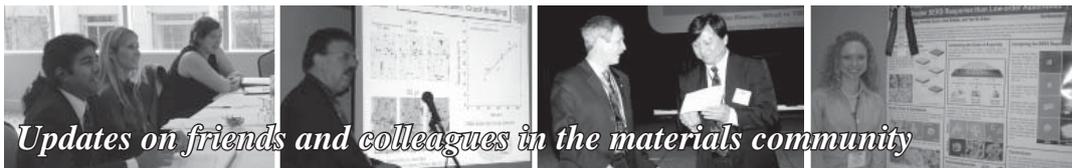


## Member News



*Updates on friends and colleagues in the materials community*

### TMS Issues Call for Book Authors and Editors

TMS and John Wiley & Sons have teamed up as publishing partners and are currently seeking new authors or volume editors for textbooks, handbooks, or reference books on materials science-related topics. Potential book topics include, but are not limited to: state-of-the-art processing, fabrication, design, and application of metals, ceramics, plastics, composites, and other materials; minerals characterization and developments in extraction; production of advanced electronic materials; and performance of next-generation aerospace structural components. However, proposed publishing opportunities based on any research or pro-

fessional interests by TMS members, as well as ideas generated from the work of TMS technical committees and divisions, are welcome. Authors and editors of new, original books receive royalties on worldwide sales of their books, while editors of proceedings volumes receive complimentary copies of their books. In addition, all authors and editors are entitled to a discount on Wiley books.

To take advantage of this exceptional opportunity, contact Anita Lekhwani, senior acquisitions editor, John Wiley and Sons, Inc, at [alekhwan@wiley.com](mailto:alekhwan@wiley.com) or Matt Baker, TMS content specialist, at [mbaker@ms.org](mailto:mbaker@ms.org).

### Jagdish Narayan Honored at MS&T 2011 Acta Materialia Gold Medal Symposium

The contributions of Jagdish (Jay) Narayan, John C. C. Fan Family Distinguished Chair Professor, Department of Materials, North Carolina State University (NCSU), and winner of the 2011 Acta Materialia Gold Medal, will be highlighted



at the International Symposium on Advances in Nanostructured Materials and Applications: The 2011 Acta Materialia Gold Medal Symposium. Sponsored by TMS, ASM International, the American Ceramic Society, and the U.S. Army Research Office, the symposium will take place at the Materials Science & Technology 2011 (MS&T 2011) Conference, October 16-20, 2011. The symposium program will address critical issues related to synthesis and processing, atomic and nanoscale characterization, structure-property correlations, and modeling of nanostructured materials, in addition to defects, diffusion, ion implantation, laser-solid interactions, and rapid thermal processing and pulsed laser deposition of novel materials with unique and improved properties.

Other celebrations of Narayan's achievement scheduled at MS&T 2011 include the Acta Materialia Gold Medal and North Carolina State Alumni Reception on October 17. The medal will be formally presented to him at the ASM-International Awards Dinner on October 18.

Narayan is also an Oak Ridge National Laboratory Distinguished Visiting Scientist and director of the National Science Foundation Center for Advanced Materials and Smart Structures at NCSU.

### TMS Shares Perspectives at Economic Roundtable



Warren H. Hunt, TMS executive director (left), and Mary Samsa, TMS professional development specialist (right), participated in an Economic Roundtable in May hosted by Congressman Jason Altmire, D-Pennsylvania (center). The event gave TMS the opportunity to outline its activities and highlight issues and concerns.

#### JOM SEEKS CONTRIBUTORS TO "SUPER MATERIALS OF THE SUPER HEROES" ARTICLE

JOM is developing a feature article on how the amazing materials of comic book mythology are close to becoming real, thanks to the wonders of modern materials science and engineering. We would like to include as many ideas, observations, and opinions from TMS members on this topic as possible. Your contribution can be based on research that you've

read about or your own work. So, is the vibranium-iron alloy that makes up Captain America's indestructible shield that far-fetched? Would it ever be possible to make Wonder Woman's plane invisible or to continuously power Ironman's suit? Let us know what you think! Send your ideas to Maureen Byko, JOM editor, at [mbyko@tms.org](mailto:mbyko@tms.org).



