



IEEE International Magnetism Conference

# INTERMAG 2023

Sendai, Japan • May 15-19, 2023

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**Bethanie Stadler**  
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## FIRST CALL FOR PAPERS



It is our great pleasure to invite you to the IEEE International Magnetism Conference, INTERMAG 2023 which will be held in Sendai, Japan, on 15<sup>th</sup>-19<sup>th</sup> May 2023. The conference will be primarily in-person, with on-demand access to pre-recorded content provided afterwards.

INTERMAG is the premier international conference on all aspects of fundamental and applied magnetism. The conference will consist of oral and poster presentations, invited talks and symposia, tutorial sessions and exhibits. A “Lab Tour in Magnetism” is also planned, including visits to Tohoku University. With its world-class cluster of magnetism research facilities, Sendai is an ideal place for magnetism researchers to gather to discuss their work.

The conference will cover a wide range of topics, including spintronics, biomagnetism, electrical machines and power transformers, memory, data storage, sensors, hard and soft magnetic materials, and interdisciplinary and emerging topics.

The Management Committee of INTERMAG 2023 invites you to participate in the conference and to submit your latest results. A new, two-page digest format will be used for this Conference, and accepted digests will be published in IEEE Xplore with a unique digital object identifier (DOI). Full papers will also be published in the IEEE Transactions on Magnetism as usual, subject to peer review.

Sendai, the capital of Miyagi prefecture, is known as the “City of Green” and is endowed with a beautiful natural environment, delicious food and unique hot springs. We hope to welcome you all to Sendai for INTERMAG 2023 and to enjoy in-person discussions with colleagues from around the world.

We look forward to seeing you in Sendai and to a productive INTERMAG 2023!

Koki Takanashi  
Bethanie Stadler  
INTERMAG 2023 General Co-chairs





**TECHNICAL SUBJECT CATEGORIES:** The conference will cover basic and applied science and technology related to magnetism and magnetic materials. The technical subject categories are as follows:

1. Spintronics
  - a. Magnetoresistance in Heterostructures (GMR, TMR)
  - b. Voltage-Controlled Magnetic Anisotropy and Switching
  - c. Skyrmions
  - d. Spin-Orbitronics
  - e. Antiferromagnetic Spintronics
  - f. Spin Injection and Spin Transfer Torques
  - g. Spin Currents, Spin Pumping, Spin Hall, and Related Effects
  - h. Spins in Graphene, Topological Insulators, and Other 2D Materials
2. Biomagnetics
  - a. Bio-Magnetism
  - b. Biomedical Diagnostics and Imaging
  - c. Biomedical Therapies and Nanomedicine
3. Electrical Machines and Power Transformers and Inductors
  - a. Permanent Magnet Synchronous Machines
  - b. Wound Field Synchronous Machines
  - c. Induction Machines
  - d. Reluctance Machines
  - e. Magnetically Geared Machines
  - f. Vernier Machines
  - g. Variable Flux Machines
  - h. Special Machines
  - i. Linear Machines and Actuators
  - j. Power Transformers and Inductors
  - k. Energy Harvesting and Storage by Magnetic Technologies
  - l. Numerical Analysis Methods for Electrical Machines
  - m. (Semi-)Analytical Modelling and Design of Electrical Machines
4. Memory, Logic and Data Storage
  - a. MRAM and Related Devices
  - b. Magnetic Logic
  - c. Neuromorphic and Unconventional Computing
  - d. Domains and Domain Wall Devices
  - e. All-Optical Recording and Other New Recording
  - f. Energy-Assisted Recording
  - g. Recording Heads and Media
  - h. Recording Physics, Modeling & Systems (inc. Coding, Actuators and Channels)
  - i. Head-Disk Interface and Tribology
5. Sensors and High-Frequency Devices
  - a. Magnetic Field Sensors (Non-Recording)
  - b. Sensors (Not of Magnetic Fields)
  - c. High Frequency, Microwave and Millimeter Wave Materials and Devices
  - d. Applications to "Internet of Things" (IoT)
6. Multi-Functional Magnetic Materials and Applications
  - a. Magneto-Optic Materials and Devices
  - b. Magneto-Elastic Materials and Devices
  - c. Magneto-Caloric Materials and Devices
7. Magnetoelectronic Materials and Phenomena
  - a. Multiferroics
  - b. Magnetoelectric Phenomena
8. Magnetization Dynamics and Micromagnetics
  - a. Magnetization Dynamics and Damping
  - b. Ultrafast and All Optical Switching
  - c. Spin Waves and Magnonics
  - d. Magneto-Plasmonics
  - e. Magnetic Textures, Statics and Dynamics
  - f. Micromagnetic and Hysteresis Modeling
  - g. New Approaches in Computational Magnetism
9. Fundamental Properties and Cooperative Phenomena
  - a. Complex Oxides
  - b. Half-Metallic Materials
  - c. Magnetic Semiconductors
10. Soft Magnetic Materials
  - a. Ferrites and Garnets
  - b. Crystalline Alloys
  - c. Amorphous and Nanocrystalline Materials
  - d. Magneto-Dielectric Materials and Meta-Materials
11. Hard Magnetic Materials
  - a. Rare-Earth Compounds
  - b. Intermetallic Alloys and L10 Alloys
  - c. Rare-Earth Free Hard Magnetic Materials
  - d. Nanostructured, Composite, and Other Hard Magnetic Materials
12. Structured Materials
  - a. Thin Films and Surface Effects
  - b. Multi-Layered Films and Superlattices
  - c. Patterned Films and Elements
  - d. Nanoparticles and Nanowire Arrays and Self-Assembly
  - e. Individual Nanoparticles and Nanowires
13. Microscopy, Imaging and Characterization
  - a. Magnetic Domains
  - b. Novel Imaging Instrumentation and Techniques
14. Interdisciplinary and Emerging Topics
  - a. Interdisciplinary Topics Related to Magnetism and Magnetic Materials
  - b. Emerging Topics Related to Magnetism and Magnetic Materials
  - c. Magnetic Fluids and Separation





