

2015

MATERIALS RESEARCH SOCIETY

YEAR-END REVIEW



Oliver Kraft
2015 MRS President



Todd M. Osman
MRS Executive Director

As we add another year to the history of the **Materials Research Society (MRS)**, it's the perfect time to pause and reflect on the Society's achievements in 2015 and to thank our volunteers and staff who deliver our community-driven programs and services.

2015 was a year of celebrations. The **MRS Fall Meeting celebrated its 40th year in Boston** and continues to be considered a main focal point of the materials community. With a meeting model unique to MRS, the program is not developed by Society leadership. Instead, year after year, materials researchers working in the field, with firsthand knowledge of what is most important to the community, create exciting, informative and world-renowned events that carry on the "great meetings" legacy.

The Society also celebrated a long tradition of editorial excellence with **MRS Bulletin's 40th anniversary** and **30-year anniversary for Journal of Materials Research (JMR)**. The *Bulletin* commemorated its milestone with a special December issue on *Materials & Engineering: Propelling Innovation*, as well as a special session at the MRS Fall Meeting on the same topic. *JMR* observed its landmark year with the first *JMR* Paper-of-the-Year Award, announced during the MRS Spring Meeting.

And new to our publishing portfolio—**MRS Advances**. Launched during the 2015 MRS Fall Meeting, this online-only, peer-reviewed journal features impactful and emerging research based on topical clusters defined by MRS Meetings, with inaugural content already available.

The **MRS OnDemand® Webinar Series** continued to flourish in 2015, with an expanded **Webinar Wednesdays** program engaging researchers in over 50 countries with free, live monthly webinars complementing the *MRS Bulletin* issue's theme topic.

In just a few short years, the **Materials Research Society Foundation** has developed a strong program to support community-driven programs in education outreach and peer recognition. In 2015, the Foundation funded six grassroots outreach projects from four countries—Israel, Sweden, Mexico and the United States—as well as nine University Chapter Special Projects. The University Chapter Program now boasts over 100 Chapters—20% outside the United States. And in an effort to reduce barriers for engagement, the Foundation continues to fund free electronic memberships for students studying in developing countries. A recent Board vote expands the program for 2016, reducing membership dues for *professional* members in developing countries as well. But with your help, there is so much more we can do. Please consider a donation to the Foundation. Every gift makes an impact.

Impact of Materials on Society, our Foundation's new introductory materials science course bridging research in engineering, humanities and social science, is garnering rave reviews. Developed in partnership with MRS, the University of Florida, the U.S. Department of Defense and Bruno White Entertainment, the flexible, modular lessons in this undergraduate course teach students that engineering shapes, and is shaped by, social and cultural variables, and that careers in engineering are not only about math and science, but also about social problem-solving.

While still in predevelopment, the Foundation's pioneering new international traveling science exhibition, **Strange Matter Green Earth**, celebrated its first Ruby Level Sponsor—Companhia Brasileira de Metalurgia e Mineração (CBMM) in 2015. This interactive exhibition will enable millions of people across the globe to explore ways in which advances in materials can lead to a more sustainable future. More information on the Foundation, its good works, and how you might help can be found on the last page of this report.

And as always, this is the perfect time to celebrate the nearly **1000 volunteers** plus **members, leadership, headquarters staff, vendors, advertisers, exhibitors, sponsors, host cities** and the **materials community** without whom these incredible accomplishments would not have been possible. Together we advance the MRS mission ... to advance materials ... and to improve the quality of life.

Now turn the page and find a remarkable array of people, projects, places, premiers and previews that defined our year—by the numbers!

Oliver Kraft, PhD
2015 MRS President

Todd M. Osman, PhD
MRS Executive Director

MRS MATERIALS RESEARCH SOCIETY®
Advancing materials. Improving the quality of life.

2015 BY THE NUMBERS

Looking back to 2015, we are delighted to see all the **Materials Research Society** has accomplished. Our members, volunteers, exhibitors, sponsors, partners and headquarters staff are all to thank for the tremendous success of our Society. We are pleased to present a year-end review summary of some of our biggest achievements this past year.



