

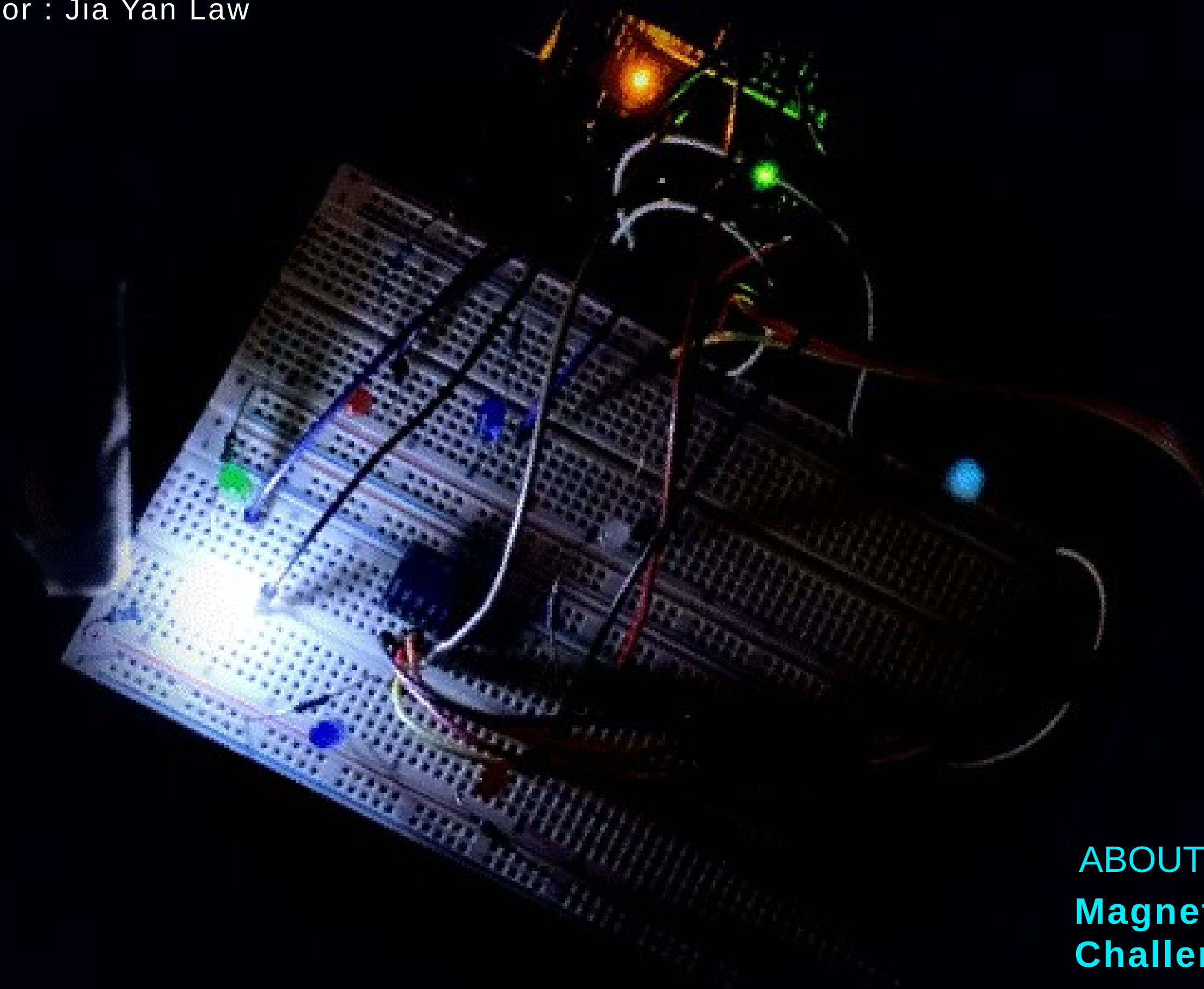


**IEEE
MAGNETICS**

NEWSLETTER

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Editor : Jia Yan Law



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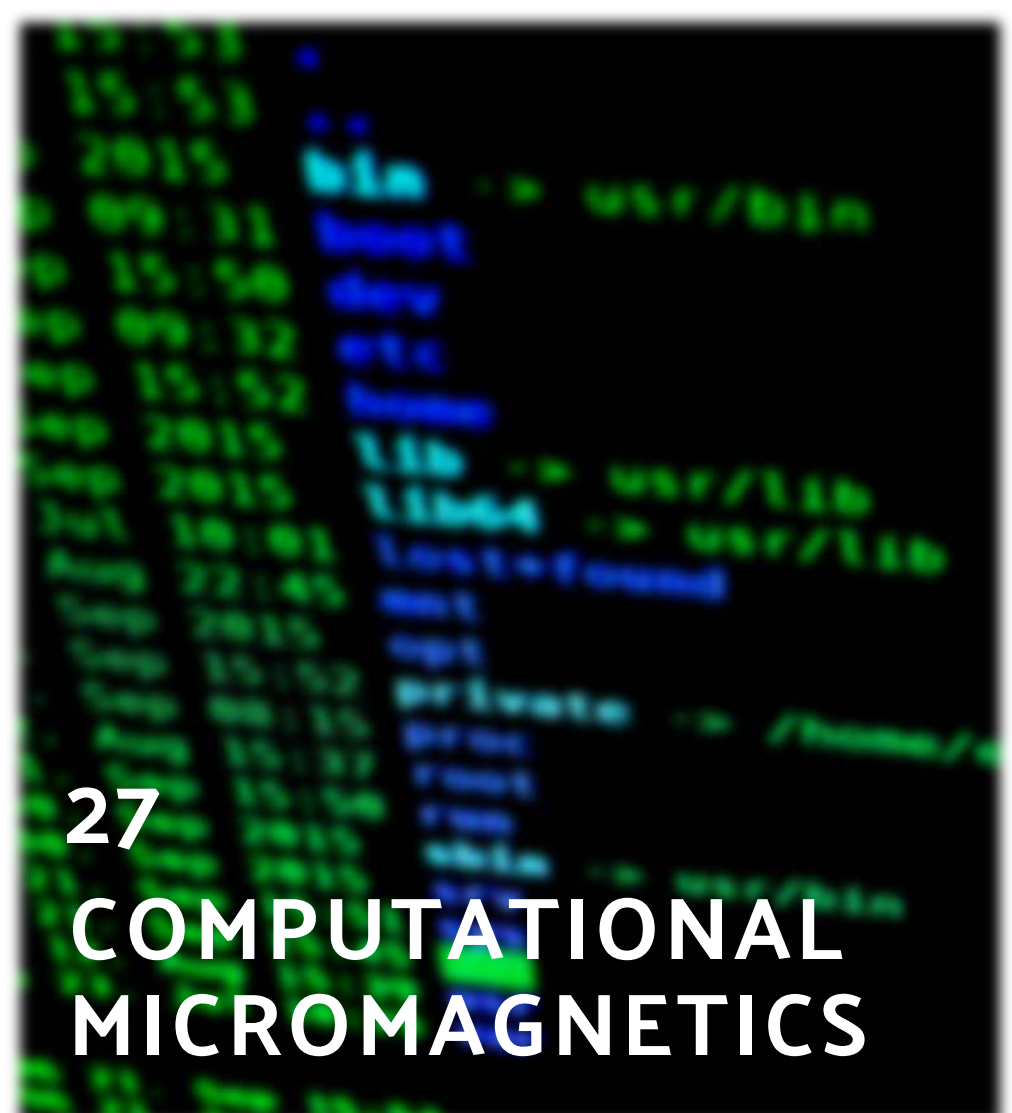
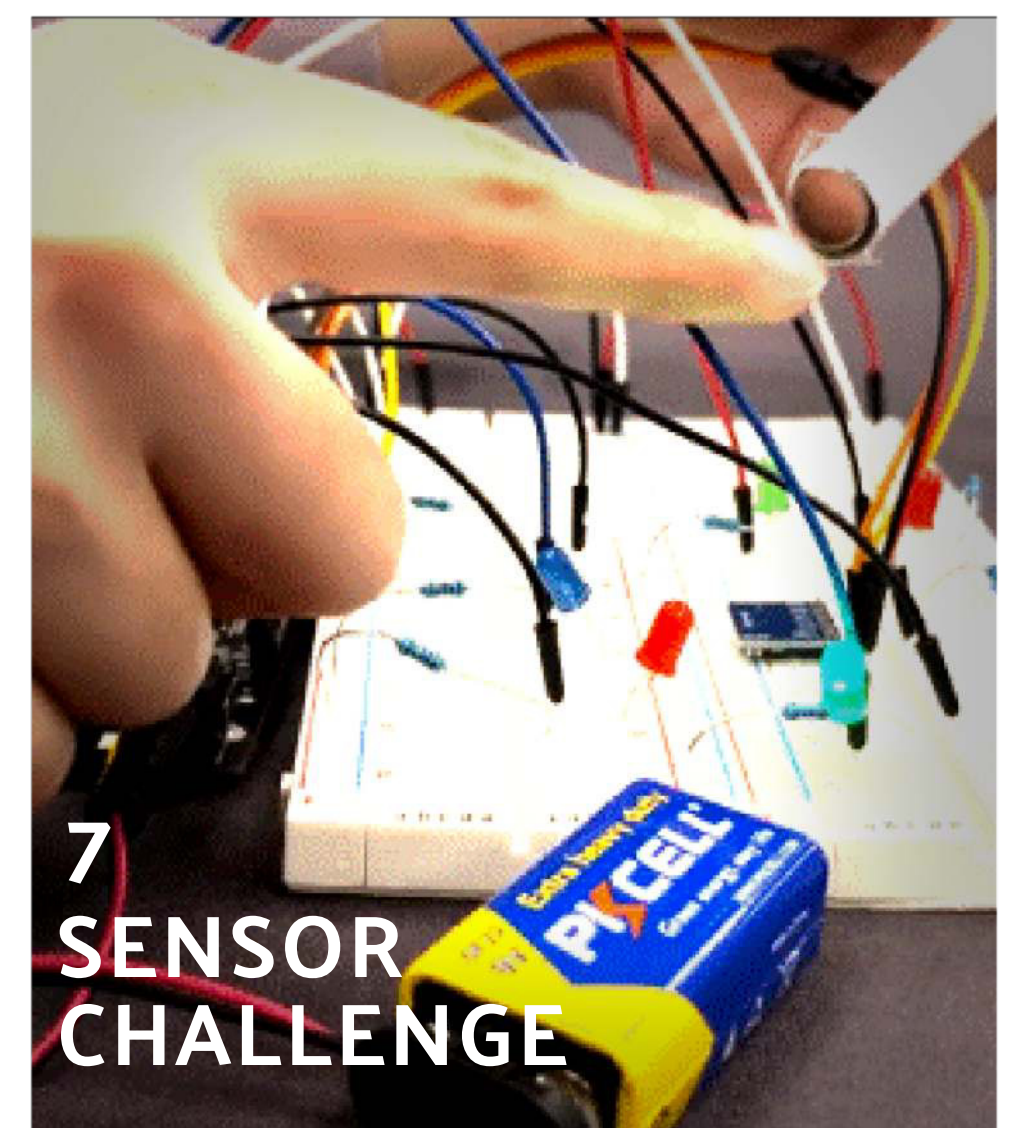
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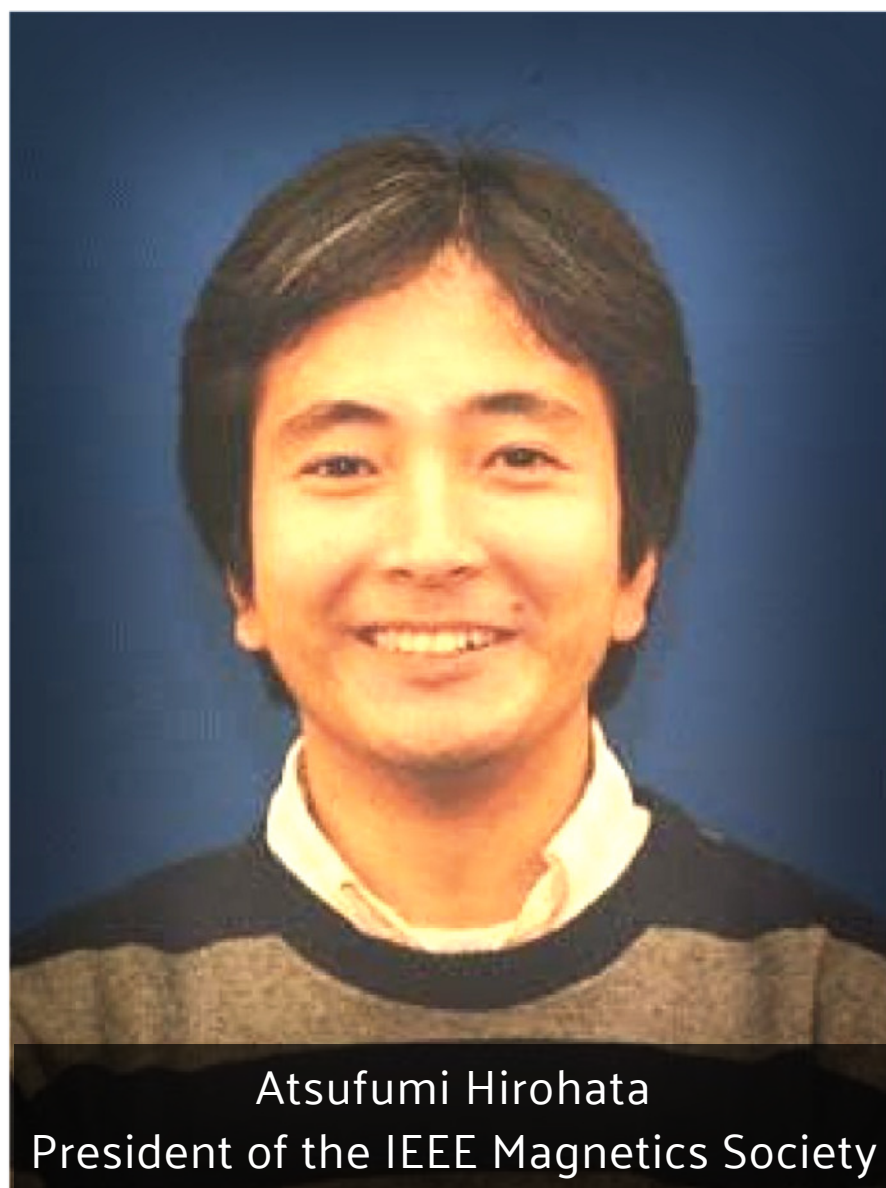
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FROM THE PRESIDENT

Atsufumi Hirohata



It is my great honor to become the 30th President of the IEEE Magnetics Society.

We all know how successful past Presidents and their Administrations have been in expanding our activities since August 1964. In order to continue our success, I will devote most of my time to my role. When I stood for the Secretary/Treasurer election, I promised to commit to four items to continue our success:

- (1) broader membership;
- (2) more collaborations with our sister societies;
- (3) increased industrial involvement; and
- (4) database creation.

These cannot be achieved without your support and contributions. In particular, I am looking forward to working with the members of the Administrative Committee (AdCom), our standing committee and subcommittee members and chairs, editorial boards, and secretarial support. We will hold online monthly meetings with committee chairs to discuss any issues that arise. I would also love to hear any comments and/or suggestions from members by e-mail or at conferences.



I would like to continue my first newsletter article by thanking my predecessor, Masahiro Yamaguchi


for his outstanding leadership. Masahiro made significant efforts to increase our visibility in Asia/Pacific regions and to initiate regular dialogue with the electric motor community. During his leadership, a hybrid format for our conferences was implemented so that both on-site and online participants could participate and learn of the latest developments in the field. The first hybrid conference, the 15th Joint MMM-Intermag, was held in New Orleans in January 2022.

Participation in hybrid conferences increased to over 670 at the MMM in Minneapolis in November 2022. In addition, he started the Standards Committee as a subcommittee of the Technical Committee, which develops a new IEEE standard on magnetic devices and materials.

Together with Ron Goldfarb, he formed an ad hoc committee for our oral history project, chaired by Liesl Folks, to interview key personnel in our field. As of today, four interview videos have been uploaded to our website. He also set up the Students in Magnetism, which provides outreach activities run by our student members, as well as the Around-the-Clock Around-the-Globe (AtC-AtG) conference. Chaired by May Inn Sim, the committee has been conducting an exercise to measure the earth's magnetic field. Our Society has remained financially healthy as a result. I will continue to plan for the best possible options under various scenarios as the world transitions from COVID-19 being a pandemic to it being an endemic process in order to enable scientific dissemination and networking activities at future events and in our publications.



I would also like to thank former president Pallavi Dhagat for her thoughtful and friendly advice on every aspect of our Society's operations. It has been a great help to us.



On behalf of the Society, I would like to acknowledge the outgoing committee chairs and welcome the new chairs:

Sara Majetich served as the Chair of the Education Committee. She organized a series of new initiatives during the pandemic, including local summer schools and support for Ukrainian researchers. She is now the Secretary/Treasurer and is replaced by Hyunsoo Yang. Hyunsoo has six years of experience on the Education Committee.

Jürgen Fassbender was the Chair of the Honors and Awards Committee. He took all the responsibilities to select our award winners. Adekunle Adeyeye, who is an experienced committee member, chairs the Committee.

Philip Pong served as the Publicity Chair for many years. He introduced our activities on social media and started e-mail bulletin, which update our activities timely and efficiently. He advances to the position of Chair of the aforementioned Standards Committee. The Associate Chair, Diana Leitão, now leads our publicity.