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## CONFERENCE FORMAT

INTERMAG 2023 will follow a new **onsite/online format** in which the onsite and online parts of the conference are run separately. There will be no live streaming of any onsite event. All contributed and invited presentations, as well as all poster presentations, must be pre-recorded and uploaded by mid-April 2023. Onsite attendees will deliver their presentations live on stage, and live Q&A will start directly after each presentation, as usual. The onsite program may include events that are not prerecorded, such as tutorials, special talks and symposia, and the IEEE plenary/awards session. Selected events may be recorded during the conference and uploaded after the onsite meeting. The online conference will start the week after the onsite conference and will last for 3 months. All uploaded presentations will be available for on-demand viewing by registrants, and Q&A will be possible via the online chat boards.

## INVITED PRESENTATIONS AND SYMPOSIA

Individual invited presentations and symposia consisting of up to 6 invited presentations are an important aspect of the program. Invited speakers will be selected from nominations and will be contacted by the Program Co-Chairs in late-December. The Program Committee may also upgrade a certain number of contributed digests on important late-breaking results to invited status.

Nominations for invited speakers and symposia will be accepted until 20<sup>th</sup> November 2022 at <https://intermag.org> under "Authors, Nominations for Invited Speakers and Symposia". We are seeking nominations that represent the most exciting work and diversity of the international magnetism community.

## DIGEST SUBMISSION

INTERMAG 2023 will use a new, **two-page digest format**. Accepted digests will be published in IEEE Xplore, with author approval, and will receive a digital object identifier (DOI). In addition to this, authors may also publish full papers, as before. All uploaded oral and poster presentations will be linked to the digests on IEEE Xplore, with presenter approval. (Presenters retain the copyright to their videos). The deadline for digest submission is **12<sup>th</sup> January 2023**. All digests must be submitted online via the Conference website at <https://intermag.org>. Digests should provide a clear summary of the work and results obtained. Authors will be informed of the status of their submission via e-mail by 17<sup>th</sup> February 2023.



## PRESENTATION

Contributed presentations accepted for the Conference will be presented either orally, or as posters (in-person and/or online). Authors are requested to indicate their preference for oral or poster presentation on the digest submission site; however, the Program Committee will make the final decision. Authors will be notified by email of their presentation format and specific session.

At the time of digest submission, it will not be necessary to choose between onsite or online participation. After a digest has been accepted, a final decision must be made as to the form in which the presenter wishes to participate in the conference. This also applies to invited speakers. Onsite participation is not required for invited talks but is strongly recommended.

All invited and contributed presentations, including poster presentations, must be pre-recorded and uploaded by mid-April 2023. Online contributed oral presentations will be in the form of a 12-minute prerecorded talk by a registered author (25-minutes for invited oral presentations). Online poster presentations will be in the form of a 5-minute prerecorded talk with a one-page electronic poster.

### Onsite oral presentations

Contributed oral presentations will consist of a 12-minute talk by a registered author (25-minutes for invited presentations), followed by a **Q&A period for in-person attendees**. Onsite attendees will deliver their talks in-person but **must also submit a prerecorded presentation**.