- broadened the reach of the Society's mission with the help of **over 1000 volunteers** from across the globe
- served an MRS membership of **over 16,000 students and professionals** hailing from physics, chemistry, biology, mathematics and engineering—the full spectrum of materials science
- furthered our global engagement by representing women and men from **91 countries** around the world in our membership and meetings
- boasted over **100 MRS University Chapters**, now with **20% outside of the United States**
- invested in the growth of the materials profession and the communities it serves with the help of **14 MRS Corporate Partners**, who help support the Materials Research Society Foundation and its programs
- announced **6 Materials Research Society Foundation grants** and **9 University Chapter Special Project Awards** at the 2015 MRS Spring Meeting
- **honored 91 MRS members** through the MRS Awards Program
- advanced **1 mission**—to promote communication for the advancement of interdisciplinary materials research and technology to improve the quality of life

- garnered **4.1 million page views** on the MRS website
- strengthened MRS presence on social media, generating **over 10,000 likes** on the MRS Facebook page alone
- reported the latest breakthroughs in materials science through the MRS news site, *Materials360 Online*, publishing **109 original news stories** in 2015
- recorded **69 interviews** with materials science experts during the 2015 MRS Spring and Fall Meetings via MRS TV, accumulating over **15,142 views** on the MRS Meeting playlist
- expanded the MRS OnDemand Webinar Series with **14 live webinars** throughout the year, allowing people in **50 countries** access to valuable educational information on timely, interdisciplinary topics



- increased combined downloads across all MRS publications, hosted on Cambridge Journals Online, to a total of **over 1.5 million downloads**
- celebrated a long tradition of editorial excellence with *MRS Bulletin's* **40th Anniversary** and *Journal of Materials Research's* **30th Anniversary**
- ranked in the **top 10%** of materials science journals with *MRS Bulletin*, which had an **Impact Factor of 5.667** for 2015
- received **25% more submissions** to the *Journal of Materials Research* from 2014 to 2015 over previous five-year average
- released **2 new topical special issues** of *MRS Communications*
- published **15 review articles** in *MRS Energy & Sustainability—A Review Journal's* first full year of publication
- achieved **4.8 million abstract downloads** on the *MRS Online Proceedings Library Archive*
- launched the new peer-reviewed, online-only journal, *MRS Advances*, with the **1st content** available in December of 2015
- extended the breadth and scope of the MRS Book Collection, now with **11 books and textbooks** in our portfolio
- reported a **readership of over 65,000** for the *Materials360*[®] e-newsletter, now in its **15th year of publication**

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- offered **106 technical symposia** at the 2015 MRS Spring and Fall Meetings, bringing in **over 12,000 total on-site attendees**
- increased the usage of the MRS Meeting App to **6790 users** at the 2015 MRS Spring and Fall Meetings
- celebrated our **40th Fall Meeting** in Boston

- provided MRS Spring and Fall Meeting attendees the opportunity to talk directly to over **400 international exhibitors** about the latest techniques and advances in materials research
- expanded MRS Career Central, now including the MRS Job Board and enhanced Career Fairs at the MRS Spring and Fall Meetings, which accommodated **838 job seekers** on-site
- achieved record **attendance of 1851** at the XXIV International Materials Research Congress (IMRC), held in partnership with the Sociedad Mexicana de Materiales
- hosted **more than 1250 scientists** at various conferences and workshops through the MRS Conference Services program

- continued to bring materials research to the public with the **13th year** of the international traveling exhibit, *Strange Matter*, reaching **over 5 million exhibition attendees** on **3 continents** to date
- sent a record-breaking **4510 letters** to the U.S. Congress through the MRS Materials Voice platform
- provided **62% international (non-U.S.) coverage** of science policy news in *MRS Bulletin*, *Materials360 Online*, and social media
- partnered with the University of Florida, Bruno White Entertainment, and the U.S. Department of Defense to produce **10 educational videos** for Impact of Materials on Society, an undergraduate course that studies the interrelationships between society and materials science
- received the **1st Ruby Level Sponsor** of the new traveling science exhibit, *Strange Matter Green Earth*, which will enable millions to explore ways in which advances in materials can lead to a more sustainable future



2015 FOUNDATION ACCOMPLISHMENTS



MATERIALS
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Supporting projects and initiatives created by the materials community, for the materials community, the Materials Research Society Foundation advances the MRS mission to “promote communication for the advancement of interdisciplinary materials research and technology to improve the quality of life.”