Bethanie Stadler worked as the Chair of the Distinguished Lecturer Committee, encouraging nominations and coordinating the program in an excellent manner, especially during the pandemic period. Hendrik Ohldag takes over her role based on his substantial contributions to the program.

Yizheng Wu led the Membership Committee, taking care of our members during the recent difficulties. Yayoi Takamura, who was the Conference Chair of the MMM 2022, has agreed to take the role with the new responsibility of diversity, equality, and inclusion.

Bruce Terris stepped down from the Fellows Evaluation Committee after his brilliant works, and Chih-Huang Lai has taken over his position. John Moreland also stepped down from the Fellows Nomination Committee after his long-term service, and Laura Heyderman has agreed to take the position. Additionally, Pallavi Dhagat coordinated the Women in Magnetism and handed it over to Montserrat Rivas, and Cajetan (Ikenna) Nlebedim coordinated the Young Professionals and handed it over to Dmytro Bozhko.

I am very happy to announce that the other standing committee chairs and council representatives will stay in their positions since we need their experience.

We can draw on their experience to make full recovery from the pandemic and global difficulties. Here is the roster of our committee chairs.



Ron Goldfarb
Planning, Constitution
and Bylaws Committee



Thomas Thomson
Publications Committee



Yayoi Takamura
Membership Committee



Hans Nembach
Chapters Committee



Diana Leitão
Publicity Committee



Rudolf Schäfer
Conference Executive
Committee



Hyunsoo Yang
Education Committee



Masahiro Yamaguchi
Nominations Committee



Mark Kief
Finance Committee



Adekunle Adeyeye
Honors and Awards
Committee



Hendrik Ohldag
Distinguished Lecturer
Committee



Mingzhong Wu
Technical Committee

Additionally, I would like to thank our outgoing Administrative Committee (AdCom) members –

Giovanni Finocchio, Jean Anne Incorvia, Galina Kurlyandskaya, Kenji Nakamura, Hendrik Ohldag, Lucian Prejbeanu, Montserrat Rivas and Yukiko Takahashi.

Their participation and contributions provide great value to our global membership.

I take this opportunity to welcome our new Secretary/Treasurer, Sara Majetich, as well as our new AdCom members, Giovanni Finocchio, José Miguel García-Martín, Takeshi Kato, Marcelo Knobel, David A. Lowther, Ioan Lucian Prejbeanu, Montserrat Rivas, and Masashi Shiraishi.

I am very much looking forward to working with the new and re-elected volunteers together with our experienced team to represent the best interests of our members.

Now we celebrate the recipients of the 2023 Society Awards for their accomplishments and contributions.

Click the icon to directly go to the article in this newsletter



Burkard Hillebrands (TU Kaiserslautern, Germany) received the Achievement Award for his pioneering contributions to the field of spin dynamics, especially in magnonics. Julie Grollier (Centre National de la Recherche Scientifique (CNRS)/Thales, France) was recognized with the Mid Career Award for her contributions to the development of spintronic devices and their use in neuromorphic computing. Claire Donnelly (Max Planck Institute for Chemical Physics of Solids, Germany) was recognized with

the Early Career Award for her excellent work on developing X-ray techniques for imaging magnetic structures in three dimensions. Mark Kief (Seagate Technology, USA) received the Distinguished Service Award for his exceptional performance in budget management and the development of new initiatives as the Finance Chair of the IEEE Magnetics Society.

We will congratulate these award recipients at the Plenary Session during Intermag 2023 in Sendai, Japan.

I also take this opportunity to announce that our Distinguished Lecturers for 2023:

- Manuel Vázquez Villalabeitia (Consejo Superior de Investigaciones Científicas Madrid, Spain)
- Susana Cardoso Freitas (Universidade de Lisboa, Portugal)
- Yoichiro Tanaka (Tohoku University, Japan) and
- Ping Liu (University of Texas Arlington, USA).

Chapter Chairs are encouraged to contact them for their excellent lectures on emerging topics in magnetics.

Finally, I would like to thank

Victorino Franco,
General Chair for the 15th Joint MMM-Intermag Conference, which was our first hybrid conference. Due to the spread of the Omicron variant of Covid-19 shortly before the start of the conference, on-site participants were significantly reduced. Victorino and his organizing committee members made every effort to maximize the experience for the on-site and online participants.

also to

Yayoi Takamura,
Chair of the 67th MMM Conference, for her great work to make a clear difference between the on-site and online experience to pave the way for the return to our traditional conference model. The program featured excellent speakers and special sessions that were very well received by the participants.

Last but not least, I would like to congratulate the new IEEE Fellows: Geoffrey Beach (Massachusetts Institute of Technology, USA), Julie Grollier (CNRS/Thales, France), Mathias Kläui (Johannes Gutenberg-Universität Mainz, Germany), Laura Lewis (Northeastern University, USA), Daniel Worledge (IBM Yorktown Heights, USA), and Tetsuo Endoh (Tohoku University, Japan).

Click the icon below to directly go to the article in this newsletter



Please visit our Society's website to learn more about our accomplishments, where you will find the list of chapters, renewed sister societies, new volunteer signup forms, and more. You can also find the Society's Constitution and Bylaws which were updated last year after the approval of the AdCom and members.

In closing, please feel free to contact me by e-mail, at on-site conferences, or virtually. Your thoughts and feedback are more than valuable for the future of the IEEE Magnetics Society. 🌐

Astufumi Hirohata

President of the IEEE Magnetics Society

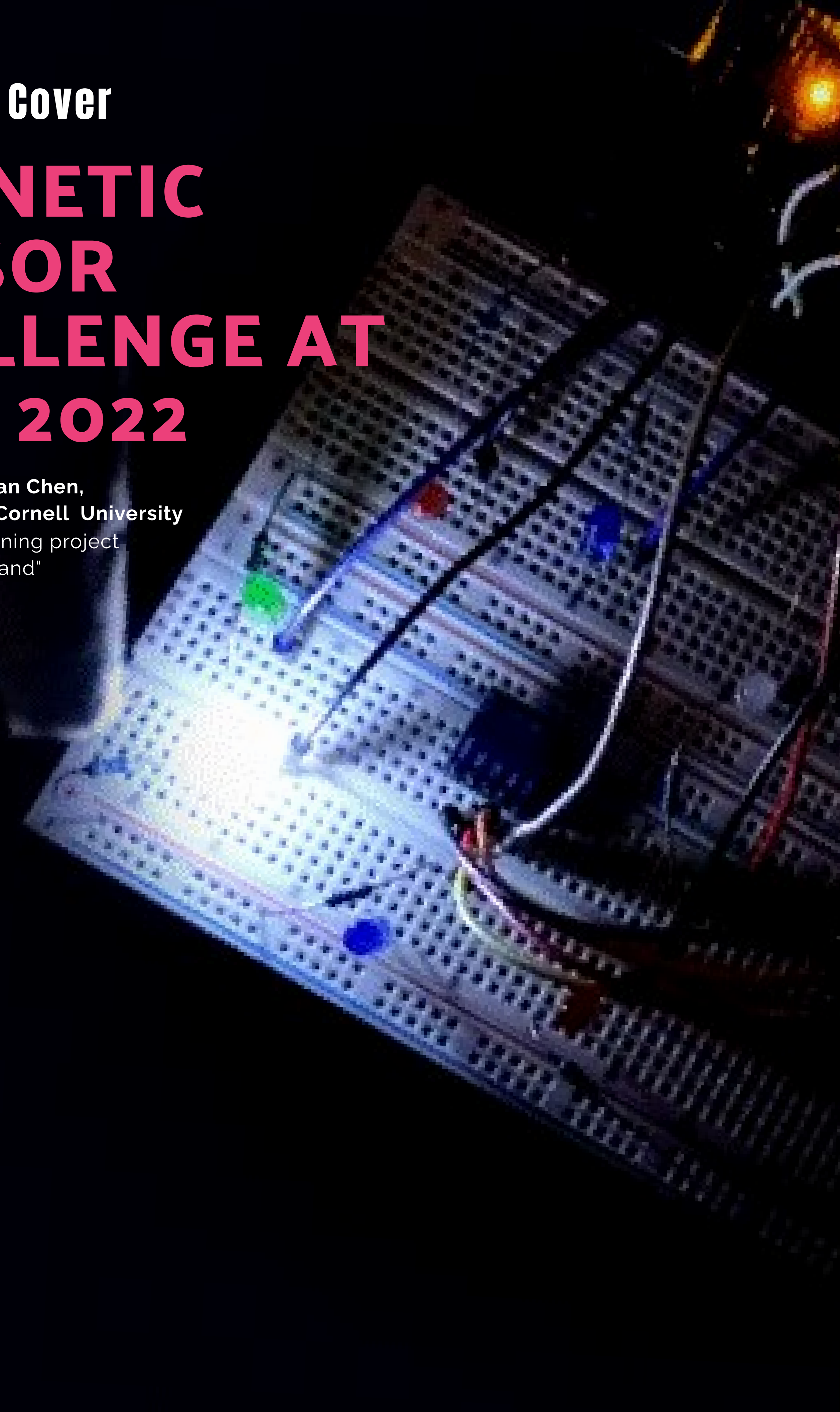


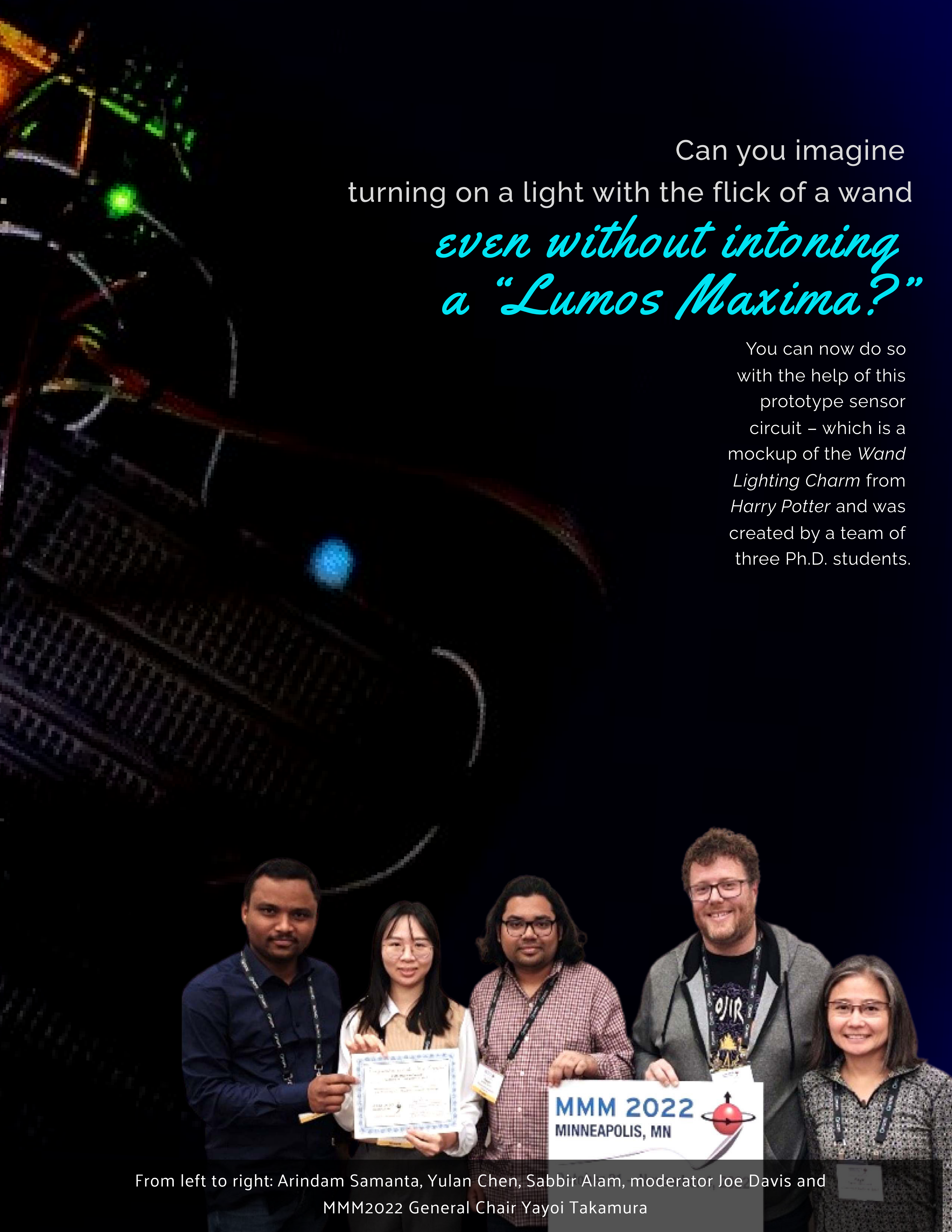
atsufumi.hirohata@york.ac.uk

About the Cover

MAGNETIC SENSOR CHALLENGE AT MMM 2022

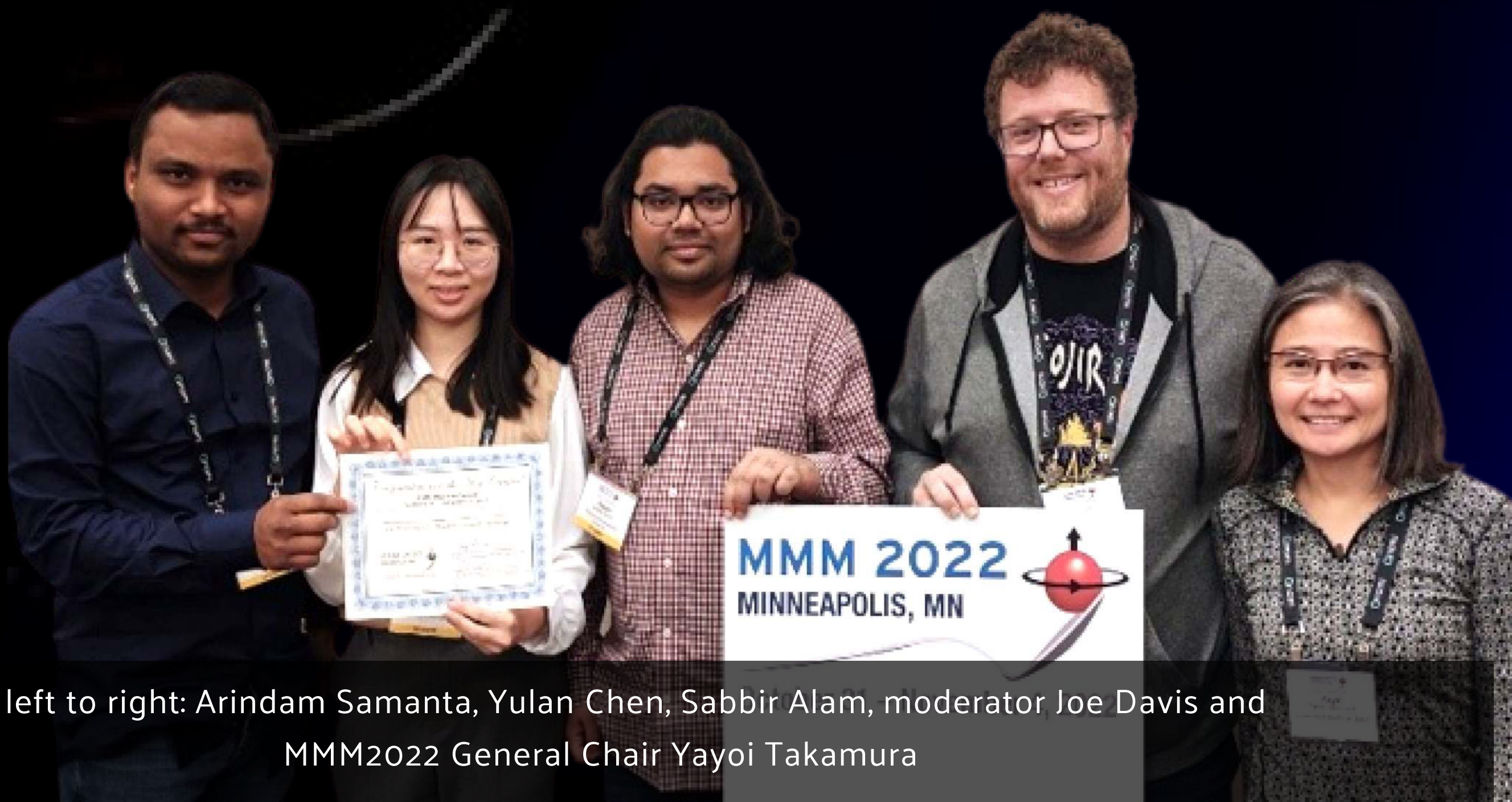
submitted by **Yulan Chen**,
Ph.D. student of Cornell University
Member of the winning project
"Magnetic Magic Wand"





Can you imagine
turning on a light with the flick of a wand
*even without intoning
a “Lumos Maxima?”*

You can now do so
with the help of this
prototype sensor
circuit – which is a
mockup of the *Wand
Lighting Charm* from
Harry Potter and was
created by a team of
three Ph.D. students.