## Meet a Member: John Cahn Named Kyoto Prize Laureate

By Lynne Robinson

**Editor's Note:** The following is excerpted from a more extensive article on John Cahn's life and work posted in the Education Community of Materials Technology @TMS at <http://materialstechnology.tms.org/EDU/home.aspx>.

With what he terms a "simple" equation, John Cahn has helped explain everything from frost on a window pane to the creation of galaxies, while many of today's high-tech gadgets owe their existence to his work in understanding and defining nature's rules for the atomic structure of metals and materials. In June, the Inamori Foundation hailed his contributions to materials science and engineering (MSE)—and the world—by naming him the winner of the prestigious Kyoto Prize in Advanced Technology, Japan's highest private award recognizing global achievement.

An emeritus senior fellow at the U.S. National Institute of Standards and Technology (NIST) and a 1983 TMS Fellow, Cahn's discoveries as a young researcher in the 1950s were driven by his frustrations with the shortcomings of prevailing theory to support a more systematic approach to materials development. In collaboration with John Hilliard, a colleague at General Electric Research Laboratory, he addressed that issue by developing the Cahn-Hilliard equation to quantitatively describe the behavior of mixtures of different materials and how they tend to separate at the microscale.

Said Robert Shull, one of Cahn's NIST colleagues, a NIST Fellow, and 2007 TMS president, "This work, inspired by Mats Hillert's theory on spinodal decomposition, is so simple in hindsight, but required great insight to develop. It has been of enormous use by industry. Rather than having to use a laborious trial-and-error process for determining the correct composition and heat treatment to give an alloy, John's theory enabled people to calculate those parameters directly." Like many other fundamental theories,



John Cahn will be formally presented with the prestigious Kyoto Prize during a week of ceremonies beginning November 9 in Kyoto, Japan.

the Cahn-Hilliard equation has proven relevant to a broad range of seemingly disparate fields, including economics and demography, and has even been used to describe how galaxies began forming out of the primal material generated by the Big Bang.

Born in Cologne, Germany, Cahn earned his doctorate in physical chemistry from the University of California, Berkeley, and taught at the University of Chicago before joining the Metallurgy and Ceramics Department at General Electric in 1954. In 1964, he became a professor in the Department of Materials Science at the Massachusetts Institute of Technology (MIT). He began his career at NIST in 1977, serving in an array of senior positions in its materials science research laboratories. He is also currently an affiliate professor at the University of Washington.

In addition to his work in spinodal decomposition, Shull said that Cahn impacted MSE in a number of other ways, such as adding strain energy to thermodynamic equilibrium equations and investigating the consequences.

"The concept of 'coherent' and 'incoherent' phase diagrams is all due to John and his students and collaborators," he said.

"John has colored many fields of materials science with his insightful research," agreed David E. Laughlin, ALCOA Professor of Physical Metallurgy, Carnegie Mellon University, who had Cahn as his Ph.D. thesis advisor while a student at MIT. "His ceaseless curiosity as to the nature of solids and his vast number of ideas have resulted in a number of research areas."

"John is exceptionally insightful. He's able to work across disciplines and is a wonderful inspiration for lifelong learning," said Samuel M. Allen, POSCO Professor of Physical Metallurgy, MIT, and another former student of Cahn's. "He has used thermodynamics and kinetics to model a broad range of processes that dictate how microstructures evolve, with many of his insights having been inspired by working with experimentalists." Allen continued that a lesson that can be gleaned from studying Cahn's life and work is, "when you observe something you don't understand, it is often an opportunity to reassess the validity of existing models."

Frank W. Gayle, Metallurgy Division chief at NIST, echoed these observations, noting that Cahn's discoveries and insights only offer a partial picture of his contributions. "His brilliance is balanced by his gracious and inclusive, welcoming attitude towards everyone, particularly younger scientists," he said. "His greatest influence has been to help great people do better work."

Each month, *JOM* profiles a TMS member and his or her activities both in and out of the realm of materials science and engineering. To suggest a candidate for this feature, contact Maureen Byko, *JOM* editor, at [mbyko@tms.org](mailto:mbyko@tms.org).