

# MMM 2022 Conference

Minneapolis, MN • October 31 - November 4, 2022 • [www.magnetism.org](http://www.magnetism.org)

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## FINAL CALL FOR PAPERS

**Abstract Submission Site Opens: June 6, 2022**  
**Abstract Submission Site Closes: June 24, 2022**

The MMM 2022 Conference will be held from October 31 to November 4, 2022 and will offer both in-person and prerecorded on-demand content. Members of the international scientific and engineering communities interested in recent developments in fundamental and applied magnetism are cordially invited to attend the Conference and actively participate in its technical sessions. The Conference provides an opportunity to share your research and interact with a large and broad collection of researchers working in magnetism, and to learn about the most recent developments in the field. Up-to-date information on all aspects of the Conference can be found at [www.magnetism.org](http://www.magnetism.org). A compilation of this information is provided in this PDF. We look forward to seeing you in Minneapolis, and to an exciting, enjoyable, and productive Conference.

**Yayoi Takamura**  
*General Chair*

**Tim Mewes**  
*Program Co-Chair*

**Jordi Sort**  
*Program Co-Chair*

**Aurelie Spiesser**  
*Program Co-Chair*

## Important Dates

|                                                                                    |                    |
|------------------------------------------------------------------------------------|--------------------|
| Abstract Submission Site Opens.....                                                | June 6, 2022       |
| Abstract Submission Site Closes ( <i>deadline will be strictly observed</i> )..... | June 24, 2022      |
| Best Student Oral Presentation Award Application Deadline.....                     | June 24, 2022      |
| Conference Registration Opens.....                                                 | August 5, 2022     |
| Author Abstract Status Notification.....                                           | August 12, 2022    |
| Accepted Author Deadline to Confirm Attendance ( <i>In Person or Online</i> )..... | August 25, 2022    |
| Child Care Grant Application Deadline.....                                         | August 31, 2022    |
| Student Travel Grant Application Deadline.....                                     | August 31, 2022    |
| Manuscript Submission Site Opens.....                                              | September 12, 2022 |
| Magnetism as Art Showcase Submission Deadline.....                                 | September 30, 2022 |
| Manuscript Submission Site Closes.....                                             | October 3, 2022    |
| Registration Deadline for In-Person Attendees.....                                 | October 7, 2022    |
| Hotel Reservations Deadline.....                                                   | October 7, 2022    |
| Presenter & Session Chair Registration Deadline.....                               | October 7, 2022    |
| Presentation Upload Deadline.....                                                  | October 7, 2022    |

For more information, contact:  
[info@magnetism.org](mailto:info@magnetism.org)

**TECHNICAL SUBJECT CATEGORIES:** This Conference will include basic and applied science and technology related to the field of magnetism and magnetic materials. The technical subject categories are as follows:

**1. Fundamental Properties and Cooperative Phenomena**

- a. Electronic Structure and Critical Phenomena
- b. Highly Frustrated Magnetism, Spin Glasses and Heavy Fermion Systems
- c. Quantum Materials and Cooperative States: Superconductivity, Spin Liquids, Chern Insulators
- d. Low-Dimensional Systems, Molecular and Organic Magnets

**2. Magnetoelectronic Materials and Phenomena**

- a. Multiferroic Materials and Magnetoelectric Phenomena
- b. Complex Oxides (Bulk, Films and Hetero-Structures)
- c. Half-Metallic Materials
- d. Topological Insulators, Dirac Materials, 2D and Layered van der Waals Materials
- e. Magnetic Semiconductors
- f. Voltage-Controlled Magnetic Anisotropy and Exchange Bias
- g. Magneto-Ionics

**3. Spintronics – Fundamentals and Devices**

- a. Magnetoresistance in Heterostructures (GMR, TMR, TAMR)
- b. MRAM, Magnetic Logic, and Related Devices
- c. Neuromorphic Computing
- d. Antiferromagnetic Spintronics
- e. Skyrmions
- f. Spin-Orbitronics
- g. Spin Injection and Spin Transfer Torques
- h. Spin Currents, Spin Pumping, Spin Hall, and Related Effects

**4. Magnetization Dynamics and Micromagnetics**

- a. Magnetization Dynamics, Damping, and Ultrafast Switching
- b. Spin Waves and Magnonics
- c. Magneto-Plasmonics
- d. Domain Wall, Vortex, and Skyrmion Dynamics and Devices
- e. Micromagnetic and Hysteresis Modeling
- f. Modelling of Magnetic Metamaterials
- g. New Approaches in Computational Magnetism

