

Topical Group on Magnetism and its Applications

<http://units.aps.org/units/gmag/>

## Note From the Chair

*As the new Chair of GMAG, I will be glad to promote magnetism through various activities. But the best promotion of magnetism and related research comes of course through the active participation of GMAG members in many of the activities outlined in this Newsletter. As you will see in the various reports below, GMAG has a solid foundation and the executive*



*committee strives to continue to develop new services for its members. Currently GMAG is the fourth largest Topical Group within the APS and concurrently Magnetism is one of the largest sorting categories at each year's APS March Meeting. In order to keep magnetism vibrant in the future we can use your help in many ways: (i) suggest focus topics and symposia for the APS March Meeting; (ii) nominate candidates for APS fellowship (note the new deadline June 1<sup>st</sup>!); (iii) nominate students for the GMAG Dissertation Awards, (iv) propose magnetism related outreach projects, (v) encourage new people to join GMAG, and in general let the GMAG executive board know how GMAG can provide additional value to you.*

—Axel Hoffmann

## GMAG Election Results

Andrew Kent (New York University) is our new Vice Chair. Furthermore, we have two new Members-at-Large: Peter Fischer (Lawrence Berkeley National Laboratory) and Eric Fullerton (University of California – San Diego). We thank departing Past Chair Bill Butler and Executive Committee Members Stephen Hill and David Lederman for their commitment and service to GMAG during the past three years. Furthermore we would like to thank everyone who participated in the election (about 31% of the GMAG membership). Having just passed one election, it is time to start considering the next one. Therefore, please consider nominating candidates for the next GMAG elections. Mike Fitzsimmons ([fitz@lanl.gov](mailto:fitz@lanl.gov)) is the new Chair of the Nomination Committee. Please send suggestions for nominees for Vice Chair and Members-at-Large (2 positions) to Mike, no later than Oct. 1, 2009. Note that according to the GMAG bylaws (see the GMAG website) it is also possible to nominate candidates via petition.

## New Developments

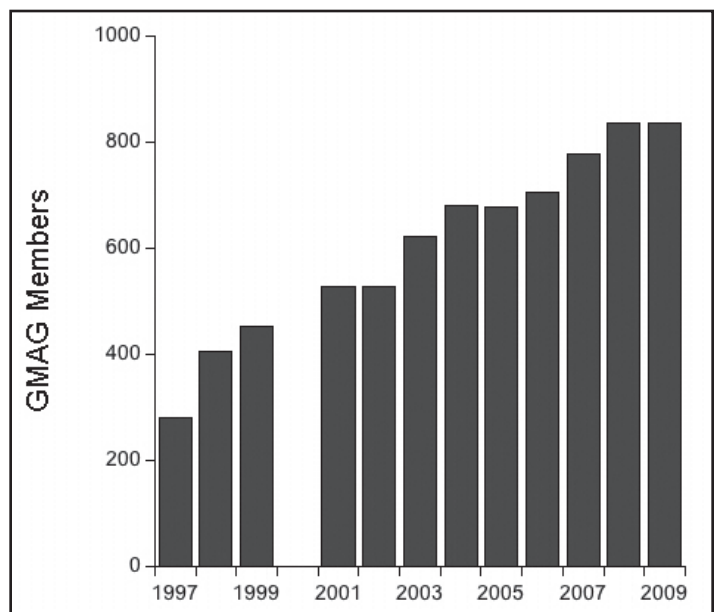
The GMAG Executive Committee met during the 2009 APS March Meeting in Pittsburgh. One important decision was to extend the deadline for the nominations for APS fellowship to June 1. For the last two years the fellowship nomination process has been conducted electronically, which has obviated the need to mail materials, saves time (and trees) and thus allowed us to move the deadline back. Thus every procrastinator has some extra time this year. APS will make the final decisions on the fellowship nominees in September.

Another new development is that the GMAG Executive Committee decided to join the International Travel Grant Award Program of the APS. This will allow members from GMAG to apply for support of collaborations with physicist from developing countries. Each award consists of up to \$2000 for travel and lodging and more information is available at <http://www.aps.org/programs/international>.

