) .................................................. 143
Zhang, H. (FP-02) .................................................. 147
Zhang, H. (FP-11) .................................................. 148
Zhang, H. (FQ-06) .................................................. 149
Zhang, H. (GR-05) .................................................. 181
Zhang, H. (GS-03) .................................................. 183
Zhang, H. (HH-06) .................................................. 205
Zhang, H. (HQ-09) .................................................. 210
Zhang, J. (AU-07) .................................................. 28
Zhang, J. (BU-03) .................................................. 58
Zhang, J. (BU-09) .................................................. 59
Zhang, J. (BV-14) .................................................. 61
Zhang, J. (CT-07) .................................................. 72
Zhang, J. (CT-13) .................................................. 85
Zhang, J. (EG-03) .................................................. 111
Zhang, J. (FF-10) .................................................. 142
Zhang, J. (FH-07) .................................................. 145
Zhang, J. (FR-02) .................................................. 150
Zhang, J. (GP-04) .................................................. 178
Zhang, J. (GR-05) .................................................. 181
Zhang, J. (GR-15) .................................................. 182
Zhang, J. (HP-04) .................................................. 208
Zhang, J. (HP-06) .................................................. 208
Zhang, J. (HR-13) .................................................. 212
Zhang, J. (JW-05) .................................................. 73
Zhang, K. (AR-08) .................................................. 22
Zhang, K. (BR-05) .................................................. 53
Zhang, K. (BR-12) .................................................. 57
Zhang, K. (CT-03) .................................................. 214
Zhang, L. (AB-04) .................................................. 3
Zhang, L. (BB-10) .................................................. 35
Zhang, L. (BT-10) .................................................. 57
Zhang, L. (CT-01) .................................................. 84
Zhang, L. (CT-15) .................................................. 85
Zhang, L. (HU-02) .................................................. 216
Zhang, M. (AG-01) .................................................. 12
Zhang, M. (BB-10) .................................................. 35
Zhang, M. (FW-01) .................................................. 160
Zhang, M. (HP-05) .................................................. 201
Zhang, M. (HW-08) .................................................. 110
Zhang, M. (NP-12) .................................................. 148
Zhang, N. (CP-16) .................................................. 78
Zhang, P. (CT-07) .................................................. 85
Zhang, P. (DE-05) .................................................. 97
Zhang, P. (GQ-01) .................................................. 179
Zhang, Q. (BU-04) .................................................. 58
Zhang, Q. (CW-04) .................................................. 90
Zhang, Q. (EO-06) .................................................. 113
Zhang, R. (EH-02) .................................................. 112
Zhang, S. (BT-01) .................................................. 56
Zhang, S. (CA-04) .................................................. 63
Zhang, S. (DC-01) .................................................. 94
Zhang, S. (EH-02) .................................................. 112
Zhang, S. (EV-11) .................................................. 189
Zhang, T. (HG-10) .................................................. 203
Zhang, W. (AB-03) .................................................. 3
Zhang, W. (EG-06) .................................................. 111
Zhang, W. (ER-11) .................................................. 121
Zhang, W. (GP-16) .................................................. 179
Zhang, X. (AP-04) .................................................. 18
Zhang, X. (AP-12) .................................................. 19
Zhang, X. (AS-03) .................................................. 24
Zhang, X. (BB-09) .................................................. 35
Zhang, X. (CV-13) .................................................. 44
Zhang, X. (CA-04) .................................................. 63
Zhang, X. (CD-03) .................................................. 67
Zhang, X. (CQ-13) .................................................. 80
Zhang, X. (CQ-14) .................................................. 80
Zhang, X. (EH-06) .................................................. 113
Zhang, X. (EP-01) .................................................. 116
Zhang, X. (EP-11) .................................................. 117
Zhang, X. (FR-14) .................................................. 118
Zhang, X. (EP-16) .................................................. 118
Zhang, X. (EQ-06) .................................................. 119
Zhang, X. (EV-13) .................................................. 129
Zhang, X. (EW-13) .................................................. 130
Zhang, X. (FP-09) .................................................. 148
Zhang, X. (FP-13) .................................................. 148
Zhang, X. (GC-01) .................................................. 165
Zhang, X. (GQ-07) .................................................. 180
Zhang, X. (GQ-10) .................................................. 180
Zhang, X. (GR-08) .................................................. 181
Zhang, X. (HE-07) .................................................. 199
Zhang, X. (HE-10) .................................................. 200
Zhang, X. (HF-02) .................................................. 200
Zhang, X. (HP-04) .................................................. 208
Zhang, X. (HP-02) .................................................. 208
Zhang, X. (HW-07) .................................................. 220
Zhang, X. (HX-08) .................................................. 222
Zhang, Y. (AB-02) .................................................. 3
Zhang, Y. (AG-03) .................................................. 12
Zhang, Y. (AR-01) .................................................. 21
Zhang, Y. (AR-08) .................................................. 22
Zhang, Y. (AR-09) .................................................. 22
Zhang, Y. (EP-02) .................................................. 114
Zhang, Y. (BR-05) .................................................. 53
Zhang, Y. (BU-14) .................................................. 59
Zhang, Y. (BV-14) .................................................. 61
Zhang, Y. (BW-02) .................................................. 51
Zhang, Y. (CC-07) .................................................. 66
Zhang, Y. (DG-01) .................................................. 99
Zhang, Y. (EP-13) .................................................. 117
Zhang, Y. (EP-02) .................................................. 118
Zhang, Y. (FC-11) .................................................. 135
Zhang, Y. (FP-03) .................................................. 147
Zhang, Y. (FQ-12) .................................................. 150
Zhang, Y. (FU-13) .................................................. 157
Zhang, Y. (FV-06) .................................................. 158
Zhang, Y. (GC-01) .................................................. 165
Zhang, Y. (GP-08) .................................................. 178

*Best student presentation award finalist
<table>
<thead>
<tr>
<th>Name</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zhou, Z.</td>
<td>EC-04</td>
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<td>Zimmermann, M.</td>
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<tr>
<td>Zou, J.</td>
<td>HJ-02</td>
</tr>
</tbody>
</table>

*Best student presentation award finalist
Zou, J. (HQ-07) .................. 209
Zou, M. (FW-11) .................. 161
Zou, M. (GT-06) .................. 184
Zou, T. (EG-08) .................. 112
Zou, X. (EH-07) .................. 113
Zou, X. (FV-12) .................. 159
Zou, Y. (BG-03) .................. 43
Zou, Y. (CT-11) .................. 85
Zou, Y. (CT-14) .................. 85
Zou, Y. (FV-10) .................. 159
Zou, Y. (FV-11) .................. 159
Zou, Z. (CQ-13) .................. 80
Zvezdin, A. (AH-03) .............. 14
Zvezdin, A. (EB-10) .............. 104
Zvezdin, A. (EP-03) .............. 116
Zvezdin, A. (FV-09) .............. 159
Zweck, J. (AE-04) ............... 9

*Best student presentation award finalist