### Onsite poster presentations

Poster presentations will consist of well-prepared visual materials about the work posted on a designated board during the assigned poster session, with the author available to explain the details and answer questions. Simply posting a hard copy of the paper is inappropriate. For further details, including poster board size, please check the conference webpage <https://intermag.org>. Onsite attendees will present their posters in-person but **must also submit a prerecorded poster presentation**.





## PUBLICATION

Authors of accepted digests are encouraged to submit full papers for publication in IEEE Transactions on Magnetism. Detailed instructions on the preparation of manuscripts will be available from the submission site at <https://intermag.org> (under "Publications") in February. Some brief notes regarding full paper publications are given below.

- To be eligible for publication, all papers must be presented at the Conference by a registered author (or representative) who is knowledgeable about the work.
- All papers will be submitted to the IEEE online submission site, ScholarOne Manuscript Central.
- The paper submission site opens on 1<sup>st</sup> March 2023. Papers must be received by 21<sup>st</sup> March 2023. Post-deadline papers will not be accepted and not forwarded for review.
- The recommended paper length is ten (10) journal pages for invited papers and five (5) journal pages for contributed papers.
- Reviewing and revisions will be handled through the online system. Review standards will mirror those used for regular articles submitted to IEEE Transactions on Magnetism.
- All papers will have at least two peer reviews, and the final decision on the publication of the manuscripts will be made by the INTERMAG editors
- Accepted conference-related papers will be posted online with DOIs as "Early Access" papers. They will be published in final form as regular articles (not as "conference papers") in a special issue of IEEE Transactions on Magnetism.
- Some papers not accepted for IEEE Transactions on Magnetism may instead be published in the IEEE Magnetism Society Conference Proceedings on IEEE Xplore. There is no cost to the authors for this, unless the authors want open access.



## BEST STUDENT ORAL PRESENTATION AWARD

Following the establishment of this prestigious award by the IEEE Magnetism Society in 2008, a competition will be held during the Conference for the IEEE Magnetism Society Best Student Oral Presentation Award, which recognizes and encourages excellence in graduate studies of magnetism. Full-time graduate students who will be presenting an oral contribution may apply. Students should apply at the same time as they submit their digests by providing the supplementary information requested in the digest submission process. The supplementary information must include: (1) Ph.D. candidacy, the expected graduation date, IEEE membership number, advisor name, advisor IEEE membership number; (2) a one-page description of the motivation for the research, the significance of the research results, and the applicant's contribution to the work being presented; (3) a letter of support from the student's advisor.

The deadline for student award applications is 12<sup>th</sup> January 2023. Incomplete applications will not be considered. Up to five finalists will be selected based on accepted digests and supplementary information. Preference will be given to students and their advisors who are current members of the IEEE Magnetism Society. Only the finalists will be notified by the selection committee. The winner will be selected at the conference by the Best Student Oral Presentation Award subcommittee and announced during the conference. The award consists of a prize of \$1000 USD and a certificate for the winner, and a \$250 USD prize and a certificate for the remaining finalists.



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## CHILD CARE GRANT & STUDENT TRAVEL GRANT

INTERMAG 2023 will offer a limited number of travel grants to parents with childcare responsibilities who wish to attend the Conference. Participants who are bringing small children to the conference, or who incur extra expenses in leaving their children at home (i.e., extra daycare or babysitting services), are invited to apply for reimbursement of allowable expenses upon receipt of digest acceptance notification.

Student travel grants are intended to partially offset travel costs, and additional support will be available specifically for students from underrepresented countries. The deadline for submitting applications and letters of endorsement is 24<sup>th</sup> February 2023. For additional details on eligibility requirements and the application process, go to <https://intermag.org> under "Travel."

## REGISTRATION

Conference registration fees and the online registration link will be available on the Conference website on 1<sup>st</sup> February 2023.



## IMPORTANT DATES

Invited Speaker & Symposia Nominations Site Opens .....	28 October 2022
Invited Speaker and Symposia Nominations Deadline .....	20 November 2022
Digest Submission Site Opens .....	25 November 2022
Digest Submission Deadline .....	12 January 2023
Best Student Oral Presentation Award Application Deadline .....	12 January 2023
Conference Registration Opens .....	1 February 2023
Magnetism as Art Submission Site Opens .....	1 February 2023
Acceptance/Rejection Notices .....	17 February 2023
Manuscript Submission Opens .....	1 March 2023
Manuscript Submission Deadline .....	21 March 2023
Presentation Upload Deadline .....	Mid-April 2023
Magnetism as Art Submission Deadline .....	End-April 2023
INTERMAG 2023 Conference .....	15-19 May 2023
Online (On-demand) Conference .....	A week after the Onsite Conference
IEEE Transactions on Magnetics Publication .....	Fall 2023