Finally, during the GMAG Executive Committee meeting we discussed the possibility of establishing a travel award to help graduate students to attend the APS March Meeting. One suggestion was to couple this award with advocacy service of the student to the community, i.e., as “arm twister” for the “Contact Congress” campaign of the APS Washington Office. A detailed proposal is currently being worked out by John Freeland ([freeland@anl.gov](mailto:freeland@anl.gov)) and thus feel free to share your thoughts and suggestions directly with him.

## APS Unit Convocation/Congressional Visits in February

Every year during February, the APS holds its unit convocation at its headquarters in College Park, MD and this year three of-

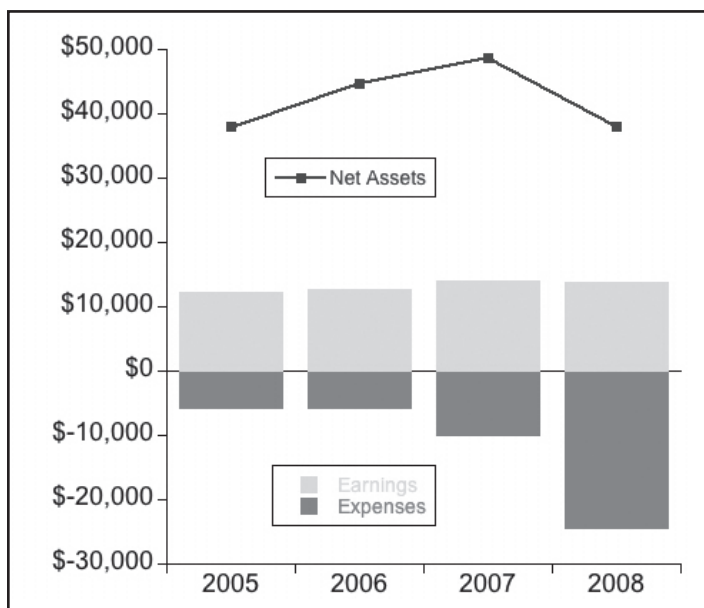


ficers from GMAG attended; Axel Hofmann, Berry Jonker, and Maria Varela. This meeting is mostly designed to educate the various unit officers about how to do business with APS, but it also updates us on new developments. One of the new developments that will directly affect GMAG members is that APS may slightly increase the dues for unit membership from the current \$7/unit. We hope that this will not have any significant negative impact on GMAG membership, which has remained very stable with currently 835 members (about 1.8% of the overall APS membership).

The day before the unit convocation, the APS Washington Office helps to organize Congressional visits for the various APS officers. This year Congress has been very supportive of science funding with large increases in funding for physical sciences in both the stimulus package and the FY2009 budget. Consequently we were very well received in most offices; presumably scientists are among the few constituents who are actually smiling these days when they contact their representatives. According to the staff in the APS Washington Office the recent change in overall attitude of politicians towards science funding has been helped tremendously by the continuous interactions of the scientific community with their elected representatives. Even though the political winds are turning for the better with respect to science, please consider seriously any forthcoming requests by APS to contact your representative to indicate that a healthy science environment is an important issue to you. Encouraging our Congressional representatives to support science goes a long way to ensure continued improvement of science funding.