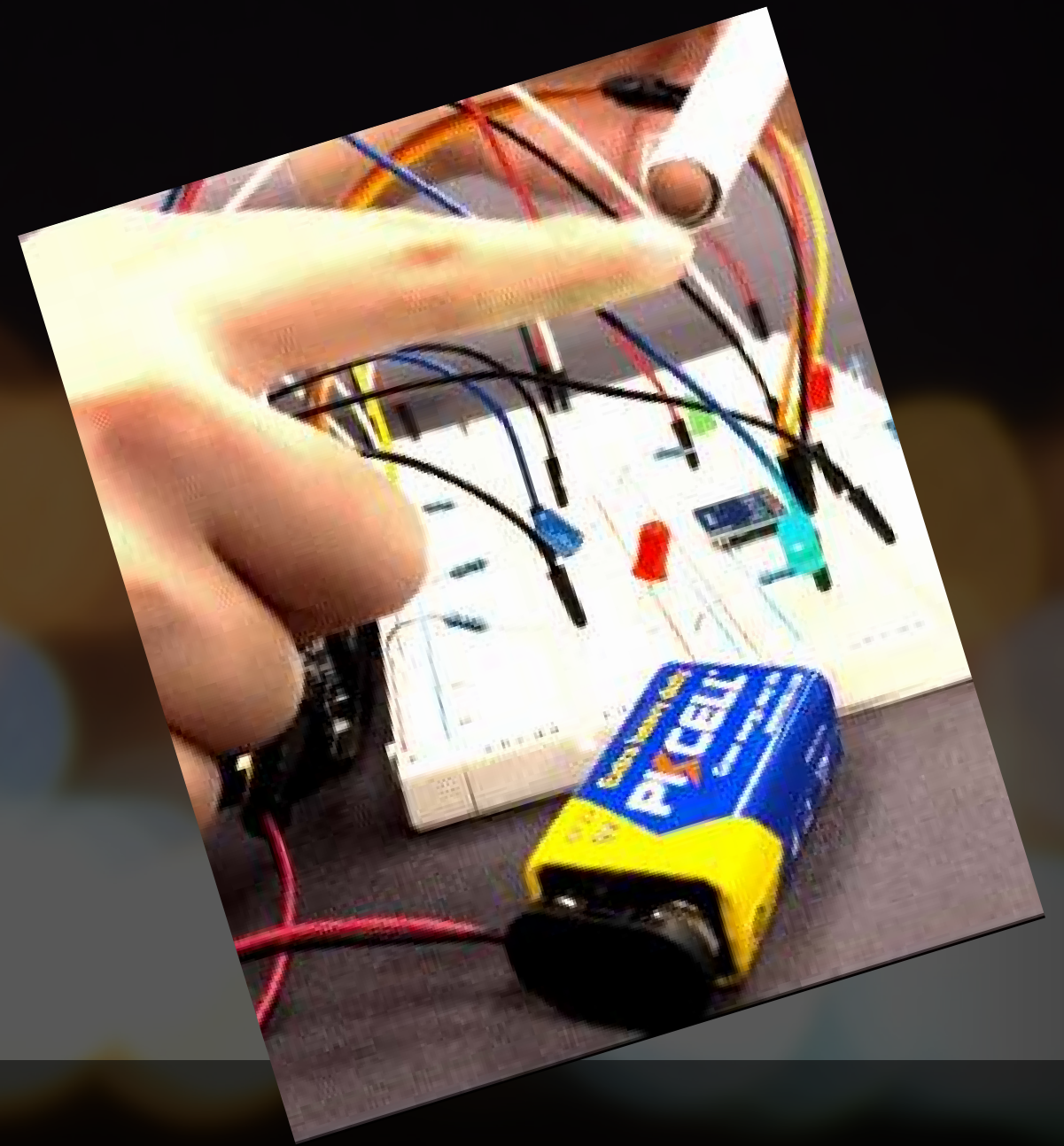
From left to right: Arindam Samanta, Yulan Chen, Sabbir Alam, moderator Joe Davis and
MMM2022 General Chair Yayoi Takamura

The "Magnetic Magic Wand" project, in which I had the honor to participate with my teammates, including Sabbir Alam and Arindam Samanta, recently won the Magnetic Sensor Challenge in the 67th Annual Conference on Magnetism and Magnetic Materials (MMM 2022). This is the second edition following the one in 2022 Joint MMM-Intermag Conference.



The event was moderated by Dr. Joe Davies (Quantinum) and Prof. Victorino Franco (University of Seville), aiming to encourage team-building and networking skills among students by creating a magnetic sensor circuit and demonstrating interesting functionalities.

There were five teams of students in the competition, and the winning team was announced and awarded on the last day of the conference at noon.



Our team envisions

that the lights can be turned on and off with a simple wave of a magnetic “magic” wand. The “magic” of the device lies in the combination of a compass sensor and a permanent magnet. The compass sensor is able to tell the strength and

direction of the magnetic field at a point in space. When connected to the programmed Arduino Uno

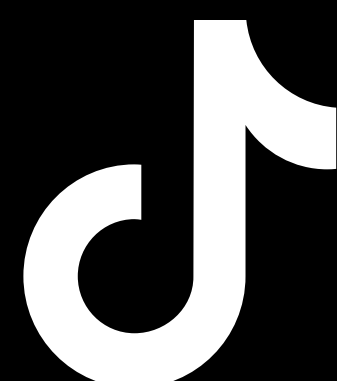
board with eight LEDs arranged in a circle, the sensor can detect the intensity and coordinates of the magnetic field, allowing for the operation of LED circuits

based on the programmed threshold intensity and X-Y

coordinates of the field. With a magnet embedded at the end of the wand, the magnetic sensor is

able to detect and switch on the circuit, lighting up the corresponding LED based on the orientation

of the magnetic field.



CLICK HERE

Links to other works by the participants on the TikTok social media platform:

Badge-O-Matic

Beer level sensor

Magnetic Flute

Magnetic Chicken

Magnetic Race

Detecting changes in breathing

Magnetic Disposal System

We credit our success to excellent teamwork and cultural diversity of our professional backgrounds

Although we were strangers from three different institutions seated near each other in the Magnetic Sensor Challenge Instructional Meeting, when Dr. Davies told us about the competition, we spontaneously formed a team. We quickly became friends with the daily group meetings as we constantly improved on the project after each day's program at the MMM 2022 conference.

Our strategy was focused on a simple circuit design that could be prototyped within two days. Therefore, we decided to build a magnetic sensor LED circuit that can detect and turn on LEDs based on the strength and direction of the magnetic field produced by a permanent magnet. After devoting two meetings to connecting the electronic components, writing the code, and successfully running the Arduino board, we tried to think of an intriguing presentation to "sell" our project. Inspired by the fantastic magical objects in Harry Potter, we wanted things to feel a bit more magical – thus we built a magnetized wand to do the job instead.



I was proud to be a part of this wonderful team, a diverse group of individuals who met by chance but shared a common goal: to push ourselves beyond our comfort zones and try something completely different.

Although our team sometimes had different opinions, we always figured out what was most effective for the team going forward. Instead of winning, our goal was to enjoy this competition, acquire relevant knowledge, and make small improvements over time.

A KEY

TAKEAWAY MESSAGE FOR ME

has been the importance of collaboration and taking advantage of each individual team member's skills and strengths (brainstorming, coding, interfacing, presenting, and video editing).

The talent mix has proven very beneficial in developing a very successful and fun project for the Magnetic Sensor Challenge.

Arindam

“ “ I would say we wouldn't have won if we didn't all contribute equally.

The team worked together perfectly, especially when each team member had a role to play and was responsible for different aspects, such as coding, prototyping, marketing, and filming ” ”

“ “

One of the keys to our success was that we encouraged diversity in multiple dimensions because we know diversity leads to stronger and smarter teams. ” ”

Sabbir

In addition to a \$100 cash prize, each of us also received an Arduino kit. I hadn't really worked with integrated circuits before. This competition, however, inspired me to start tinkering and creating something awesome. The Magnetic Sensor Challenge is such a worthwhile opportunity that I have been able to challenge myself, explore the practical use of magnetic sensors, and network with talented people. I highly recommend participating in this activity and taking advantage of this amazing opportunity! 🌐

*It's time to celebrate
the success of*
MMM 2022



★ **Yayoi Takamura**

• MMM 2022 General Chair

It was my pleasure to serve as the General Chair for the 2022 Magnetism and Magnetic Materials (MMM) Conference and work alongside an amazing Steering Committee to bring together an international forum on recent developments in fundamental and applied magnetism.

While uncertainties related to the ongoing COVID pandemic changed the conference landscape compared to expectations when we all agreed to serve, we worked together as a team to provide the best conference experience for all attendees, whether they were able to travel to Minneapolis in-person or attended the conference virtually. For many of the attendees, the MMM Conference was their first in-person conference since the pandemic began, so it was heartening to see so many smiling faces deep in scientific discussion, either at the morning coffee breaks or the evening bierstubes in the Exhibit Hall. With the guidance of our sponsors, AIP Publishing and IEEE, it was decided that the full program would be offered virtually, with a subset program created for those presenters who confirmed their in-person attendance. Special appreciation goes to the Program Co-Chairs, Aurelie Spiesser, Jordi Sort, and Tim Mewes, as well as Regina Mohr and Molly Bartkowski from the Simply Vintage support team, for putting in the extra effort to assemble the two programs, particularly when faced with a flurry of last-minute change requests.

In-person attendees were treated to unseasonably warm temperatures in Minneapolis, with daytime temperatures reaching above 70 °F (approximately 21 °C), at times exceeding the temperatures back home in sunny California. The conference opened on Monday, October 31, 2022, with a tutorial entitled "Towards 3D Nanomagnetism: Fundamental Aspects and Technological Applications," followed by a Halloween-themed Welcome Reception, featuring traditional Minnesota State Fair treats and an

extra-special cake decorated with the conference logo.

MMM 2022 MINNEAPOLIS, MN



October 31 – November 4, 2022

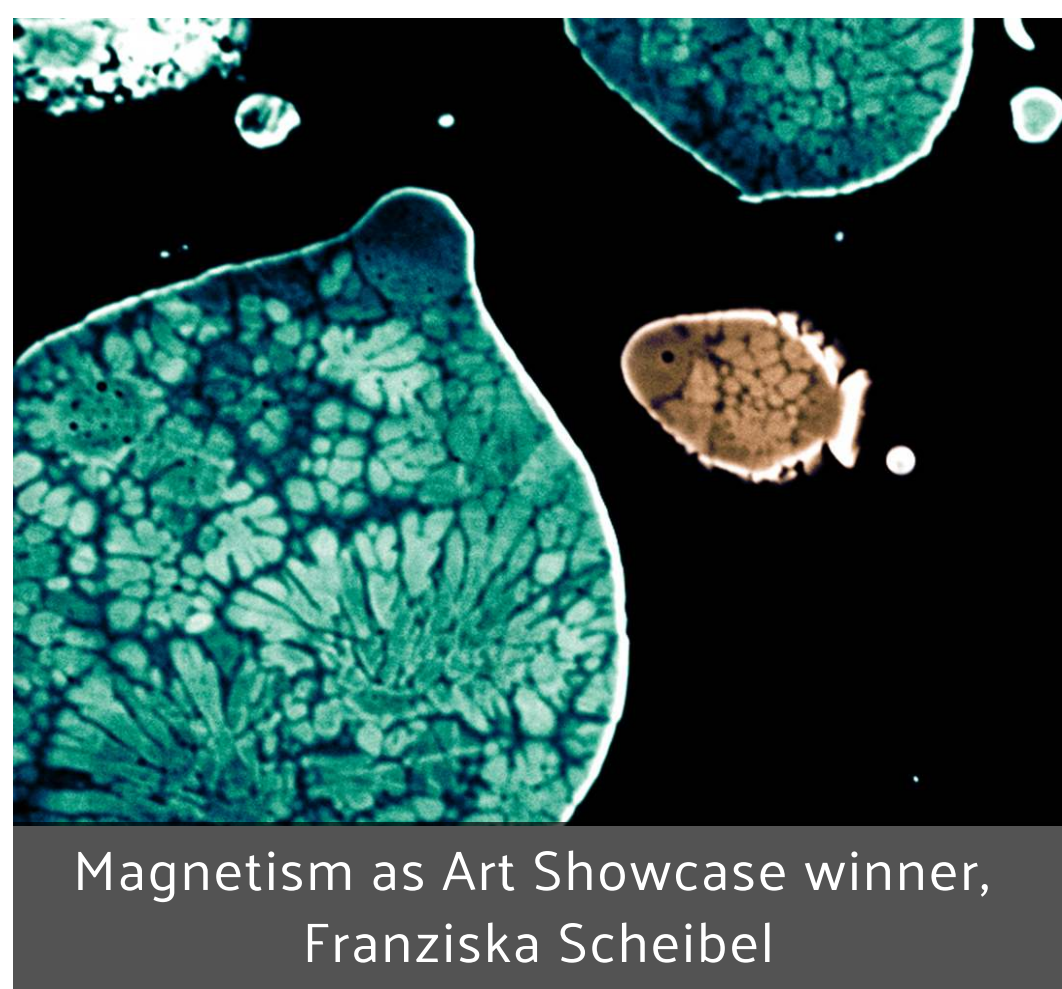


MMM 2022 Steering Committee Onsite

For those new to Minneapolis, the conference logo is inspired by the "Spoonbridge and Cherry" sculpture by Claes Oldenburg and Coosje van Bruggen installed in the Minneapolis Sculpture Garden near the conference site.

Additional conference highlights included two evening sessions, one on "Magnetism in Nature and the Universe" and a roundtable discussion on "Advanced Magnetic Materials for Novel Computing Paradigms". Special thanks go out to Jia Yan Law, the Special Events Chair, for organizing several innovative special events (e.g., "Making a Difference in Magnetism Outside of the Laboratory",

Creating An Effective Scientific Presentation Video", and the "Magnetic Sensor Challenge") to enrich the in-person experience for attendees. Michael Lee also initiated the MMM Conference podcast with interviews with notable attendees and invited speakers, representing a variety of the topics covered during the conference. These episodes are available on Spotify and Apple Podcasts.



Magnetism as Art Showcase winner,
Franziska Scheibel

I remain inspired by the many innovative and beautiful submissions to the "Magnetism as Art Showcase," which was initiated at the 2017 MMM Conference in Pittsburgh, PA.

Finally, with funding from the IEEE Magnetics Society, we were able to provide financial support for in-person conference attendees with Student Travel and Childcare Grants, as well as new initiatives for Ukrainian scientists and the Expanded Global Participation Travel Grant to increase attendance from countries typically underrepresented at MMM conferences.



Given the success of the MMM 2022 Conference, I remain enthusiastic about the future of our conference series, and I hope to see as many of you as possible in person at the 2023 Intermag Conference in Sendai, Japan, the MMM Conference in Dallas, TX, and beyond. 🌍

Sincerely yours,
Yayoi Takamura
MMM 2022 General Chair

Meet a MagSoc AdCom Member

Women in Magnetism (WiM) New Subcommittee

by **Montserrat Rivas**

WiM Chair, IEEE Magnetics Society

It wasn't long ago that women were discouraged from studying and getting an education in science. In some areas of the world, it continues to be true. Society has made substantial strides toward equal opportunities, despite some variations depending on the geographical region. However, more efforts are needed to be made to ensure that everyone has the same opportunities to select and shape their careers and lives.

The mere mention of the subject will prompt readers of this article to consider a variety of thought paths regarding goals and approaches to achieving them. It is not an easy task, and any solutions must be comprehensive and widely regarded.

For a while, Women in Magnetism (WiM) initiatives were pioneered by a group of enthusiastic volunteers in the IEEE Magnetics Society. They worked hard to offer our female members, and especially our younger members, educational opportunities (such as the online leadership conferences for women), social events (the popular women networking events at our flagship conferences), and the Women in Magnetism (WiM) list:



Click to join the mailing list to receive news about events and job opportunities and to participate in discussions about female researchers in magnetism.

In November 2022, the IEEE Magnetics Society Administrative Committee established the WiM Subcommittee under the Membership Committee to improve the development and integration of WiM in the Society.

As of January 1, 2023, I was appointed to be the chair of this subcommittee, and I am confident that I will meet your expectations. I welcome your ideas and suggestions.