In 2015, the Foundation funded six exciting grassroots outreach projects:

Polycraft: Educational Innovation through Gaming *The University of Texas at Dallas*

This project educates students about polymer chemistry and materials science, incorporating live real-life demonstrations of processes—such as 3D printing and extruding—with a modified version of the game Minecraft.

Would You Agree to Have Perovskite-Based Photovoltaic Cells? *Weizmann Institute of Science*

This outreach project provides a module on sustainable energy (perovskite-based solar cells) to Arabic teachers in Israeli high schools to raise students' awareness of the interactions between science and society and to encourage them to consider STEM careers.

Materials Touch *Rice University*

This project enables visually disabled children and adults to experience materials science in a safe learning environment specifically designed for their needs, generating a materials-aware population and a diverse workforce.

Ask a Scientist *Ask a Scientist Corporation*

Submitted and driven by students, this project utilizes modern technology (i.e., smartphones, internet) to illustrate that the ability to perform a critical search and analysis of internet content is a vital skill to future generations.

Mucus, It's Snot What You Think—The Video *Kungliga Tekniska Hogskolan (KTH)*

This informational video showcases the amazing properties of mucus, a unique biomaterial, and offers the general public insight into the world of materials that compose our bodies.

Hagamos con-Ciencia (Let's Make Conscience with Science)

Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional Unidad Saltillo

This outreach program exposes 5th and 6th grade students in rural and/or impoverished areas of Mexico to the excitement of science and technology. The goal is to raise student interest in science, support educational efforts with revised science subjects, and show how materials science impacts their daily lives.

Additionally, in 2015 the Foundation:

- funded nine MRS University Chapter Special Projects
- supported over 100 MRS University Chapters around the world
- honored outstanding contributors to the progress of materials research through 12 MRS awards
- funded free electronic MRS memberships for university students studying in developing countries
- offered professional and career development programs
- provided postdoctoral support
- and afforded diversity and inclusion initiatives.

Looking forward to 2016, we know that with your help, we can do more. Donate to the causes you care about. Visit www.mrs.org/foundation-donation to learn more about the good work the Foundation is doing, and to make a donation.

FREE access for a limited time!
www.mrs.org/bulletin-special-issue-2015

MRS Bulletin

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SPECIAL ISSUE

Materials & Engineering: Propelling Innovation

This special issue of *MRS Bulletin* highlights the unique relationship and close intertwining between materials and engineering. Materials enable engineering; engineering, in turn, depends on materials to transform design concepts and equations into physical entities. This relationship continues to grow with expanding societal demand for new products and processes. The articles in the issue address how engineering accentuates the properties of materials, and how materials inspire innovations in engineering and technology.



EDITORIAL

- Materials & engineering: Propelling innovation

ENABLERS

- Materials and engineering: An evolving landscape
- Materials characterization and the evolution of materials
- Integrated computational materials design for high-performance alloys

MATURE APPLICATIONS

- Advanced lightweight materials and manufacturing processes for automotive applications
- Materials considerations for aerospace applications
- The energy-storage frontier: Lithium-ion batteries and beyond
- The role of materials science in the evolution of microelectronics
- Biopolymers and supramolecular polymers as biomaterials for biomedical applications
- Innovations in cement-based materials: Addressing sustainability in structural and infrastructure applications

EMERGENT APPLICATIONS

- Not just graphene: The wonderful world of carbon and related nanomaterials
- Materials by design: Using architecture in material design to reach new property spaces
- Ultraflexible organic electronics
- Localized fields, global impact: Industrial applications of resonant plasmonic materials
- Designing defect spins for wafer-scale quantum technologies
- Additive manufacturing of materials: Opportunities and challenges
- Three-dimensional printing of biomaterials and soft materials

META ISSUES

- At the intersection of materials, engineering, and new business creation
- From academic discovery to industrial applications: Innovation and success in materials science and engineering

FUTURE

- Materials for the 21st century: What will we dream up next?

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