### GMAG Finance Report

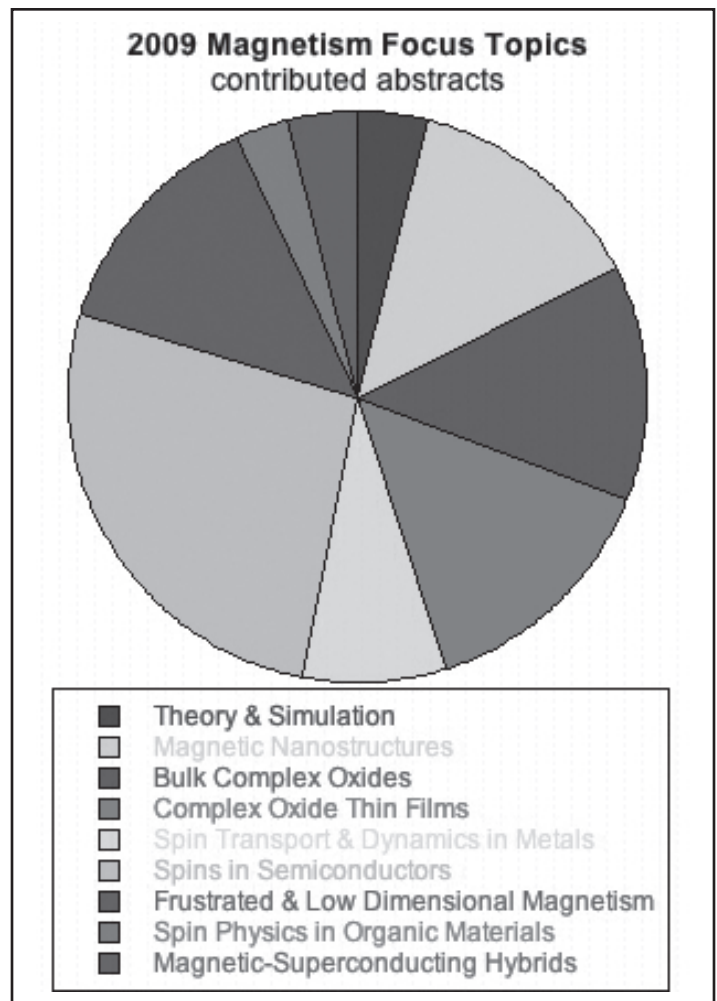
Over the last couple years GMAG finances have remained very stable. At the end of 2008 our net assets were \$37,998, which is a significant decrease from the year before (at the end of 2007: \$48,676). The relatively large net decrease in our funds of -\$10,278 was mainly due to the Nobel Prize reception hosted by GMAG at the 2008 APS March Meeting in New Orleans. The total cost for the reception amounted to \$18,616. However,



everybody within the GMAG Executive Committee agrees that the reception was a resounding success with a very large attendance. Our total expenses last year were \$24,501, while our revenues totaled \$13,773. Thus if we exclude the expenses for the Nobel Prize reception (a rather singular event, although we are eagerly awaiting the next magnetism related Nobel Prize) GMAG still has a healthy surplus. Thus at the past Executive Committee meeting the report from the Treasurer/Secretary Maria Varela was approved unanimously.

### 2009 APS March Meeting

This year's APS March Meeting was the biggest ever (not counting the Centennial Meeting) and as every year, magnetism was one of the largest scientific areas represented at the meeting. Even though most of the magnetism sessions were in direct view of the now-closed Seagate Research Lab in Pittsburgh, the absolute numbers in magnetism contributions continued to increase. In 2009, there were 901 contributed abstracts (13% of total meeting) in magnetism sessions co-sponsored by GMAG. Note, that this corresponds to essentially one contribution per GMAG member; this either means that GMAG members are very good about contributing to the APS March Meeting, or, more likely, that many people interested in magnetism are not yet GMAG members. All the submissions resulted in a total 73 sessions (61 Focus Topic sessions, 7 general sessions, and 5 symposia). Besides the regular program GMAG also contrib-



uted to the program by sponsoring four student lunches with experts (John Freeland, Michael Pechan, Amanda Petford-Long, and Myriam Sarachik) and two GMAG members (Chris Leighton and Suzanne te Velthuis) helped organize tutorials on the Sunday before the main meeting.

One unfortunate problem during the APS March Meeting was that several foreign participants could not obtain a visa in a timely manner, since the processing time averaged 100 days! This prevented at least four invited speakers from abroad attending the APS March Meeting just for GMAG co-sponsored sessions alone. In the cases that we were aware of, we offered invitees either the possibility of suggesting a replacement speaker consistent with APS policy (i.e., the replacement speaker could not have another invited talk themselves) or the possibility of presenting their talk via slidecast. In any case, we would like to encourage everyone aware of unreasonable delays for visa for foreign scientific visitors to report these cases to the International Visitors Office of the National Academies (see <http://www7.nationalacademies.org/visas>). If they are contacted early enough in the process they may assist the visitor and contact the U.S. Department of State on the visitor's behalf. If nothing else, they can compile hard statistics to provide information beyond anecdotal accounts.