**I am a professor
at the University of
Oviedo in Spain.**

**I lead a
multidisciplinary
team made up of
physicists, chemists,
engineers, and
biotechnologists**

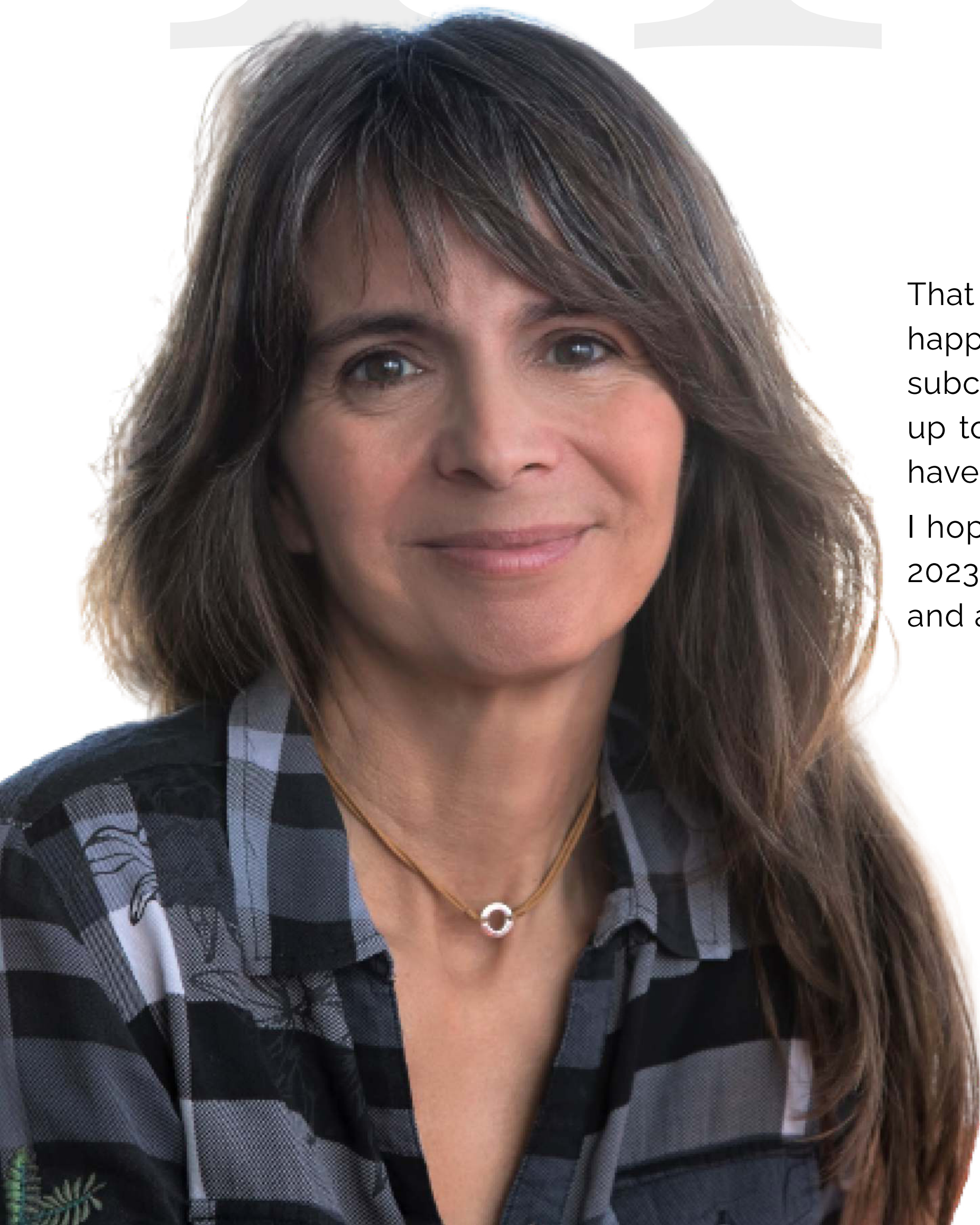
who are dedicated to exploring and developing, and applying nanoparticles and magnetic sensors in the life sciences. In addition, I am the Editor-in-Chief of the Magnetics Society section of the IEEE Access journal and an Associate Editor of IEEE Magnetics Letters.

Ever since I first attended an Intermag WiM networking event, I have been hooked. It broadened my perspective in many ways, for example, by giving me the confidence to request professional advice from a colleague or to be nominated for an invited talk. I was a young researcher at that time and had the chance to learn that admired senior researchers were approachable people who were honest about themselves.

I gained self-confidence from it, which helped me expand my network of contacts.

That is why I am so motivated and happy to serve as the WiM subcommittee chair, and I hope to live up to the standards of the women who have preceded me in this role.

I hope to see you in Sendai at Intermag 2023 to enjoy a worthwhile conference and an exciting WiM networking event. 🌐



Award Winners

submitted by **Jürgen Fassbender**
2022 Honors and Awards Committee Chair, IEEE Magnetics Society

congratulations

2023 Early Career Award

Dr. Claire Donnelly,
Max Planck Institute for
Chemical Physics of
Solids, Dresden, Germany
*For excellent work on
developing x-ray
techniques for imaging
magnetic structures in
three dimensions*



2023 Mid-Career Award

Dr. Julie Grollier,
CNRS/Thales Lab., France
*For contributions to the
development of
spintronic devices and
their use in
neuromorphic computing*



2023 Distinguished Service Award

Dr. Mark Kief,
Seagate Technology, U.S.A.
*For exceptional performance
in budget management and
the development of new
initiatives as Finance Chair of
the IEEE Magnetics Society*



2023 Achievement Award

**Prof. Burkard
Hillebrands**
TU Kaiserslautern,
Germany
*For his pioneering
contributions to the
field of spin
dynamics, especially
in magnonics*





Dr. Claire Donnelly from the Max Planck Institute for Chemical Physics of Solids in Dresden will be awarded the 2023 Early Career Award of the Magnetism Society at the

upcoming Intermag Conference in Sendai, Japan.

The citation reads: for Contributions to developing X-ray techniques for imaging magnetic structures in three dimensions.

Dr. Donnelly received her MPhys from the University of Oxford. She went to Switzerland to pursue her Ph.D. studies at the Paul Scherrer Institute and ETH Zurich. She was awarded her Ph.D. in 2017 for her work on 3D systems, which was recognized by a number of prizes including the APS Richard Greene Dissertation Award, the Werner Meyer-Ilse Memorial Award, the ETH Medal, and the SPS Award for Computational Physics.

After a postdoc at the ETH Zurich, she moved to the University of Cambridge and the Cavendish Laboratory as a Leverhulme Early Career Research Fellow, where she was awarded the L'Oréal For Women in Science Fellowship, and the European Magnetism Association Young Scientist Award.

Since September 2021 Dr. Donnelly is a Lise Meitner Group Leader of Spin3D at the Max Planck Institute for Chemical Physics of Solids in Dresden, Germany.

Dr. Donnelly has been the driving force behind the work to develop a new understanding of magnetic structures in three dimensions. She has made significant contributions both during and after her Ph.D. at ETH. Her accomplishments are well demonstrated by her key publications in high-quality journals.

Early Career award was established in 2016 in order to honor an individual, nominated not more than 5 years after completion of the Ph.D., and who has already shown outstanding scientific or technical achievements.

Dr. Grollier's early career established her as one of the leading researchers on spin-transfer torque-induced magnetization dynamics, starting with her pioneering work on measurements of magnetic switching in devices and on spin-torque nano-oscillators. She leveraged her expertise in spintronic devices to begin a field that continues to grow to this day: spintronics-based brain-inspired computing. She showed that reservoir computing, a form of neuromorphic computing, could be implemented with nanodevices that could be scaled down to extremely small sizes, demonstrating to the world the possibility of nanoscale neuromorphic computing. She also demonstrated that spin-torque nano-oscillators can function as both detectors and sources of microwave signals allowing for frequency multiplexed neural networks.

Dr Grollier received her master's degree in Materials Science in 2000 from Sorbonne University, Paris, France. In 2003 she received her Ph.D. in Materials Science from the Université Pierre et Marie Curie and CNRS/Thales, France. After two years of post-doctoral research at Groningen University and then at the

Institut d'Electronique Fondamentale, she joined CNRS in 2005. Dr. Grollier is currently a researcher director at the CNRS/Thales lab in France.

Dr. Julie Grollier from Unité Mixte de Physique CNRS/Thales will be awarded the 2023 Mid-Career Award at the INTERMAG conference in Sendai, Japan.

The citation reads: for contributions to the development of spintronic devices and their use in neuromorphic computing.

The aim of Mid Career award is to recognize scientists and engineers at the mid-stages of their careers for outstanding research and technological contributions in a field represented by the IEEE Magnetism Society. Eligible are members of the IEEE Magnetism Society in the mid-stages of their career (typically between 10 to 20 years after completion of the Ph.D.). This

award fills a void between

the Society's Early Career

Award limited to a

nominee within 5 years

of completion of the

Ph.D., and the

Achievement Award,

which recognizes a

nominee for research

that has demonstrated

unusually high impact,

regardless of

stage in

career.



**Professor Burkard Hillebrands
from the Technical University
of Kaiserslautern, Germany
will be awarded the
2023 Achievement Award
of the Magnetism Society
at the upcoming
Intermag Conference
in Sendai, Japan.**

*The citation reads:
for his pioneering
contributions to the field of
spin dynamics, especially in
magnonics.*

*This is the highest award
bestowed by the Magnetism
Society, given in recognition
of exceptional technical
accomplishments in the field
of magnetism.*



Professor Hillebrands received his Ph.D. in physics from the University of Cologne in 1986. After terms as a research associate at the University of Arizona and RWTH Aachen, he joined the University of Karlsruhe as Associate Professor. In 1995 he became a full professor at TU Kaiserslautern. From 1999 to 2001 he was Head of the Department of Physics, and from 2006 to 2014 he was their Vice President for Research, Technology, and Innovation. He later (2016-2018) was the Scientific Director of the Institute for Solid State and Materials Research (IFW) Dresden.

Prof. Hillebrands is well known for his applications of magnons to spintronics, as exemplified by demonstrations of magnonic transistors and logic gates. Other topics include magnonic crystals and solitons, plus discoveries in parametric spin-wave amplification and the magnonic spin Seebeck effect. Underpinning much of this work are his advances in Brillouin light scattering (BLS) spectroscopy, which provides unprecedented experimental access to spin wave phenomena.

He also has a record of distinguished service to the field including well-received (and well-cited) review articles on magnon spintronics and YIG magnonics. He served as Honors and Awards Chair of the IEEE Magnetism Society from 2013 to 2018 and chair of the Cg Commission (Magnetism) of the International Union of Pure and Applied Physics (IUPAP) since 2018.

Burkard is an IEEE Fellow and a Fellow of the American Physical Society. In 2005, he was an IEEE Magnetism Society Distinguished Lecturer. He is a member of the Academy of Science and Literature in Mainz and also a member of the German National Academy of Science and Engineering.

**Dr. Mark T. Kief
is recognized
with the 2023
Distinguished
Service Award of
the Magnetics
Society.**

***The citation reads:
for exceptional performance in
budget management and the
development of new initiatives
as Finance Chair of
the IEEE Magnetics Society***

The Distinguished Service Award was established in 2015 and was first awarded in 2016 to honor outstanding service to the Magnetics Society. It is characterized by sustained voluntary service significantly beyond the average performance of a person in that role.



Mark has been well engaged with the Magnetics Society. He served The Magnetic Recording Conference (TMRC) as Treasurer (2011, 2013, 2014) and as General Chair (2015, 2017). He was Treasurer of the Intermag Conference (2015-2021). He has been a member of the Magnetics Society Technical Committee since 2017 and has served as Magnetics Society Finance Chair since 2019. He is a Senior Member of the IEEE.

As Magnetics Society Finance Chair, Mark has been a true leader. He mastered IEEE's new, unwieldy, "NextGen" finance system; he has effectively monitored the society's budget; and he has ensured the accuracy of budget projections. He has led the budgeting for initiatives allowed under IEEE's finance rules.

He has supported student initiatives, such as "Around-the-Clock Around-the-Globe." He has intervened with IEEE staff to facilitate the disbursement of Magnetics Society awards and grants. He has worked tirelessly to simplify processes for payment and paperwork for small conferences and chapter activities.

Mark led the negotiations that eventually resulted in approval by the IEEE Board of Directors in 2022 of a nonpolitical, bulk grant to support the rebuilding of magnetics research in Ukraine. 🌐

Mark received his undergraduate degree from the University of Illinois Urbana-Champaign and his Ph.D. in physics from The Pennsylvania State University for the study of ultrathin magnetic films. He was awarded a National Research Council postdoctoral associateship at the National Institute of Standards and Technology (NIST, Gaithersburg, Maryland) to study giant magnetoresistive materials. In 1993, he became an assistant professor at the University of Alabama in physics and the Center for Materials for Information Technology (MINT).

In 1996, he joined Seagate Technology to work on the development of hard-disk-drive recording heads. At Seagate, he held several managerial and technologist appointments, including Senior Director / Technologist in Advanced Transducer Development. For many years, Mark directed Seagate's External Research program and was chair of the Advanced Storage Research Consortium's U.S. Technical Committee. Mark has over 50 patents and over 65 publications. He received Seagate's Technical Innovators Award and was a four-time recipient of Seagate's Inventors Hall of Fame Award.

New IEEE Fellows

submitted by **Thomas Thomson**,
Publications Committee Chair, IEEE Magnetics Society

congratulations

Six members of
the IEEE
Magnetics
Society were
recently
elevated as 2023
Fellows:

Geoffrey Beach
**Massachusetts Institute of
Technology Cambridge, USA**

for contributions to the understanding of
magnetoelectric effects, domain wall and
skyrmion dynamics in nanostructures

Tetsuo Endoh
Tohoku University, Japan
for contributions to nonvolatile memory and
spintronic logic

Julie Grollier
CNRS/Thales, France
for contributions to the use of spintronic
devices for neuromorphic computing

Mathias Kläui
**Johannes Gutenberg-Universität
Mainz, Germany**
for his contribution to the next generation
magnetic solid-state memory, logic and
sensor devices

Laura Lewis
Northeastern University, USA
for contributions to the design of magneto-
functional materials


Daniel Worledge
IBM Yorktown Heights, USA
for contributions to magneto-resistive
random access memories

New Senior Members

The following members of the IEEE Magnetics Society were recently elevated to the grade of Senior Member:

November 2022:

Shaahin Angizi
Patricia de la Presa
Jia Yan Law
Hongxi Liu
Eric Waydick
Weiduo Zhao



For more information on elevation to Senior Member, visit the IEEE Senior Member Grade Web page.

IEEE Magnetics Letters

Confirmed Recognition for Short Submission-to-Publication Times

by **Massimiliano d'Aquino**
Chief Editor, IEEE Magnetics Letters



I am extremely pleased to share that with its most recent report covering the third quarter of 2022, the IEEE Technical Activities Board's Periodicals Committee

**has again
designated *IEEE
Magnetics Letters
(IML)* as a high
performer.**

For the second time in 2022, after the recognition we got for the first quarter, the journal is in the first quartile for short times for both submission-to-first-decision and submission-to publication, with an average of 3.4 weeks and 7.7 weeks, respectively.

As Chief Editor, I am particularly proud of the present achievement, since reaching an excellent result is indeed very difficult, but confirming excellence is more challenging.

Of course, the merit for making this prestigious recognition possible belongs to the wonderful team that I have the honor and privilege to work with: our Editorial Review Board, our journal production manager, and our editorial assistant.

Once again I want to take this opportunity to thank all of them for their tireless work, along with all people who contribute to keeping the high-quality standards that the Magnetics Society strives for in its publications.

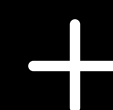
Established in 2010, IML publishes five-page, scholarly articles of substantial current interest covering the physics and engineering of magnetism, magnetic materials, applied magnetics, design and application of magnetic devices, bio-magnetics, magneto-electronics, and spin electronics. 🌐



Click to find IML on IEEE Xplore



Click for IML webpage



Articles can be submitted through this link



by **Andrew D. Kent, Enrique del Barco and Olga Kazakova,**
Conference Chairs of Magnetic Frontiers 2023

On behalf of the program and organizing committees

It is our great pleasure to announce Magnetic Frontiers: Quantum Technologies. This is the 3rd event in a series of small topical conferences under the general title "Magnetic Frontiers," which are sponsored by the IEEE Magnetics Society and IEEE Magnetics Letters. The conference will now be held from

April 19th to 22nd, 2023,
in Orlando, Florida,



at the Rosen Centre Hotel.

[Click Here](#)

Magnetic Frontiers is the premier topical conference on emerging aspects of fundamental and applied magnetism. The forum provides a range of plenary and invited talks delivered by key field researchers, as well as oral and poster presentations. As there will be a small number of participants (about 80), the conference provides a unique environment for researchers to communicate and discuss the latest developments with leading scientists in magnetism-related Quantum Technologies. We would like to cordially invite you to attend the conference, actively participate in its technical sessions, and contribute to the success of this conference series.

Magnetic Frontiers: Quantum Technologies is a cross-disciplinary and thought-stimulating forum where attendees will have the unique opportunity to discuss challenges and opportunities, present the latest developments in quantum technologies in the domains of spintronics, quantum information, simulation, and sensors and their implementation using various platforms.

More details can be found on the conference website:

<https://physics.nyu.edu/magneticfrontiers2023/>

We sincerely hope you will consider attending and actively participating in this exciting event! 🌐

Computational Micromagnetics

by **Martin Lonsky**

Institute of Physics, Goethe University Frankfurt, Germany

Numerical simulations and computational methods are gaining popularity among researchers in science, technology, engineering, and mathematics (STEM). This evolution can be explained by the rapidly rising computational power, which is readily available even on reasonably priced desktop computers, as well as by the improved accessibility, user-friendliness, and functionality of modern software packages. In this article, we discuss the field of computational micromagnetics as a prime illustration of the growing significance of computational methods in contemporary science, along with potential pitfalls and caveats.

Micromagnetics is concerned with the static and dynamic properties of a material's magnetization, typically on length scales between a few nanometers and about a micrometer, and on time scales in the nanosecond to picosecond regime. To describe the temporal evolution of magnetization, the so-called Landau-Lifshitz-Gilbert equation needs to be solved.

Typically, this partial differential equation consists of at least two terms, which describe the precession of magnetic moments as well as the damping. It also contains various micromagnetic energy terms, such as exchange interaction and Zeeman energy. Given the complex shapes, inhomogeneities, and structures of realistic physical systems, the aforementioned differential equation has to be solved numerically.

While atomistic simulations are considered to be more accurate, they also require more computational resources, and thus a continuum description of magnetization is often preferred. Here, magnetization is discretized into small simulation cells, where it is assumed to be constant. Towards this end, finite-difference and finite-element methods are typically utilized.

Micromagnetic simulations have become a standard tool for experimentalists working in various subfields of magnetism, such as spintronics. Models like this can help interpret experimental data. Alternatively, it can be used to predict novel phenomena and design

new devices, such as next-generation read heads for magnetic recording. First released in 1998, the Object Oriented MicroMagnetic Framework (OOMMF) was the first widely used software package.