**5. Magnetic Recording**

- a. Recording Media, Write and Read Heads
- b. Energy-Assisted Recording
- c. All-Optical Recording and Other New Recording
- d. Recording Physics, Modeling, Theory, and Testing

**6. Soft Magnetic Materials**

- a. Ferrites and Garnets
- b. Crystalline Alloys
- c. Amorphous and Nanocrystalline Materials
- d. Magneto-Dielectric Materials

**7. 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

**8. 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. Exchange Bias
- f. Nanocomposite Magnetic Materials
- g. 3D and Other Magnetic Structures

**9. Multi-Functional Magnetic Materials and Applications**

- a. Magneto-Optic Materials and Devices
- b. Magneto-Elastic Materials and Devices
- c. Magneto-Caloric Materials and Devices
- d. New Coupled Magnetic Phenomena

**10. Sensors, High Frequency Devices and Power Devices**

- a. Magnetic Sensors (non-recording) and Actuators
- b. High-Frequency, Microwave, and Millimeter Wave Devices
- c. Transformers and Inductors
- d. Magnetics for Power Electronics and Control
- e. Shielding, Levitation and Propulsion

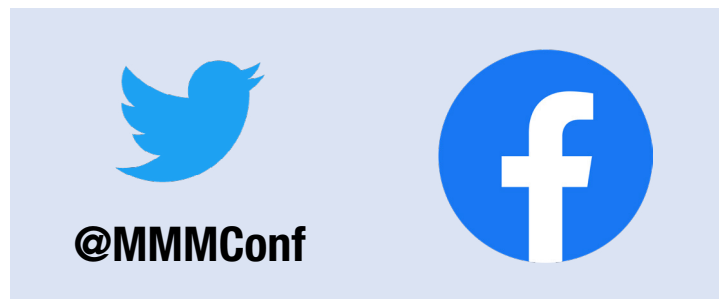
**11. Interdisciplinary and Emerging Topics**

- a. Bio-Magnetism
- b. Biomedical Applications
- c. Magnetic Fluids and Separations
- d. New Applications and Other Emerging Topics
- e. Education, Outreach, and Public Engagement in Magnetism

**12. Magnetic Characterization**

- a. Magnetic Microscopy and Imaging
- b. Instrumentation and Measurement Techniques

**PROGRAM:** The MMM 2022 Conference will offer both in-person and prerecorded on-demand content. The program will consist of invited and contributed presentations falling broadly within the scope of the categories listed on the previous page. All presentations will be prerecorded and available online for on-demand viewing starting the week after the Conference. Q&A will be conducted via the online Chat Boards. There will also be limited live programming on the virtual platform. During the Conference week (October 31 - Nov 4, 2022), onsite registrants will attend in-person talks, special sessions and networking events in Minneapolis.



**INVITED PAPERS:** Individual invited presentations and symposia, consisting of up to 5 invited presentations, are an important aspect of the program. Invited speakers will be selected from

the nominations received and will be contacted by the Program Co-Chairs in early June. The Program Committee may also select certain contributed abstracts on important late-breaking results for upgrade to invited status. Please note that if you submitted a nomination, that does not guarantee an invited talk. Regardless of the nomination outcome, an abstract must be submitted separately for consideration to be part of the technical program.

**ABSTRACT CRITERIA:** To maximize your chances of acceptance, keep in mind the following abstract criteria:

- The abstract must report a substantial advance in the science of magnetism or magnetic materials.
- The advance in knowledge must be both original and significant.
- The work reported must be complete, with specific reference to new results. Lack of sufficient context and details may result in abstract rejection.
- The Program Committee wishes to permit as many groups as possible to present their work. Groups or individuals considering the submission of several related abstracts should, wherever possible, combine them into a single submission.
- The abstract must be written in clear English. If necessary, please have a native English speaker edit your abstract before submission.