#### **The 5 GMAG (co-)sponsored symposia were:**

- Unconventional Spin Torques
- Quantum Spin Dynamics and Relaxation in Molecular Magnets
- Applications of Thin Films with Tilted Anisotropy
- Recent Progress in Spin-Spiral Ferroelectricity
- New Insight into Exchange Bias from Advanced Scattering Techniques

#### **There were 9 GMAG (co-)sponsored Focus Topics:**

- Theory & Simulation of Spin Dependent Effects & Properties (2 sessions)
- Magnetic Nanostructures: Materials and Phenomena (7 sessions)
- Bulk Properties of Complex Oxides (9 sessions)
- Complex Oxide Thin Films (9 sessions)
- Spin Transport & Magnetization Dynamics in Metal Based Systems (6 sessions)
- Spin Dependent Phenomena in Semiconductors (14 sessions)
- Frustrated & Low-Dimensional Magnetism (7 sessions)
- Spin Dependent Physics in Organic Materials (2 sessions)
- Hybrid Magnetic-Superconducting Systems (2 sessions)

GMAG is planning to continue all of these Focus Topics in next year's APS March Meeting with the exception of "Theory & Simulation of Spin Dependent Effects & Properties," which has been steadily shrinking over the last couple years.

## **Planning for the 2010 APS March Meeting in Portland**

It is time to start organizing the magnetism part of the 2010 APS March Meeting in Portland. GMAG is permitted to sponsor five Invited Symposia and an unlimited number of Focus Topics as long as they attract sufficient contributed papers to generate more than one (preferably several) session. Symposia and Focus Topic Sessions are the cornerstones of the magnetism emphasis in the APS March Meeting, so your help in organizing and making these sessions effective is very important. Each Symposium consists of all invited talks (typically 5) relating to a specific topic. Focus Topics are made up of multiple sessions related to a general theme and have one invited talk per session with the remainder contributed talks. The call for nominations for Focus Topic speakers will go out this summer.

Any suggestions for Symposia and new or existing Focus Topics should be sent directly to the GMAG program chair Berry Jonker ([jonker@nrl.navy.mil](mailto:jonker@nrl.navy.mil)). To volunteer to help organize a Focus Topic on one of the topics of the 2009 APS March Meeting (see list in previous article) or to propose a title for a new one, please send your information to Berry by June 1, 2009. In order to suggest a Symposium, a summary paragraph along with the suggested chair and five invited speakers should be sent to Berry by September 1, 2009.

## **Request for Fellowship Nominations**

GMAG is allowed to nominate 3 to 5 people for APS Fellowship each year from among our members (0.5% of our membership). This is an important task, and one that relies on your active input. Please note that we have extended the deadline to June 1, 2009. Please consider nominating a worthy person from the magnetism community. A list of APS fellows since 1995 is available online on the APS website or alternatively check the APS directory to see if an individual is already a fellow. You might be surprised by some of the GMAG members that are not fellows. This highlights the importance of the nominator for the nominee's achieving recognition for important contributions to magnetism research. All nominations are submitted online at <http://fellowship.aps.org/>. Please consult the APS fellowship homepage for detailed instructions.

#### **In 2008 GMAG sponsored five new APS Fellows:**

- Paul Crowell, University of Minnesota
- Pengcheng Dai, University of Tennessee
- Jacobo Santamaria, University Complutense de Madrid
- Sung-Chul Shin, KAIST
- Evgeny Tsymbal, University of Nebraska

## **Nominations for Student Dissertation Awards**

In order to encourage students working in magnetism, every year GMAG sponsors Outstanding Dissertation in Magnetism Awards. GMAG will present up to three dissertation awards at the next APS March Meeting. These awards will recognize students who have conducted outstanding research leading to their dissertation and will consist of an invited talk in an ap-

propriate session at the APS March Meeting, a \$500 prize to the student, and up to \$250 toward his/her travel expenses to the APS March Meeting. The student must be in the final year before graduating with a Ph.D., and both the student and the advisor must be current members of GMAG. Nominations will consist of: a nominating letter; an extended abstract of the research; the student's CV and publication list; and contact information for the student, all submitted by the student's advisor or another senior researcher who knows the student's work well. The nominating letter must address the following issues:

- Quality and independence of the student's work;
- Student's speaking ability;
- Year the student began graduate school;
- Student expected completion date (must be after September 1, 2009, but before September 1, 2010 to be eligible for the 2010 APS March Meeting);
- Assessment of the student's future potential as a research scientist.

Nominations should be sent by email as a single PDF file to Axel Hoffmann (hoffmann@anl.gov) by September 1, 2009. Evaluation of the nominations will be conducted by the GMAG Executive Committee.