While this CPU-based software clearly revolutionized the field of micromagnetics, GPU-accelerated code, such as *mumax3* has provided a further significant boost by facilitating faster simulations of even larger systems.

Many other packages, both free and commercial, are available today [1]. Current and future advancements include the extension of multiphysics approaches through the interaction with other physical quantities, such as thermal fluctuations and mechanical strain.

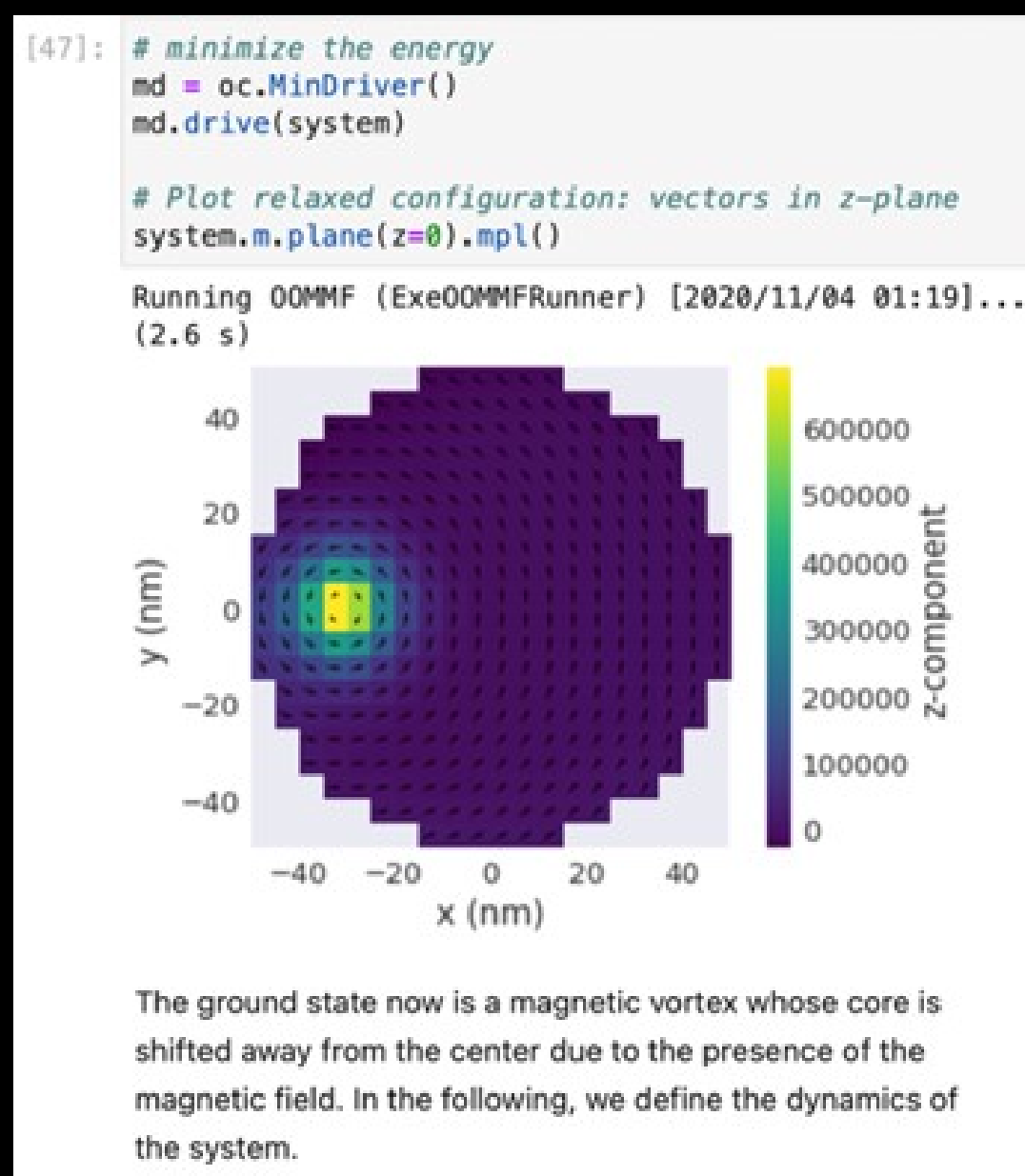


Fig. 1: Exemplary screenshot of a typical Jupyter notebook in *Ubermag* showing actual code, a visualization of a displaced magnetic vortex on a nanodisk with a diameter of 50 nm and a few comments using the so-called Markdown language.

Simulation packages have not only become more powerful but also more accessible to everyone. For instance, *Ubermag* offers a Python interface to the well-established packages OOMMF and mumax3, which are based on exotic programming languages with some limitations. In contrast, the use of Jupyter notebooks (as shown in Fig. 1 for an example) and the availability to run *Ubermag* in the cloud lower the barrier for scientists to perform their own micromagnetic models.

[1] J. Leliaert and J. Mulkers, *J. Appl. Phys.* **125**, 180901 (2019)

[2] J. Castell-Queralt et al., *J. Magn. Magn. Mater.* **549**, 168972 (2022)

[3] <https://nanohub.org>



Although computational micromagnetics represents an exciting opportunity for experimentalists to become involved with numerical simulations, a word of caution is also needed at this point. Increased accessibility and user-friendliness make it easier for researchers to run their first simulations, but potential pitfalls should be avoided. Taking into account numerical artifacts, such as edge effects, for example is important [2].

An adequate choice of parameters, such as the simulation cell size is fundamental to achieving meaningful results. This is not only true for micromagnetic simulations, but also for other types of numerical modeling, such as electronic structure calculations based on density functional theory, which can be carried out on the nanoHUB platform [3]. Such online simulation tools are incredibly valuable for research and teaching activities, but beginners should always take their first results with a grain of salt. For instance, it is prudent to reproduce results with modified simulation parameters, such as the mesh size instead of running erroneous calculations for several months and realizing that one should have chosen a smaller cell size.

The rapid evolution of computational micromagnetics has been truly impressive, and it will undoubtedly continue in the near future.

Accessibility and equity have been significantly improved by releasing free software packages with the capability of running simulations in the cloud. In other words, there is no need to purchase a license or a supercomputer to produce publishable results. Computational magnetics is a great example of how relevant numerical methods have become in today's research. Thus, we would like to encourage young scientists and professionals to explore and get involved in computational methods, since these have become the third pillar of STEM, next to theory and experiment.

Do you have further examples of exciting computational methods and platforms that you wish to share? Contact me at

mlonsky@physik.uni-frankfurt.de 

4th Joint Annual Meeting Of The IEEE Magnetics Society & IEEE Nanotechnology Council Chicago Chapters

submitted by Yi Li
Vice Chair of the Chicago Chapter, IEEE Magnetics Society

The fourth annual joint meeting of the IEEE Magnetics Society and IEEE Nanotechnology Council was held in Chicago on November 18, 2022. A hybrid format was used this year for the Joint Annual Meeting, with attendees from all over the world attending virtually in addition to the in-person event at Northwestern University. The meeting featured 12 invited talks by experts in the fields of nanotechnology and magnetism, including 4 IEEE Distinguished Lecturers (DLs) to broaden the scope of the research field and 8 speakers from local Chicago institutions to foster networking and collaboration.

This year, the Joint Annual Meeting emphasized the theme of "Next generation microelectronics and quantum information." Three IEEE DLs discussed new frontiers of computing. Prof. Aurélien Manchon from Aix-Marseille University (Magnetics Society DL) delivered a talk titled "Exploring the Potentials of Spin-Orbitronics", Dr. Aida Todri-Sanial from CNRS-LIRMM/University of Montpellier (Nanotechnology Council DL) presented a talk

on "Can We Compute with Oscillators? From Devices to Architecture to Enable Edge AI," and Massimiliano Di Ventra from University of California San Diego (Nanotechnology Council DL) gave a talk about "MemComputing: When Memory Becomes a Computing Tool". One IEEE Magnetic Society DL, Prof. Michael E. Flatté from University of Iowa, gave us fresh insight into quantum information with magnons in his talk "Coherent Magnonics for Quantum Information Science."

One IEEE Magnetic Society DL, Prof. Michael E. Flatté from University of Iowa, gave us fresh insight into quantum information with magnons in his talk "Coherent Magnonics for Quantum Information Science."

In addition to the IEEE DLs, this year the Joint Annual Meeting has invited 6 local faculty speakers from various universities and national laboratory. There were two speakers from Northwestern University, including Prof. Ted Sargent's talk on "Photon Sensing and Energy Harvesting Using Semiconductors Processed as Inks" and Prof. Koray Aydin's talk on "Optical Metasurfaces Enabled by 3D Nanoprinting and DNA Assembly of Gold Nanoparticles." There were also two speakers from Argonne National Laboratory, Dr. Anand Bhattacharya, who discussed "Superconducting 2D Electron Gas at Interfaces of KTaO_3 ," and Dr. Joe Heremans, who presented his work on "Engineering Optically Addressable Spin Defects for Quantum Applications." The speakers also included Prof. Amit Trivedi from University of Illinois Chicago, who discussed his work on "Robust Edge Intelligence: A Compute-in-Memory Pathway", and Prof. Tian Zhong, who presented a talk on "Long-lived Rare-Earth Qubits and Memories for Quantum Interconnect."

This year, the Joint Annual Meeting has also announced two awardees of the inaugural IEEE Chicago Early Career Awards in Magnetics and Nanotechnology.

Both are postdoc researchers at Argonne National Laboratory and have been invited to give invited talks about their research. Dr. Yue Li (Magnetics Award winner) discussed her work on “Topological stability and thermal hysteresis of magnetic domains in van der Waals Fe₃GeTe₂”, and Dr. Xianjing Zhou presented his work on “Single Electrons on Solid Neon: A New Solid-State Qubit Platform.” Congratulations on their achievements!

The Joint Annual Meeting this year was the first in-person gathering since the COVID-19 pandemic in 2020; prior meetings had been held virtually. Local Chicago scholars were able to meet and discuss science at the Meeting. It drew more than 50 in-person participants at Northwestern University and 20 virtual attendees via Zoom. IEEE members made up half of those in attendance. All of the talks were followed by lively discussions between the speakers and the audience.

The meeting gave the communities of magnetism, spintronics, nanotechnology, and nanoelectronics a fantastic opportunity to learn from one another and connect. In the coming years, the two Chicago Chapters intend to continue holding these events yearly. 🌐



International Conference on Fine Particle Magnetism (ICFPM-2022)

by **Yuko Ichiyanagi**

Conference Co-chair, ICFPM-2022

The 11th International Conference on Fine Particle Magnetism (ICFPM-2022) was successfully held from Sunday, October 16, to Friday, October 21, 2022, at Yokohama Symposia, Yokohama, Japan, co-sponsored by the IEEE Magnetics Society. (Originally scheduled for May 30-June 3, but postponed due to COVID-19.)

ICFPM-2022 is a series of conferences designed to provide an international forum for discussion of fine magnetic particle systems (the historical name for what we now call nanoparticles), their physics, their underlying phenomena, and their applications, along with developments in methods for preparing and characterizing them.




A total of 153 people, from 22 countries, attended ICFPM-2022, including 22 online participants. Over 70 participants came in person from overseas. As usual, each presenter's lecture was advanced and interesting, and the floor discussion was lively and respectful. Six plenary speakers and twelve invited speakers gave excellent talks. There were no parallel sessions for this conference series, but because everyone attended the lectures, the conference became a pioneer in combining the various research fields. The conference drew a large number of early-career researchers (37% of the participants were graduate students and postdoctoral associates) who were eager to participate in multidisciplinary studies.

Poster sessions were held on two separate days, which featured engaging discussions, particularly among the students. Due to COVID-19, the Japanese students attended their first-ever in-person conference, and interacting with overseas researchers was extremely motivating for them.

The IEEE Magnetics Society's grant was used to help overseas students attend the conference, a young magnetics researchers' event, and a Women in Nanomagnetism gathering and discussion. Following the one-day plenary session, on Monday evening, a Young Researchers Networking Event was held, which featured a Student Grant award ceremony and a welcome by Dr. Goldfarb of the United States, who was at the time Secretary/Treasurer (currently President-Elect) of the IEEE Magnetics Society, for young researchers to establish connections and even friendships among themselves.

On Thursday, a Women's Networking Event was chaired by Prof. Montserrat Rivas from Spain. Female and male researchers exchanged opinions and deepened their mutual recognition and understanding of the differences in the situations of each country.

The success of ICFPM-2022 generated much enthusiasm for a follow-on conference. ICFPM-2025 will be held in Bariloche, Argentina, in 2025, hosted by the Institute of Nanoscience and Nanotechnology of Bariloche. 



SPAIN CHAPTER: ACTIVITIES IN 2022

submitted by **José Miguel García-Martín**,
Chair of Spain Chapter, IEEE Magnetics Society



Group photo at the 2022 Joint Annual Meeting of the IEEE Magnetics Society Spain Chapter and the Spanish Magnetism Club.

2022 was an active year full of activities organized by the Spanish Chapter, both online and in person. We continued with the series of virtual talks called Experts from the Non-Academic World, co-hosted with the Italian Chapter, which started in 2021. These presentations give senior researchers a view of the most recent changes in the industry while also giving Ph.D. students and postdocs insight into job opportunities outside of the academic setting. Two of them are accessible on YouTube:

▶ Ana Seoane from IMA factory

(a company that makes magnets and electromagnets),
talked on February, 24, 2022.



▶ Carlos Roces and Javier Alonso from FELEMAMG

(a company that manufactures magnetic separators and industrial lifting devices),
talked on May 31, 2022.





We sponsored the Students Workshop on Magnetism: From Fundamentals to Applications, in June, which was held successfully for 5 days in Llanes, on the North coast of Spain.

(recall from the IEEE Magnetics Society Newsletter, Volume 62, Issue 3, page 6, August 2022).


In July, there were two noteworthy events. The European Magnetic Sensors and Actuators Conference (EMSA 2022) took place in Madrid, from July 5 to 8, 2022. 16 students were able to attend thanks to grants offered by the IEEE Magnetics Society. Additionally, as part of the Biennial Meeting of the Royal Spanish Society of Physics, on July 11, in Murcia, we co-organized *Symposium #15: Novel Frontiers and Challenges in Magnetism*. We hosted Aurélien Manchon's Distinguished Lecture, and we sponsored five travel grants, two Invited Speakers (Saúl Vélez from UAM, Spain, and Elvira Paz from INL, Portugal), and the best oral and poster awards, which were won by Rodrigo Martín-Hernández from Universidad de Salamanca and Zaida Curbelo from IMDEA Nanociencia, respectively.

We organized the 1st edition of the Award for the Best Ph.D. Thesis on Magnetism, Magnetic Materials, and Their Applications, and the winner was Elizabeth Martín Jefremovas, from Universidad de Cantabria, with her thesis entitled Spin dynamics in magnetic nanoparticles.

We also launched the first edition of the Thesis Video Contest, "Magnetism Has an Impact," co-sponsored by the IEEE Spain Section, and the awards were given to José Luis Marqués Fernández from the University of Oviedo (Spain), who is developing rapid diagnostic tests that use magnetic nanoparticles, 

and to Danny Petty Gweha Nyoma from Université de Lorraine (France), who studies the ultrafast manipulation of magnetization on the femtosecond scale. 

On November 17 and 18, 64 attendees joined us in person for the announcement of the winners of The Thesis Video Contest Awards at the Joint Annual Meeting of the IEEE Magnetics Society Spain Chapter and the Spanish Magnetism Club (CEMAG) in Cádiz.

The two-day meeting included the Young Researchers in Magnetism (YRinM2022), event the Distinguished Lecture by Michael Flatté (who also gave his seminar in Madrid, Zaragoza, and Seville), talks by Dr. Miriam Jaafar, recipient of the Emergent Researcher Prize by CEMAG, and by Dr. Elizabeth Martín Jefremovas, awardee of the aforementioned Best Ph.D. Thesis Award, as well as short presentations by the IEEE Young Professionals and the newly-formed IEEE Magnetics Students Chapter, and finally the general assemblies of CEMAG and the IEEE Magnetics Society Spain Chapter. It is worth noting that the IEEE Spain Section co-sponsored this successful meeting. 

Visit our ^{new} website

Visit Link 

6th Young Researchers in Magnetism

(YRinM) 2022

by **Daniel Arranz, Lourdes Marcano and Elizabeth M. Jefremovas**,
General Chairs of YRinM2022

The Young Researchers in Magnetism (YRinM) session celebrated its 6th edition in Cádiz in 2022, along with the Joint Annual Meeting of the IEEE Magnetics Society Spain Chapter and the Spanish Magnetism Club (CEMAG). Thanks to the financial support of the Spain Section, the IEEE Magnetics Society, and the HIPERNANO Network, up to 30 students were able to present their early contributions to magnetism and magnetic materials. Additionally, the YRinM session was held only on-site due to ideal sanitary conditions, with the aim of fostering social interactions between and among young researchers, which is the cornerstone of this event.

This event featured, for the first time in the history of the YRinM series, a roundtable discussion with senior female scientists from CEMAG. Thanks to Drs. Agustina Asenjo, Arantxa Fraile-Rodríguez, and Montserrat Rivas, the young researchers had the chance to learn from the experts' experiences, ask questions about career perspectives, and discuss gender bias. The organizing committee board presented awards for the top three oral presentations and the top three posters at the closing ceremony.

The first and second oral presentation awards were given to Amina Hadjoudja (USAL) and Irene Rubia (IMDEA), while the poster presentation awards were given to Yolanda Álvarez (UniOvi) and Cantia Belloso (ICMM-CSIC) won.