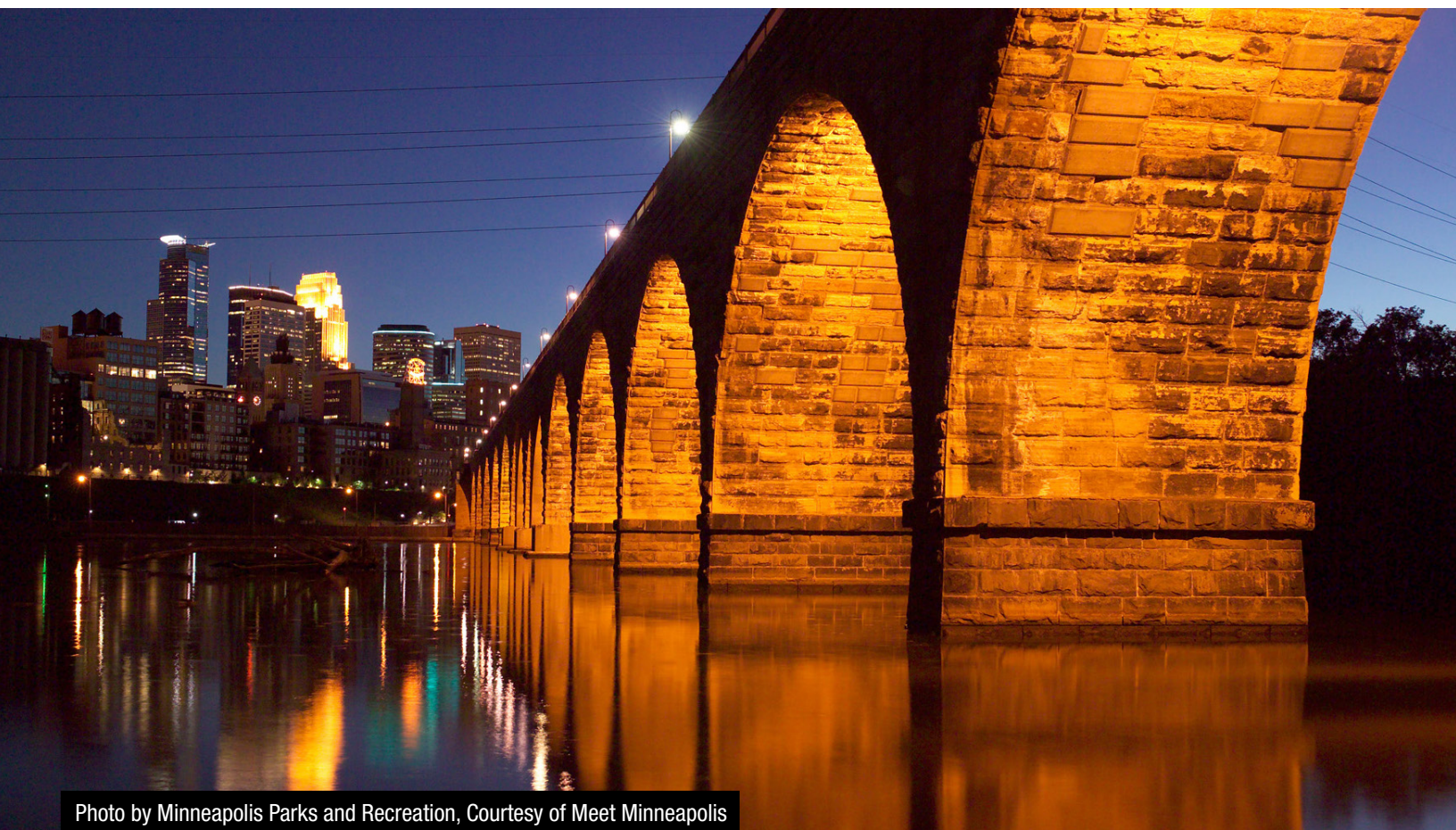


Photo by Minneapolis Parks and Recreation, Courtesy of Meet Minneapolis

**ABSTRACT SUBMISSION REQUIREMENTS:** Complete details on formatting your abstract and the online submission process may be found at [www.magnetism.org](http://www.magnetism.org) under “Authors, Abstract Submission”. Note that all abstracts must be submitted electronically, and the presenting author must be a paid registrant at the Conference. The Conference does not provide financial support or registration fee waivers for any presenters.

#### Important Deadlines:

- June 6, 2022: Abstract submission site opens.
- **June 24, 2022: Abstract submission site closes.** *This deadline will be strictly observed.*
- August 12, 2022: Authors notified regarding the status of their submission.
- August 25, 2022: Accepted author deadline to confirm attendance (*In Person or Online*).

**CONTRIBUTED PAPERS:** Contributed papers accepted for the Conference will be presented either as oral or poster presentations (*in-person and/or online*). Both oral and poster presentations are vital to the success of the Conference and are expected to be of similarly high technical quality. Note that the presenting author or representative must be registered at the Conference and available to provide details and answer questions during the Conference.

#### Oral Contributed Presentations:

- The contributed presentation format is a 10-minute talk by the registered author, followed by a 2-minute discussion period for in-person attendees.
- **All oral presenters will be required to submit a prerecorded presentation, even if they are presenting in person.**

#### Poster Presentations:

- Posters should consist of well-prepared visual materials about the work.
- **All poster presenters will be required to submit an electronic poster, even if they are presenting in person.**

#### In-Person Poster Guidelines:

- Posters should be printed to fit the onsite presentation board dimensions of 116 cm (46 inches) wide by 238 cm (94 inches).
- Posting a copy of a paper is NOT appropriate and will be treated as a NO SHOW.