#### **In 2009 GMAG awarded Dissertation Awards to:**

- Li Gao, Stanford University and IBM Almaden
- Thomas Ward, University of Tennessee and Oak Ridge National Laboratory

### **Request for Magnetism Outreach Proposals**

For several years GMAG has made funds available to its members to support outreach activities. Limited funds (up to \$2500 per project) are available to cover supplies and expenses associated with activities, which aim to educate non-scientists about magnetism and its applications. Preference will be given to innovative activities that will be documented so that they can be reproduced elsewhere. The outcome of the activities are then disseminated to the GMAG membership through the GMAG Newsletter (see also the following article) and to the broader magnetism community through the GMAG website. Interested GMAG members should prepare a 1-2 page summary of the proposed activity (including expected duration and outcome) along with a 1 page CV and a list of anticipated expenses. These should be mailed as a single file in PDF format to the GMAG Chair, Axel Hoffmann (hoffmann@anl.gov). The GMAG Executive Board will review proposals on an ongoing basis.

### **Thoughts on Successful Outreach**

*The following are thoughts shared by Renee Horton (Materials Information Technology Center, University of Alabama), who was involved in a GMAG sponsored outreach project (see GMAG Newsletter #28, August 2008).*

In designing a successful outreach program there are four main focus points that should be considered: 1) the main objective of

the outreach; 2) choosing an activity you are passionate about; 3) identifying and targeting the community you are trying to reach with the outreach program; and 4) choosing the best method of reaching that audience.

In addressing the main objective of the program it is important for those involved to be passionate about doing the outreach and the mission of the outreach activity. Merely satisfying a requirement of a funding agency should not be the main objective. Even though funding agencies expect outreach to be included in grant proposals, a project will be much more successful if the participants are truly committed to the outreach. Furthermore, activities will be far more successful if the objectives focus on those for whom the outreach is intended, rather than those performing the outreach. The activity should benefit the community more than it should benefit the persons doing the outreach. In this way, everyone benefits in the long term, i.e. it is a win win situation if the project is successful.

An example: I heard a professor give a talk about her work with black holes. She was so excited about the work she was doing. When she spoke, her excitement showed through her body language and the words she used to describe her work; she made me want to know more about black holes. This motivated me to go and learn more about black holes. The same is true for outreach. It is important to choose an activity that you are passionate about. You must truly enjoy what you are doing. In this way, it will be fun and not seem like a chore. If you can treat it as a leisure activity instead of work it will be more enjoyable. If you enjoy it, this will come across in your presentation and your audience will be more receptive to the information you are sharing. The feedback will be more positive and the activity more successful.

Outreach is not a cookie cutter type operation: your colleagues are likely to be passionate about different outreach activities. Let each person decide, which aspect of the project they are most excited about and let them do that part. For example, I know a professor who dresses as a wizard during his outreach activities, which keeps the students engaged in the classroom. Some people will be willing to be up front doing all of the talking, others will likely prefer to be out of the spotlight. Regardless, everyone should have a positive experience so that it is fun for everyone involved. If you enjoy what you are doing, others will feed on your enthusiasm. If you feel that you are performing a chore, this will affect your colleagues. So, make sure that: 1) you really want to do the outreach activity; 2) you are passionate about the subject matter; and 3) that you want others to be excited about what you are doing. If you build it, they will come.

Each outreach activity should be targeted towards a particular community, and it is important to understand these communities and their backgrounds so that the activity is tailored to best serve them. If it is a Research Experience for Undergraduates, make sure the students enjoy what you are showing them. Put people in charge of them who want to be in charge of them and have a desire to give back to the community. This is a valuable experience for all involved. Don't limit activities to those communities that you typically meet on a daily basis. There is a push to reach underrepresented populations; the places where you can find these populations are endless. Be creative. Places