The IEEE Magnetics Society Spain Chapter provided financial support for all four of these awards. Furthermore, the HIPERNANO Network awarded Raúl López (UCLM) and José Antonio Vílchez (UCA) with the first and second oral presentation awards, respectively.

This year's YRinM further solidifies its position as Spain's congress for and by young people. An open and relaxed congress where you can start communicating your research progress to the rest of your peers is expected to continue for many years. This is thanks to the collaboration between CEMAG and the IEEE Magnetics Society Spain Chapter. 🌐

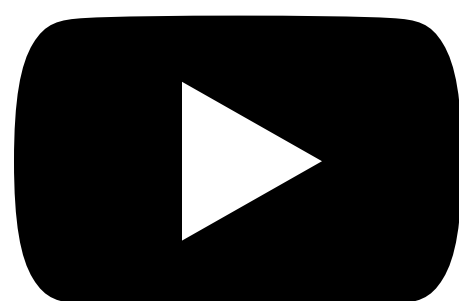
THESIS VIDEO CONTEST: "MAGNETISM HAS AN IMPACT"

by José Luis Marqués,
Ph.D. Student of University of Oviedo, Spain



I am overjoyed to have won first place the thesis video contest, "Magnetism Has an Impact," which was organized by the IEEE Magnetics Society Spain Chapter and the Spanish Magnetism Club (CEMAG), and funded by the "Call for Recruitment and Stabilization of Student Members of the IEEE Spain Section" and the IEEE Magnetics Society. The contest was open to students around the world.

My video is about the motivation for my doctoral thesis. I am working on a highly sensitive sensor to measure the sensitivity and quantification of magnetic rapid diagnostic tests. The video is in Spanish with English closed captions to reach a broad audience.



Without the help of my group mates, especially María Salvador and Leire Bei Fraile, the video and project would not have been possible. We have diverse expertise: I am an industrial engineer, María is a chemical engineer, and Leyre Bei is a biotechnologist. We had lots of fun making this video together, and we plan to invest the prize money in a simulation software license.

Additionally, it made me reflect a lot on what was the most appropriate point to say about my thesis in only three minutes.

We came to the decision to discuss the overall project's motivation, which fuels our enthusiasm for working on the project's various multidisciplinary components. I greatly appreciate the initiative, and I hope that more successful editions will follow. 🌐



Our Research Group (from left to right)

front row: M^a Arántzazu Argüelles Vélez, José Carlos Martínez García, Montserrat Rivas.
back row: Jimena Menéndez Maco, María Salvador*, Bea Xinyu Díaz Álvarez, Leyre Bei Fraile Aguirre*, David Cendán García, Jose Luis Marqués Fernández*.

**those directly responsible for making the video*



WINTER SCHOOL IEEE MAGNETICS - PETASPIN, December 13-16, 2022 - Messina

by **Giovanni Finocchio**,

Co-organizer of the School on Spintronics: Fundamentals and Applications

The first school on "Spintronics: Fundamentals and Applications" took place in Messina, on December 13-16, 2022. The school will take place for three years (2022, 2023, and 2024) and it is aimed at students, post-docs, and early-stage researchers interested in spintronics and related areas of research.

This year the school was organized by the IEEE Magnetics Society Italy Chapter in collaboration with the Petaspin Association (www.petaspin.com) and co-sponsored by the project "Low Power Spintronics Wireless Autonomous Node (SWAN) Integrated Circuits Developed Via Spintronics Technology Accelerator Platform" (SWAN-on-chip) funded by the European Union within the call HORIZON-CL4-2021-DIGITAL-EMERGING-01 and by the project "The Italian Factory of Micromagnetic Modeling and Spintronics" funded by MUR (Ministero della Ricerca) within the Italian call PRIN 2020, and by the Association of Engineers of Messina.



(Left to right): Prof. Giovanni Finocchio, Prof. Michael Flatté and Prof. Mario Carpentieri

The co-organizers of the school were Prof. Giovanni Finocchio from the University of Messina and Prof. Mario Carpentieri from Politecnico di Bari. The school had a total of 31 students from different countries (Italy, USA, Spain, Germany, France, Lebanon, Poland, Switzerland, India, the Republic of Czechia, and the UK) and 17 speakers who covered topics ranging from fundamental aspects of magnetism (e.g., micromagnetic modeling, magnetic tunnel junctions, material and device characterizations) to applied topics including antiferromagnetic spintronics, skyrmions, probabilistic computing, microwaves, and tetrahertz spintronics.



Click above for a complete list of lecturers and the curriculum of the school

Two other interdisciplinary talks were also presented, and a distinguished lecturer of the IEEE Magnetics Society, Michael Flatté, gave an inspiring talk on "Coherent Magnonics for Quantum Information Science."

The students were encouraged to share the challenges they are facing in performing their own research activities and to network throughout the School and beyond.

The program also included several social activities planned and managed by Susy Garesci. The social dinner was organized on December 15, 2022, in a restaurant in the center of Messina called "Toronero" with a menu typical of the place.



Attendees of the school in the main entrance of the University of Messina

We would like to invite students to apply for the next year's edition:

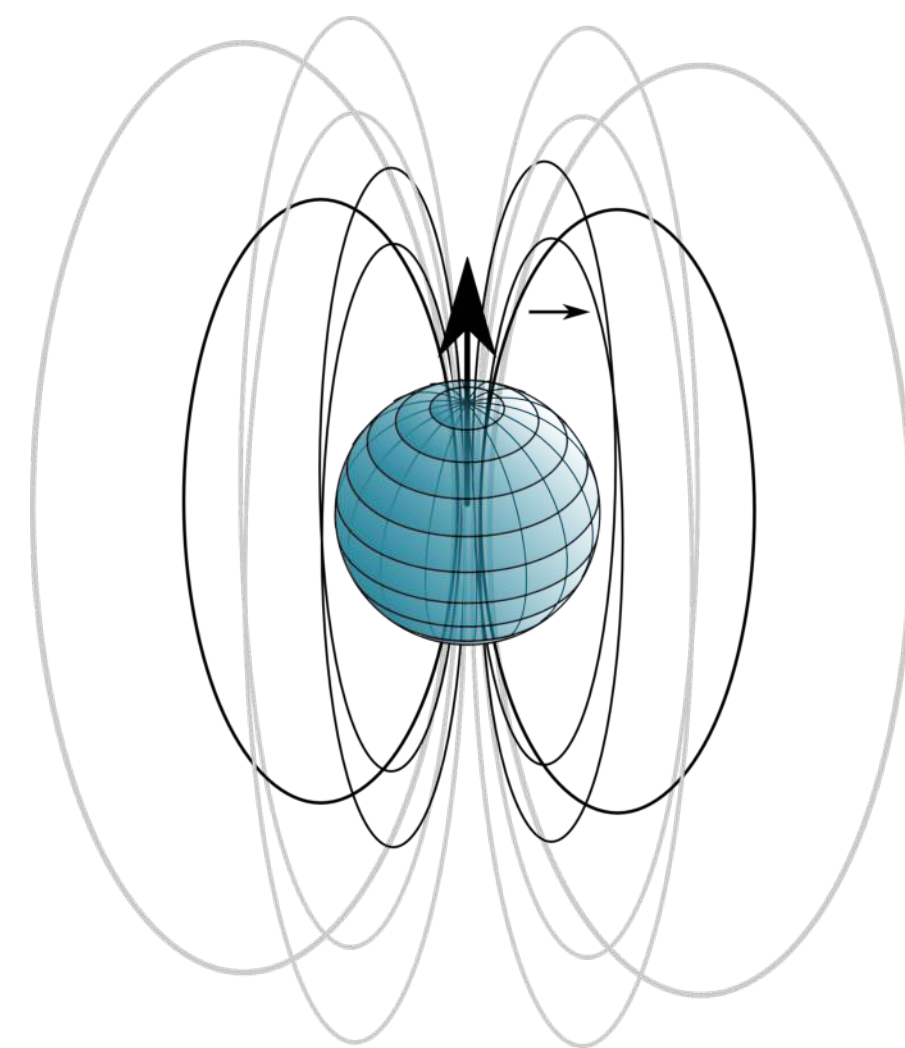


TEACHING & COMMUNICATING MAGNETISM

My Personal Top 5 Magnetism Phenomena & Experiments that can Get People Excited About Our Field

by **Martin Lonsky**

Institute of Physics, Goethe University Frankfurt, Germany



In the last issue of the Newsletter, we talked about the mission of teaching magnetism and how we, as members of the IEEE Magnetics Society, can contribute. In this light, the focus of the present article will be on a few selected fascinating phenomena and experiments that reveal the beauty of magnetism. In the following, I will present my personal top five list. Subsequently, our readers will get the chance to respond and talk about their favorite magnetic effects and experiments!

1.

First, let us think about iron filings and how they can arrange themselves into fascinating patterns when exposed to a magnetic field. People may recall the high school experiment with iron filings on paper or an overhead projector with transparency. This can be easily reproduced by everyone at home.



Iron filings visualize magnetic field lines.

To avoid a mess, one can use iron filings sealed in a plastic bag or a water bottle containing fluid. In principle, such an experiment can visualize magnetic field lines in three dimensions.

By carefully mixing iron filings and vegetable oil, you can even create your own ferrofluid!

2.

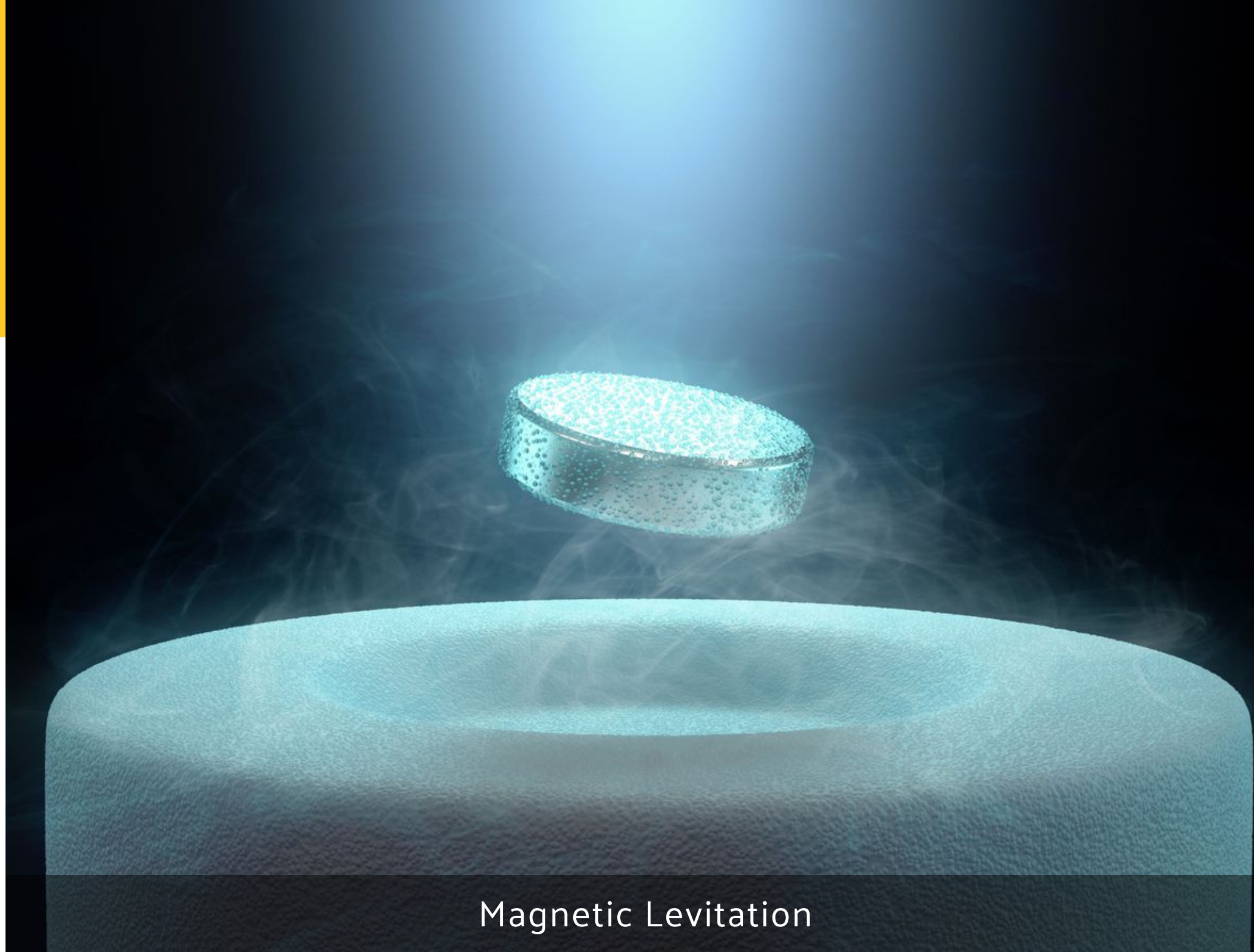
A fascinating phenomenon occurs when magnetic levitation due to repelling forces is used in so-called maglev trains. Another interesting variation of this is the levitating superconductor on a track composed of permanent magnets.

Here is a fun fact related to the author's personal background:

For me, the latter phenomenon was in fact the reason why I got into condensed matter physics. I started attending an elective course on superconductivity and then, at some point, transitioned into the field of magnetism. Moreover, I also have several friends outside of physics who have become aware of and

fascinated by a levitating sumo wrestler standing on top of a magnet that floats above a superconductor.

On another note: Have you ever heard of levitating frogs? No? Well, you might want to look up diamagnetic levitation in strong magnetic fields.



3.

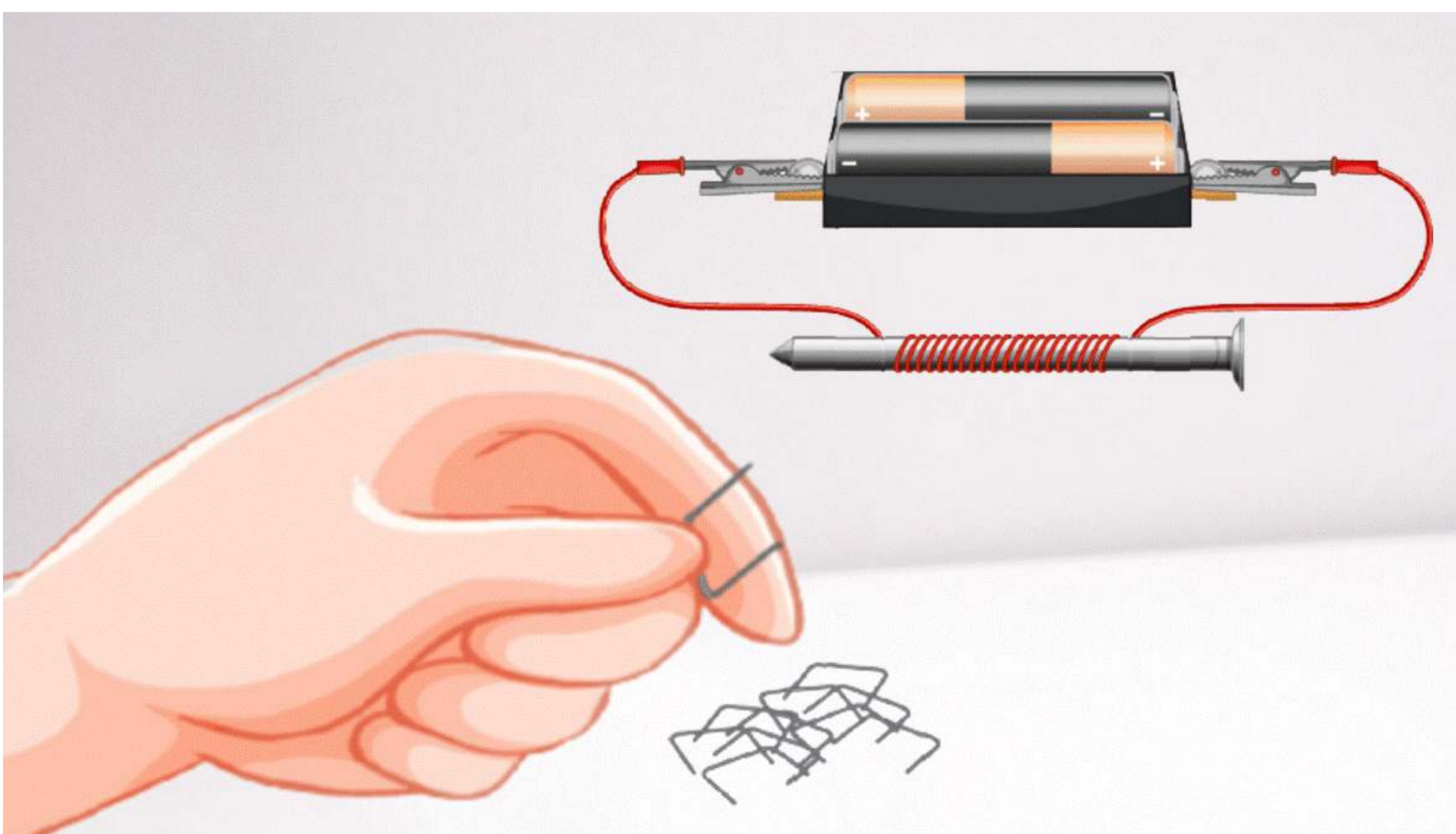
Playing around with a compass can also be very instructive since it helps people realize that our planet is basically a giant magnet. One may discover that Earth's geographical North Pole corresponds to the magnetic south pole, and vice versa. Apart from that, it also demonstrates that the earth's

magnetic field is a bit skewed and does not run exactly between the two geographical poles. You can even build your own compass by fixing a bar magnet to a string or magnetizing a needle and letting it float on water. In this context, one will certainly end up discussing the possible origin of the earth's magnetic field, which, up until today, is still not fully understood!