#### Virtual Poster Guidelines:

- Top of the poster should clearly display: Abstract Title, Authors/Affiliation and Abstract Number
- Landscape orientation; format 16:9 ratio

- One (1) page PDF file; minimum 300 dpi
- Do not embed video, animation, audio, or hyperlinks or QR codes
- Save file name as Author Last Name and Abstract Number (example: Smith152.pdf)

**No Show Policy:** If any of the following applies, then the paper will be recorded as a NO SHOW and will not be published.

- Abstracts that are listed in the program but are NOT presented in person or virtually (no presentation file uploaded).
- Abstracts that are presented by an unregistered and/or unknowledgeable author or representative.
- Abstracts that did not have a registered author or representative available and responsive during the Conference week to address questions.

Authors are requested to indicate their preference for oral or poster presentations when submitting their abstracts; however, the Program Committee will make the final decision on the assignment of papers to specific sessions and the presentation format (oral or poster). Authors will be notified by email of their presentation format and specific session.

**PUBLICATIONS:** Conference papers will be published online in early 2023 in *AIP Advances* as a special topic. *AIP Advances* is an open access journal published by AIP Publishing, and articles are freely available to read, download and share. All previously published MMM articles can be viewed at <http://mmm.aip.org>, and all published Conference papers are identified by presentation IDs. **All MMM Conference papers published in *AIP Advances* will be open access at no additional cost to the authors.** Detailed instructions on the preparation of manuscripts will be available at [www.magnetism.org](http://www.magnetism.org) (under “Publications”).

- Recommended paper length: 6,000 words for invited papers and 3,500 words for contributed papers.
- The manuscript submission site opens on September 12, 2022. **All manuscripts must be received by October 3, 2022.** Post-deadline manuscripts will not be accepted and will not be forwarded for review.
- Presentations listed as a No Show will not be eligible for publication.
- Reviewing and revisions will be handled through the online system. Review standards are the same as those used for regular articles submitted to *AIP Advances*. Due to time constraints, a second review may not be possible for resubmitted papers that were originally rejected.
- All manuscripts assigned to *AIP Advances* must be submitted through the AIP Publishing online submission site, Peer X-Press (PXP).

**ADVANCES IN MAGNETISM AWARD:** *AIP Advances* will sponsor the third annual **Advances in Magnetism Award**. The Award will be presented to the best paper submitted as part of the MMM 2022 Conference and presented at the MMM 2023 Conference in Dallas, Texas. **To be eligible to win this exciting Award, you must submit your MMM 2022 Conference paper to *AIP Advances*. The winner will receive a cash prize of \$3,500 plus a travel allowance!**

**SUPPORT OPPORTUNITIES:** Organizations interested in supporting Conference events should contact [info@magnetism.org](mailto:info@magnetism.org).

**HOTEL:** The MMM 2022 Conference has negotiated a special discounted rate for Conference attendees at the Hyatt Regency Minneapolis Hotel. Reservation links will be available in August at [www.magnetism.org](http://www.magnetism.org) under "Travel, Hotel Information."

**REGISTRATION:** Conference registration fees and the online registration link will be available on the Conference website in August 2022.

**REQUIREMENTS FOR ENTRY INTO THE USA:** Obtaining your visa to enter the USA for the MMM 2022 Conference may take 3-6 months for processing of your application and receipt of your visa. **For details that apply specifically to your country, go immediately to the nearest U.S. Consulate or Embassy.** Review your visa status now to determine if you need a U.S. visa or visa renewal and to find out how to schedule an interview appointment, pay fees, and other vital instructions. To request a letter of invitation from the Conference, complete the online form at [www.magnetism.org](http://www.magnetism.org) under "Travel, Visa Info."

All nationals and citizens of **Visa Waiver Program (VWP)** countries who plan to travel to the U.S. for temporary business or pleasure for 90 days or less are required by law to obtain travel authorization prior to travel to the U.S. This authorization can be obtained online through the Electronic System for Travel Authorization (ESTA).

For the most current information on U.S. COVID-19 entry requirements, please visit the U.S. Department of State website at <https://travel.state.gov/content/travel/en/traveladvisories/ea/covid-19-information.html>.

**BEST STUDENT PRESENTATION AWARD:** This \$1,000 one-time fellowship recognizes and encourages excellence in graduate studies in the field of magnetism. Finalists will receive a \$250 one-year fellowship. For additional details on and the selection process go to [www.magnetism.org](http://www.magnetism.org) under "Awards."