to consider are not limited to your local schools. Try contacting the Boys and Girls clubs, after school programs, daycare centers, the housing authority, or your local Pan Hellenic Sororities and Fraternities. Most African American Sororities and Fraternities mentor young African American students through their organizations. You should be able to find local contact information on the internet. If not, contact the high schools in your area and find out if they are aware of any groups with the demographics you are looking for. One organization is Delta Sigma Theta Sorority, Inc., which has a Science and Everyday Experience component as part of their objectives; they also have two girls groups, predominantly African American, ages 11-18. This is an ideal way to reach this demographic. Their website is <http://www.deltasee.org/>. This is just one possible avenue. You must think outside of the box and be willing to try many avenues until you find the best fit for your organization. There are a million activities on the internet, and it takes time to find the right one. When you find the one that you like, make it personal, adapt it to your style and make it your own. This is not recreating the wheel; it is like personalizing your new bike. When you add your personal touch to something, you will be better able to demonstrate your excitement about the activity. Don't be afraid to try something new, beyond what is described online. We are scientist and we love to experiment. So experiment and find out how to expand an activity and how to make it fun. It is important that activities be adapted to fit the audience and the location. Some activities can be made to be more hands on. Try experimenting with a smaller group of kids. If you have children of your own or a friend has kids, ask them to do the activity first; watch how they do it and take note of any changes they make. If making small adjustments to the activity allows the students to get more out of it, making such changes will be well worth it in the long run. Make sure you are familiar with the educational level of the students you are working with so that you aim your activity at their level: don't assume that all 5th grade classes are the same. Whenever possible, do research on the educational background of your audience. The most important part of outreach is to have fun with what you are doing, so that they will have fun too.

### Great Magnetic Activities

1. Maglev vehicles from Pitsco. The kits can be purchased as a starter kit or as replacements. The kit comes with the ability to make 50 pre-designed cutouts. The kit can be adapted by creating a blank design for the kids to color and design themselves. In this way, you can make the activity interactive for the students by allowing them to put their own touch on the maglev vehicles. When using this activity in an open environment, like a museum, it helps to have the vehicles pre-cut and folded. You can invite the children to make their own at home. Hold on to the magnets so that you do not have to replace them each time.
2. Magnetic Romp. This is a great activity that attracts all ages. I have one in my office and everyone who visits likes to play with it. We are in the process of making a bigger one for the children's hands on museum in Tuscaloosa (<http://www.chomonline.org/>). This activity is great as is and works for all age groups. It can be found on the internet for \$13.00-15.00. This link has a great explanation

about what is happening with the magnetic romps. [http://www.4physics.com:8080/phy\\_demo/ROMP/ROMP.html](http://www.4physics.com:8080/phy_demo/ROMP/ROMP.html).

3. Magnetic Mouse Trap Cars from Pitsco. A lot of fun and a lot of work. If used in an open setting like a museum, put the cars together ahead of time and talk about what is happening using a poster or some type of demo. Let the students race them against other types of mouse trap vehicles. Works great with groups and closed settings.
4. Magnetic rocks are fantastic! The imagination can run wild a few rocks and a can of iron filings. They can be purchased by the pound and each kid needs only two to have a lot of fun. Great activities can be created by just sitting and playing with these rocks.
5. Magnetic balls are rattle snake eggs are also a lot of fun to use.
6. Make a collection of different magnets and test which has the greatest strength by picking up another object or see which one can attract another magnet from the furthest distance.
7. Levitate you're favorite action figures. My Einstein floats all the time for the kids and he rides on the maglev vehicles.
8. Magnetic Paint is a must for outreach also. It's magical.

### Useful Websites for Magnetism Outreach

<http://www-istp.gsfc.nasa.gov/istp/outreach/ed/>

<http://www.proteacher.com/cgi-bin/outside/site.cgi?id=10015&external=http://www.coreknowledge.org/CKproto2/resrcs/lessons/298AmazingMags.htm&original=http://www.proteacher.com/110077.shtml&title=Amazing+Magnets>

<http://edtech.kennesaw.edu/web/electric.html>

[http://www.deltasee.org/trainers/trainers\\_CTactivities.htm](http://www.deltasee.org/trainers/trainers_CTactivities.htm)

<http://shop.pitsco.com/activities/item.aspx?CategoryID=46&act=160>

<http://shop.pitsco.com/store/detail.aspx?CategoryID=102&by=9&ID=4651&c=1&t=0&l=0>

<http://www.magnetwrap.com/servlet/Categories?category=Other+Magnetics%3AMagnetic+Rocks>

<http://www.kjmmagnetics.com/categories.asp?gclid=CNz0p7-kqJkCFQrAGgodG1NZqg>

<http://magnamagic.com/start.html>

<http://science.howstuffworks.com/magnet.htm>

As much as I love magnets, our outreach efforts are not limited to magnetism. However, thanks to the American Physical Society Topical Group on Magnetism and its Applications (GMAG), a lot of great magnetic activities were adapted and incorporated into the outreach activities at the MINT center at the University of Alabama.