4.

Everybody can build their own electromagnet. You just need a battery, copper wire, and an iron nail. With this simple setup, students can pick up paper clips, for instance, and explore how the properties of an electromagnet depend on various parameters, such as the use of a ferromagnetic core. To this end, copper wire can be coiled around the iron nail in order to generate stronger fields.

They learn to understand that electric conductors can become magnetic when a current is passed through them. Aside from paper clips, a compass can be used to prove that a magnetic field is being generated.



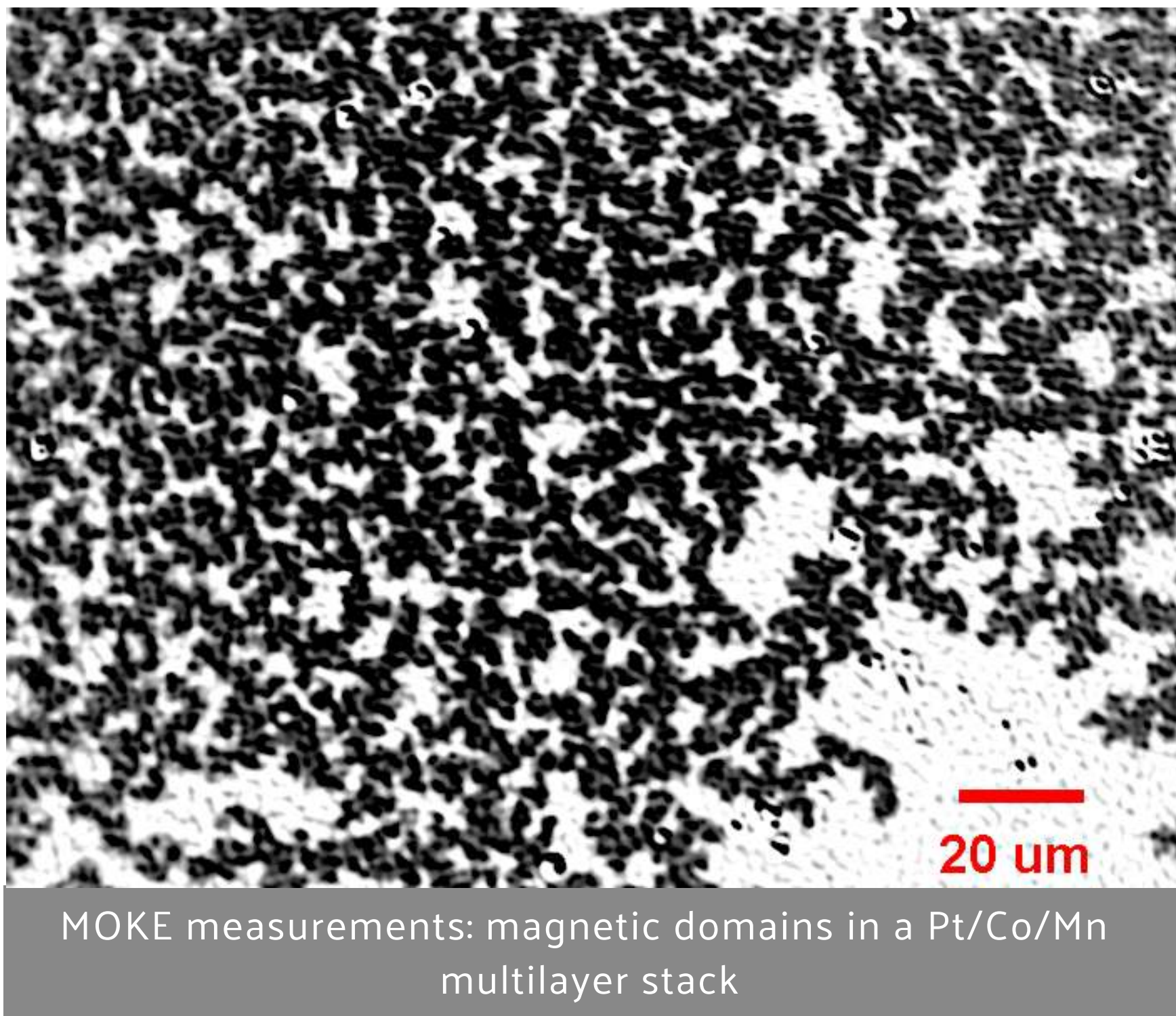
Build Your Own Electromagnet

5.

The last point may be the most exotic one for many readers: the magneto-optical Kerr effect.

In this case, reasonably cheap equipment (basically, a modified optical microscope) can be used to visualize magnetic domains, skyrmions, and other exotic magnetic textures.

The effect is based on the changing polarization of light when it is reflected from a magnetized surface. By using an electromagnet and/or applying an electric current through the sample using probe tips, it is straightforward to modify the aforementioned magnetic structures. Magnetism can be visualized in a very fascinating way, and it is a simple way of making magnetism visible — albeit, typically not feasible at home.



Prior to the conclusion, let me bring up a couple of honorable mentions:

magnetotactic bacteria and fish, as well as birds

that supposedly use magnetic field lines to orient themselves (magnetoreception). Albeit not an experiment, these natural phenomena have really sparked my (and many other folks') interest in this subdomain of magnetism.

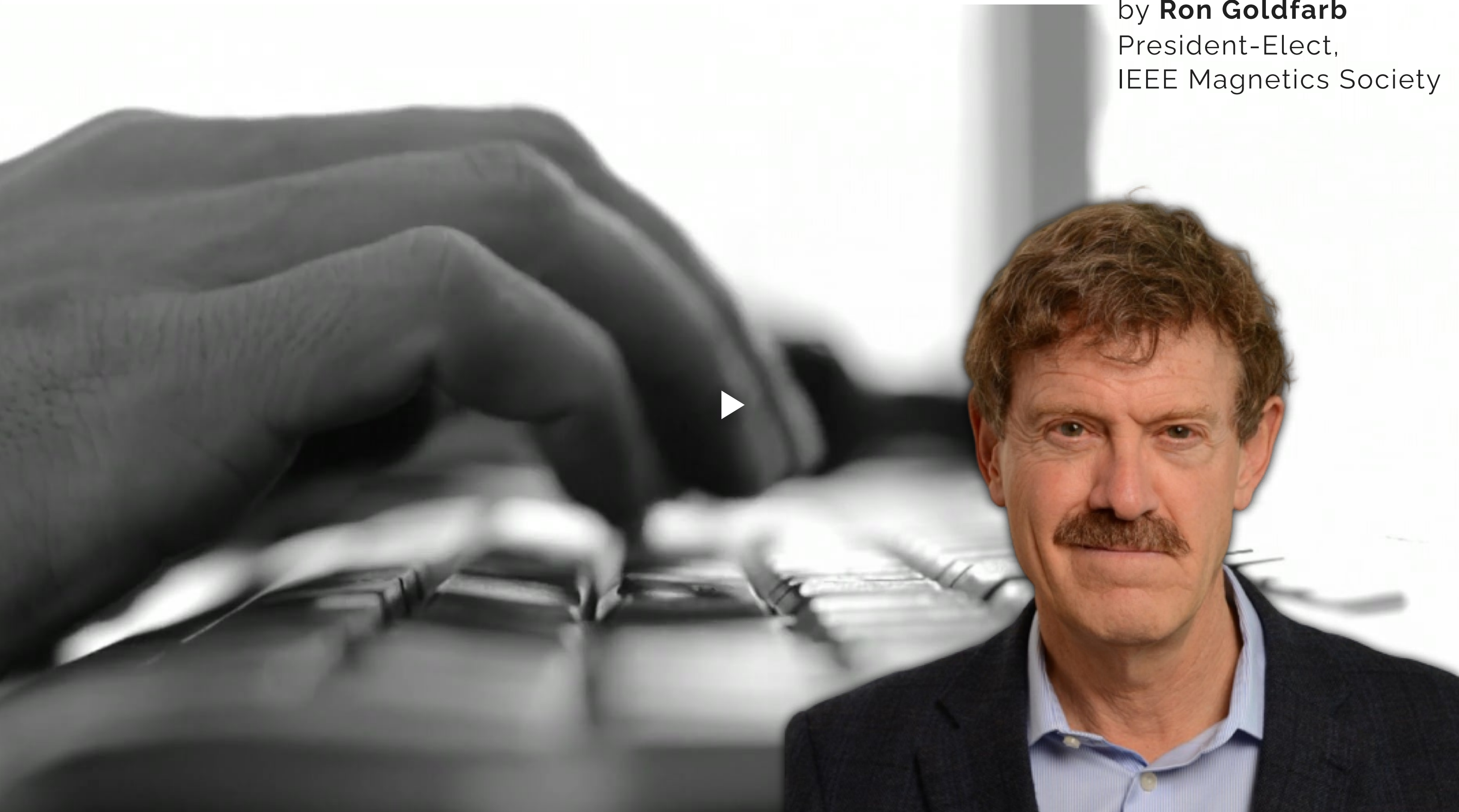
Obviously, this is a very personal perspective on potentially fascinating magnetic phenomena and experiments. Everyone in the IEEE Magnetics community has a favorite effect, I'm sure. This is why we would be glad to hear about your perspective. What experiments are most impressive to you? Is there any magnetic phenomenon that you use to get people interested in our field? Would you like to share anything relevant at school, university, or general outreach levels? Please reach out to us by

mlonsky@physik.uni-frankfurt.de 



The **Write** Stuff: Weak Writing

by **Ron Goldfarb**
President-Elect,
IEEE Magnetics Society



To paraphrase a question attributed to the philosopher George Berkeley about a tree in a forest,

“**If research is done in a lab and no one hears about it, did it really happen?**”

For practical purposes, no. That is why we write and publish papers. But the way we write them differentiates articles that are remembered and cited from those that are not. I was a journal editor for about 25 years, so I saw a fair number of poorly written manuscripts.

I can give you examples of how *not* to write.

In writing about science, sentences should be like karate punches: straight from your waist to your target, with a twist of your wrist at the end.

Shorter sentences are easier to read and understand. Shorter sentences have greater impact.

Here are two examples:

- Weak: "There are many experiments that have demonstrated this effect."
- Strong: "Many experiments have demonstrated this effect."
- Weak: "There are reactions that occur in the presence of a catalyst."
- Strong: "Some reactions occur in the presence of a catalyst."

Most "there are ... that ..." sentences can be rewritten to good effect.

Sentences should not be redundant, repeat themselves, or say the same thing more than once. Examples:

- "Along with ... we also investigate ..." (*also* is redundant)
- A new novel device can be made ..." (*new* or *novel*, pick one)

Dangerous "ing" Words

Recently, I attended several IEEE committee meetings that employed parliamentary procedure based on *Robert's Rules of Order*. The chair, in their (more on "their" below) officious way, said, "Hearing no objection, the motion is approved." Another chair at another committee meeting got it right: "Hearing no objection, I declare the motion approved." What's the difference?

In the first case, we don't know who or what is doing the hearing (or not hearing, in this case). "Hearing no objection" is an example of a dangling participle (phrase in a sentence).

Here are some examples of dangling participles I copied from the Internet. (The unintended humor is in parentheses.)

- "Sitting on the park bench, the sun disappeared behind the clouds." (Was the sun sitting?)
- "Driving like a maniac, the deer was hit and killed." (Was the deer driving?)
- "After laying a large egg, the farmer presented his favorite chicken." (Did the farmer lay the egg?)
- "Sleeping in my orchard, a serpent stung me." (Was the serpent sleeping?)
- "Coming out of the market, the bananas fell on the pavement." (Were the bananas coming out?)
- "Running after the school bus, the backpack bounced from side to side." (Was the backpack running?)

Other types of dangling participles exist. A common one is a misused adverb at the beginning of a sentence, as in,

"Thankfully, our pet turkey was not on the dinner menu." (Except maybe, in this example, the turkey was indeed the thankful one.)

Don't be passive

This brings us to the passive versus the active voice.

Some researchers think they must use the passive voice to make their papers seem scientific. I disagree. One problem with the use of the passive voice is that stuff happens, but it is hard to tell who is responsible. Furthermore, such passive constructions lend themselves to dangling participles. On the other hand, the use of the active voice makes clear who did what. Here is an example:

- Passive voice: "Using the equation, the potential was calculated." (Dangling: Did the potential use the equation? Passive: Who calculated?)
- Active voice: "Using the equation, we calculated the potential." (We know who used the equation and who calculated.)

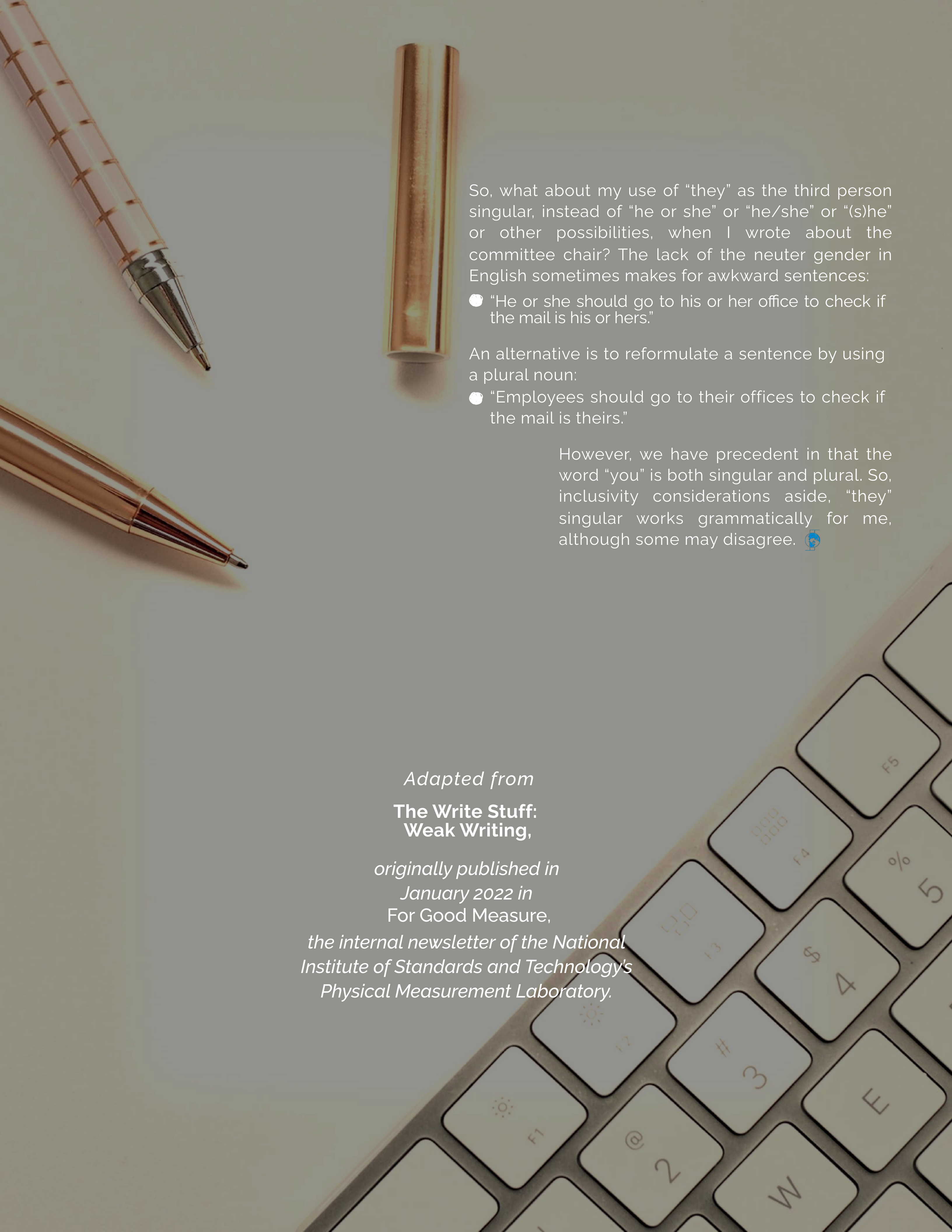
Microsoft Word can identify the passive voice during Spelling & Grammar scans. Just check the boxes at File > Options > Proofing > Grammar > Clarity.

This brings us to the progressive participle, the use of an word to indicate something in progress.

"-ing"

You hear it a lot in reference to sponsors on National Public Radio in the U.S.: "Brought to you by the Green Company, working to make a better world." It is not wrong; it is annoying. (Are they really working right now?) I would say, "Brought to you by the Green Company, which works to make a better world." Here are some examples of how to avoid the progressive participle:

- "... the equations defining their relationships are based on ..."
→ "... the equations that define their relationships are based on ..."
- "Quantifying Spin-Mixed States in Ferromagnets" (the title of a paper) → "Quantification of Spin-Mixed States in Ferromagnets"



So, what about my use of “they” as the third person singular, instead of “he or she” or “he/she” or “(s)he” or other possibilities, when I wrote about the committee chair? The lack of the neuter gender in English sometimes makes for awkward sentences:

- “He or she should go to his or her office to check if the mail is his or hers.”

An alternative is to reformulate a sentence by using a plural noun:

- “Employees should go to their offices to check if the mail is theirs.”