**Eligibility:**

- The nominee must be a full-time graduate student expecting to graduate within one year of the Conference. Postdoctoral fellows, undergraduates or non-students are not eligible.

- The student's area of research may either be theoretical or experimental in any of the general technical and scientific areas normally presented as part of the Conference.
- The student's regularly submitted abstract must have been accepted for presentation through the normal abstract review process by the Program Committee as an oral presentation.
- The student must attend the Conference to present their talk in person in Minneapolis.

**Congratulations to the Best Student Presentation Award winner and the finalists at the 2022 Joint MMM-Intermag Conference:**

*Supported by APS GMAG and IEEE Magnetics Society*  
Winner: **Sujung Kim**, *University of California Santa Cruz (FOC-12)*

*Finalists:*

Yong Hu, *University at Buffalo, The State University of New York (BOD-07)*

Daniel Casaleiz, *IMDEA Nanociencia (DOD-01)*  
Stefan Pollok, *Technical University of Denmark (IOI-11)*

**Best Student Presentation Award Application Procedure:**

1. Students must submit an abstract to the Conference according to the standard submission guidelines and deadlines as outlined on the Conference website. DO NOT identify the abstract as part of the student award competition in the text of the abstract. The Conference **abstract submission deadline is June 24, 2022.**
2. Award applications will be accepted via ScholarOne, and must include the following supplemental information:
  - Expected graduation date, advisor name, advisor email.
  - Extended two-page abstract of the presentation which includes a short (300 words or less) explanation of your contribution to the work and significance of the research results.
  - Letter of support from the student's advisor.

**STUDENT TRAVEL GRANTS:** The MMM 2022 Conference will offer travel grants to a limited number of qualified students who wish to attend the Conference. Additional support will be available specifically for students from underrepresented countries. The grants are intended to partially offset travel costs.

**The deadline for submitting applications and letters of endorsement is August 31, 2022.** For additional details on eligibility requirements and the application process, go to [www.magnetism.org](http://www.magnetism.org) under "Awards."

## Additional Support



Additional support will be available for Ukrainian scientists (students and non-students) to attend MMM 2022. Details and the application link will be posted in early July at [www.magnetism.org](http://www.magnetism.org) under "Awards."

**CHILD CARE GRANTS:** A limited number of child care grants are planned for MMM 2022 Conference participants who are bringing small children to the meeting or who incur extra expenses in leaving their children at home (i.e., extra daycare or babysitting services). Online applications may be submitted upon receipt of abstract acceptance notification. Details about allowable expenses and an application form are available at [www.magnetism.org](http://www.magnetism.org) under "Travel." **The deadline for submitting applications is August 31, 2022.** Recipients will be notified upon approval of their application in mid-September 2022.

**BEST POSTER AWARDS:** Only in-person posters will be eligible for nomination for this award provided they meet the requirements and guidelines detailed on the Conference website. **Authors must attend in person to present their poster; virtual posters will not be considered for poster awards.** Selections, made by Poster Session Chairs, will be based on the level of the research, quality of the poster, and clarity of the presentation. Award winners will be announced during the Conference and prominently displayed in Minneapolis and on the Conference website.

**MAGNETISM AS ART SHOWCASE:** The MMM 2022 Conference will host a Magnetism as Art Showcase to highlight the beauty of magnetism and magnetic materials. All submissions will be displayed online. Four finalists will be selected by a panel of judges, and the winner will be selected by popular vote.

Detailed information on the Showcase rules and submission requirements are available at [www.magnetism.org](http://www.magnetism.org) under "Program, Magnetism as Art Showcase". The four finalists will be displayed onsite in Minneapolis. **The submission deadline is September 30, 2022.**

**ADDITIONAL INFORMATION:** To receive additional information about the MMM 2022 Conference, to be added to the Conference mailing list, or to update your mailing address, please contact [info@magnetism.org](mailto:info@magnetism.org). The latest information on the MMM 2022 Conference can be found at [www.magnetism.org](http://www.magnetism.org).

## Future Conferences

### 2023 Intermag Conference

May 15-19, 2023, Sendai, Japan

### 2023 Conference on Magnetism and Magnetic Materials

October 30 - November 3, 2023, Dallas, Texas, USA

### 16<sup>th</sup> Joint MMM-INTERMAG Conference

January 13-17, 2025, New Orleans, Louisiana, USA

### 2025 Conference on Magnetism and Magnetic Materials

October 27-31, 2025, Palm Beach, Florida, USA