*Renee Horton  
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## Upcoming Conferences

**2009 International Conference on Neutron Scattering**, May 3–7, 2009, Knoxville, TN <http://neutrons.ornl.gov/conf/ics2009/>

**Intermag 2009 Conference**, May 4–8, 2009, Sacramento, CA <http://www.intermagconference.com/intermag2009/>

**1st IEEE International Memory Workshop**, May 10–14, 2009, Monterey, CA <http://www.evh.ieee.org/soc/eds/imw/>

**HMM-2009 - 7th International Symposium on Hysteresis Modeling and Micromagnetics**, May 12–14, 2009, Gaithersburg, MD <http://www.metallurgy.nist.gov/magnet/hmm2009/>

**5th International Workshop on Nanomagnetism & Superconductivity COMA-RUGA**, July 5–9, 2009, Tarragona, Spain <http://www.ub.edu/gmag/comaruga>

**20th International Colloquium on Magnetic Films and Surfaces**, July 20–24, 2009, Berlin, Germany <http://www.icmfs2009.org/index.html>

**9th International Conference on Research in High Magnetic Fields**, July 22–25, 2009, Dresden, Germany <http://www.rhmf09.de/>

**International Conference on Magnetism 2009**, July 26–31, 2009, Karlsruhe, Germany <http://www.icm2009.de/>

**Magnonics: From Fundamentals to Applications**, August 2–29, 2009, Dresden, Germany <http://www.pks.mpg.de/~magnon09>

**Polarized Neutrons and Synchrotron X-rays for Magnetism 2009**, August 3–5, Bonn, Germany <http://www.fz-juelich.de/iff/pnsxm2009>

**European School on Magnetism 2009**, September 1–10, 2009, Timisoara, Romania <http://esm.neel.cnrs.fr/2009/>

**19th Soft Magnetic Materials Conference**, September 6–9, 2009, Torino, Italy <http://www.smm19.eu>

**11th International Conference on Advanced Materials, Symposium on "Magnetic Materials at the Nanoscale,"** September 20–25, 2009, Rio de Janeiro, Brazil <http://www.icam2009.com/>

**Advances in Magnetic Nanostructures**, October 4, 2009, Vail, CO <http://www.engconfintl.org/9bd.html>

## Important Deadlines

June 1 | **Fellowship Nomination**  
Contact: <http://fellowship.aps.org>

June 1 | **Focus Topic Organization for March Meeting**  
Contact: Berry Jonker [jonker@nrl.navy.mil](mailto:jonker@nrl.navy.mil)

September 1 | **Symposia Nomination for March Meeting**  
Contact: Berry Jonker [jonker@nrl.navy.mil](mailto:jonker@nrl.navy.mil)

September 1 | **Dissertation Award Nomination**  
Contact: Axel Hoffmann [hoffmann@anl.gov](mailto:hoffmann@anl.gov)

October 1 | **Nominations for Executive Committee**  
Contact: Mike Fitzsimmons [fitz@lanl.gov](mailto:fitz@lanl.gov)

ongoing | **Outreach Proposals**  
Contact: Axel Hoffmann [hoffmann@anl.gov](mailto:hoffmann@anl.gov)

*Thanks for being involved with GMAG and please do not hesitate to get actively involved in the activities described above.*

*A more detailed list of magnetism related conferences can be found on the GMAG website: <http://www.aps.org/units/gmag/meetings/index.cfm>.*

### GMAG Executive Committee

Chair: Axel Hoffmann ([hoffmann@anl.gov](mailto:hoffmann@anl.gov))

Chair-Elect: Berend Jonker ([jonker@nrl.navy.mil](mailto:jonker@nrl.navy.mil))

Vice-Chair: Andrew Kent ([adk1@nyu.edu](mailto:adk1@nyu.edu))

Past Chair: William Butler ([wbutler@mint.ua.edu](mailto:wbutler@mint.ua.edu))

Secretary-Treasurer: Maria Varela ([mvarela@ornl.gov](mailto:mvarela@ornl.gov))

Members-at-Large: Peter Fischer, Michael Fitzsimmons, John Freeland, Eric Fullerton, Michael Pechan, and Evgeny Tsymbal