However, we have precedent in that the word “you” is both singular and plural. So, inclusivity considerations aside, “they” singular works grammatically for me, although some may disagree. 🌐

Adapted from

**The Write Stuff:
Weak Writing,**

originally published in

January 2022 in

For Good Measure,

*the internal newsletter of the National
Institute of Standards and Technology's
Physical Measurement Laboratory.*

Attention *All* Students

by **María Salvador, Audre Lai and May Inn Sim**, Students in Magnetism

Looking into 2023, Students in Magnetism by the IEEE Magnetics Society (SiM) has several activities planned ahead and is excited to share them with you! Join the student community in the IEEE Magnetics Society and find exclusive opportunities to participate in outreach activities and expand your network!

As a student-centric entity, SiM aims to create an inclusive and collaborative space for members to grow in their graduate journeys. In addition, members will have the opportunity to network and make a difference in their closest community by organizing outreach activities and motivating younger generations to pursue engineering and magnetism careers.

SiM will be curating exclusive content to form the first-of-its-kind SiM column in upcoming editions of the Magnetics Society Newsletter.

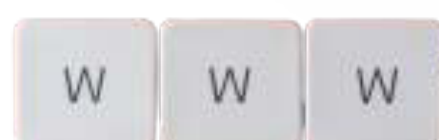
Look forward to getting to know more of your fellow students in magnetism, and getting enlightened by words of wisdom from senior members of the IEEE Magnetics Society. Stay tuned for the Newsletter column for students, by students!



Interested in joining us or collaborating in events? Contact us at

SiM@ieee
magnetics.
org

Stay up to date with SiM ongoing through



AWARDS & NOMINATIONS CALENDAR



NOMINATIONS DUE

+ + +



+ + +



ANNOUNCED
ON DECEMBER 15

ANNOUNCED
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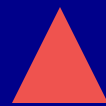
NOMINATIONS FORM +



CONFERENCE & SCHOOL CALENDAR

by Jia Yan Law,
Newsletter Editor, IEEE Magnetics Society

Magnetic Frontiers:
Quantum
Technologies
(Magnetic Frontiers 2023)



April 19 - 22, 2023
Orlando, Florida, USA

**INTERMAG
2023**



May 15 - 19, 2023
Sendai, Japan

24th
International
Conference on the
Computation of
Electromagnetic Fields
(COMPUMAG 2023)



May 22 - 26, 2023
Kyoto, Japan

26th

Soft Magnetic
Materials
Conference (SMM26)
September 4 - 7, 2023
Prague, Czech Republic

68th

Annual Conference on
Magnetism and Magnetic
Materials

(MMM 2023)

October 30 - November 3, 2023
Dallas, USA

Trends in
MAGnetism 2023
(TMAG 2023)

September 4 - 8, 2023
Rome, Italy

The European School on
Magnetism 2023 (ESM 2023)

September 3 - 15, 2023
Madrid, Spain

The Joint European Magnetic
Symposia 2023 (JEMS2023)

August 27 - September 1, 2023
Madrid, Spain

Physics of Magnetism 2023
(PM'23)

June 26 - 30, 2023
Poznań, Poland

**2023 IEEE Magnetics Society
Summer School**

June 11 - 16, 2023
Bari, Italy

Petaspin 2023 School on
"Spintronics: fundamentals
and applications"

December 11 - 15, 2023
Messina, Italy

To list your
conference/events
in the Newsletter
Conference and
School Calendar in a
future edition,
please contact the
Newsletter
Editor

Editor's Note



Exciting Updates & New Opportunities for Our Readers

We are thrilled to bring you the latest edition of our Newsletter, featuring a new look and exciting articles!

The redesign with animated elements will enhance your reading experience and bring out content to life.

You will also find other brand-new features, such as a calendar of awards and nominations, a section introducing MagSoc AdCom members, a column on writing tips, a column by Students in Magnetism column, and recommended reads on magnetic research.

In addition to these updates, we welcome article contributions from sister communities. It will be a great opportunity for everyone to share

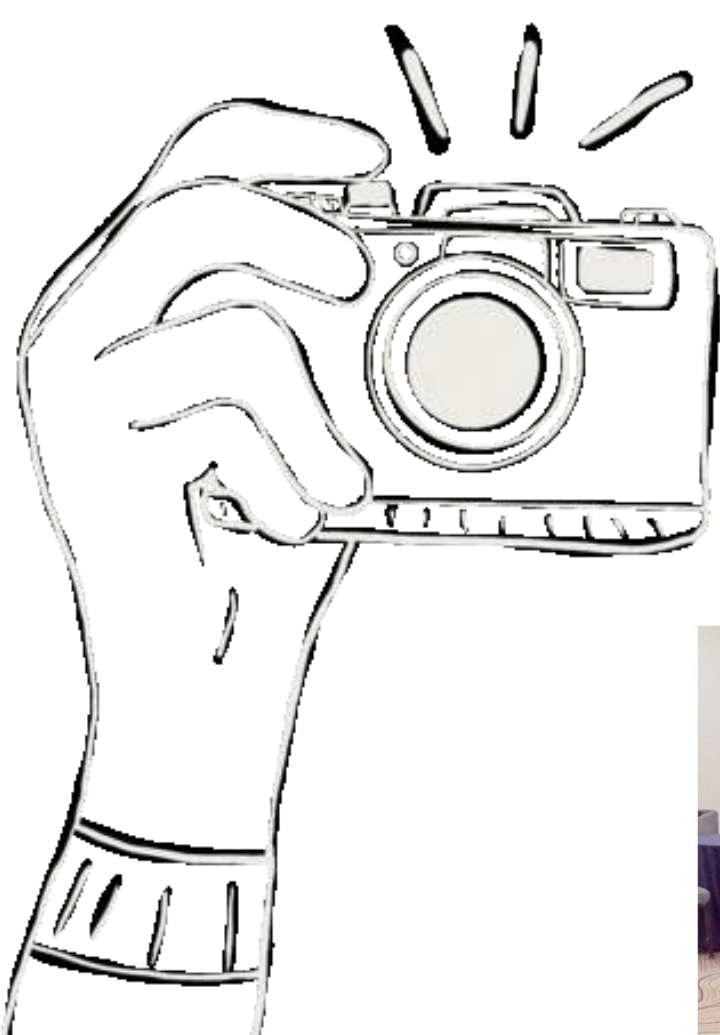
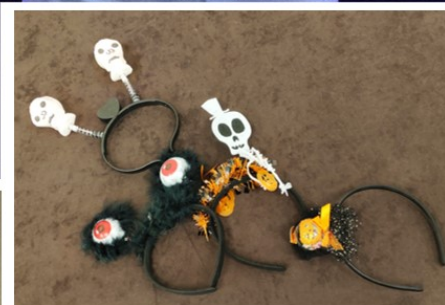
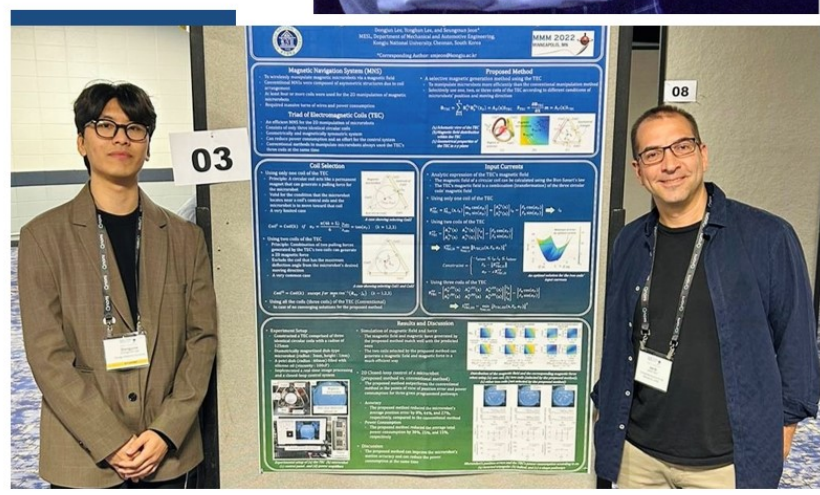
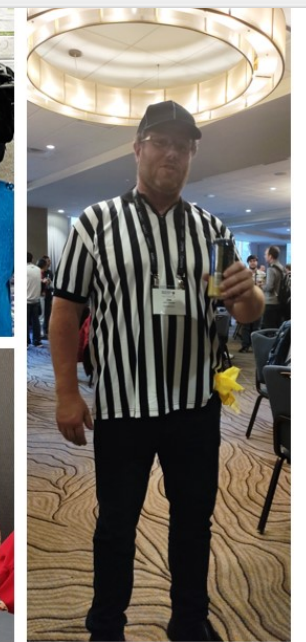
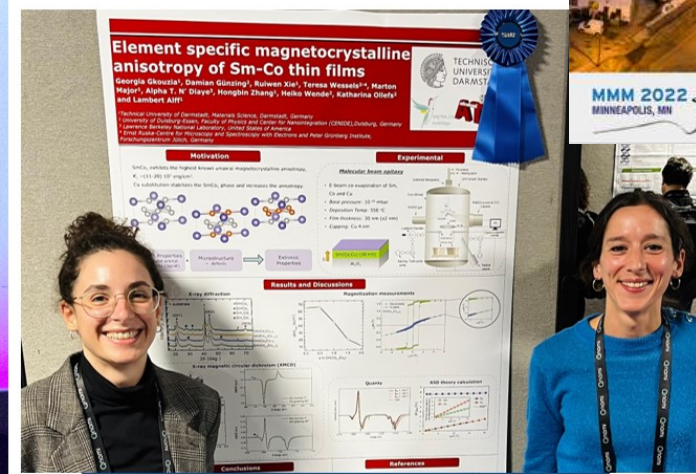
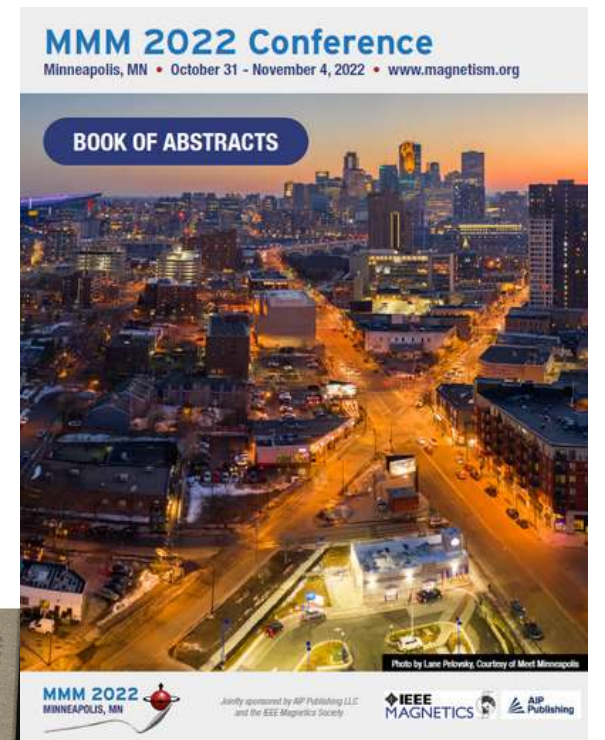
information and experiences and collaborate on events with a wider audience.

If you are interested in contributing an article (or listing your events) to our Newsletter, please get in touch with us via [email: jylaw@ieee.org]. We welcome submissions on a wide range of topics and perspectives, as long as they align with the focus and values of our publication.

We look forward to receiving your submissions and featuring the diverse works in magnetism, and the voices and perspectives of our Society and sister communities in our Newsletter. In addition, I encourage all contributors to think about how they can use animated elements to bring their articles to life. Let's make this Newsletter the most dynamic and interactive one yet! 🌐

Jia Yan Law, _____
Editor of Newsletter, IEEE Magnetics Society

Photo Memories

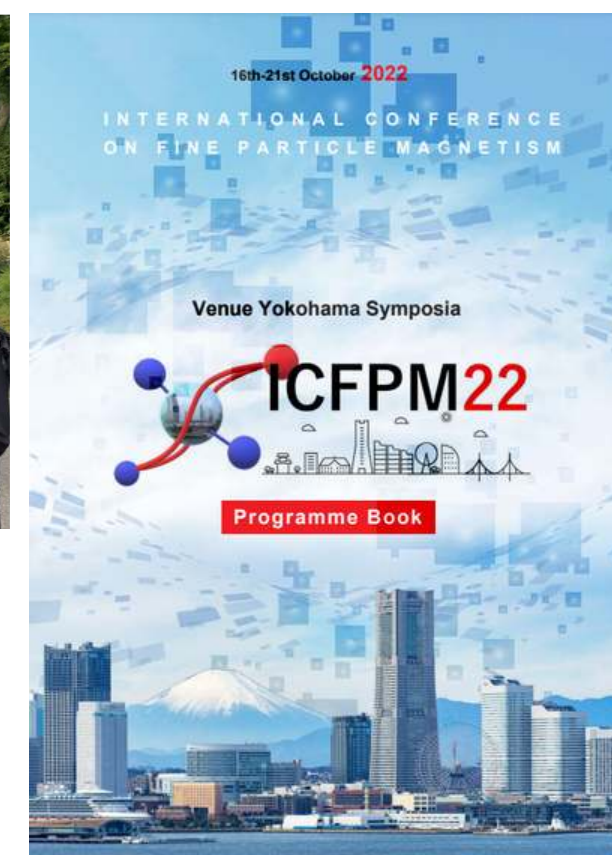


Remember this?

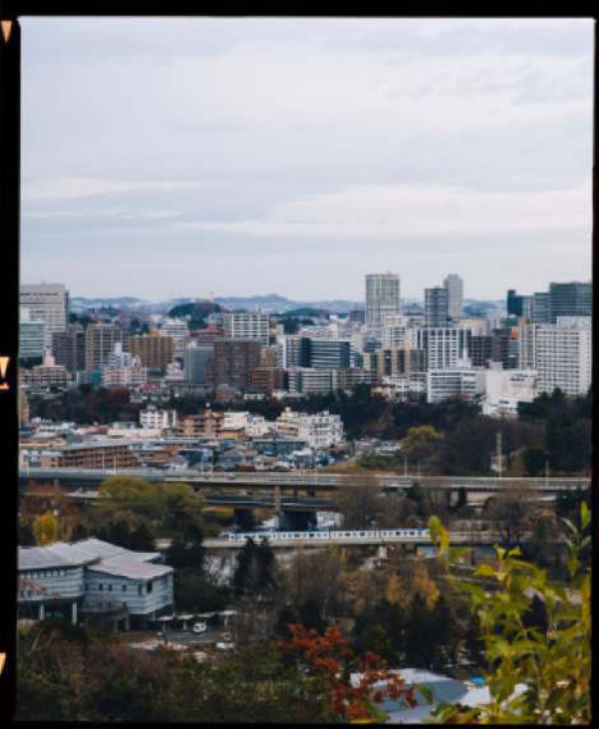
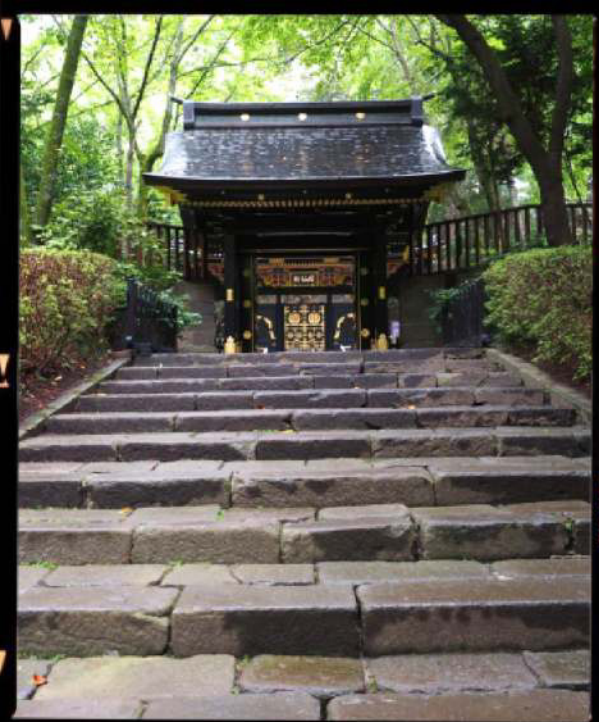




2022.10.16-21 Yokohama



MEMORY LANE



INTERMAG 2023

SENDAI, JAPAN



INTERMAG 2023

will take place at the
Sendai International
Center, in Sendai,
Japan,
May 15-19, 2023

Sendai is known as the “City of Green” and benefits from a beautiful natural environment, delicious food and unique hot springs. Early conference registration starts in February; **for further details about the conference please visit <https://intermag.org>**

We look forward to welcoming you to Sendai.

The IEEE Board of Directors has approved a discount

50%

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FUTURE50

during the online check-out process for joining or renewing their IEEE memberships. Students who recently joined or renewed at full price may write to the

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Students

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 **IEEE
MAGNETICS
NEWSLETTER**

Volume 63 | Issue 1 |
FEBRUARY 2023

ABOUT THE NEWSLETTER

The purpose of the Newsletter of the IEEE Magnetics Society is to publicize activities, conferences, workshops and other information of interest to Society members, sister societies and other people in the area of applied magnetism.

Contributions are solicited from Society and sister society members, Officers & other volunteers, conference organizers, local chapters, and other individuals with relevant material. The Newsletter is published quarterly on the Society website at: <http://www.ieeemagnetics.org> 

Please send all contributions via email to the Newsletter Editor, Jia Yan Law, at: jylaw@ieee.org

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