



Updates on friends and colleagues in the materials community

2012 TMS Award Nominations Accepted Until April 1

TMS will implement a number of changes to its Professional Recognition Program in 2011. One of the most notable will be significantly reducing the amount of time from nomination to award presentation to less than a year. For this reason, the deadline for all 2012 division and society award nominations is Friday, April 1. A new online nomination form that enables nominators to submit all materials, including letters of recommendation and curriculum vitae, can be accessed through the TMS Professional Recognition web site at www.tms.org/society/tmsawards.aspx.

In addition to simplifying and accelerating the awards process, TMS has broadened the scope of its recognition with the following new awards:

- **Brimacombe Medalist:** Honors TMS members in the mid-point of their careers, recognizing sustained excellence and achievement in business, technology, education, public policy, or science

related to materials science and engineering, as well as a record of service to the Society.

- **Cyril Stanley Smith Award:** Recognizes an individual who has made outstanding contributions to the science and/or technology of materials structure.
- **Morris Cohen Award:** Honors an individual who has made outstanding contributions to the science and/or technology of materials properties.
- **James Douglas Gold Medal Award:** Recognizes distinguished achievement in nonferrous metallurgy, including both the beneficiation of ores and the alloying and utilization of nonferrous metals. This award had previously been conferred by AIME.

TMS has also repurposed the existing Bruce Chalmers Award to recognize an individual who has made outstanding contributions to the science and/or technology of materials pro-

cessing. Formerly, the Chalmers award more specifically recognized outstanding contributions to the science and technology of solidification processing.

For more information about honors and awards available through TMS, please contact the TMS Professional Affairs Administrator at awards@tms.org.

Membership Vote Adopts Bylaws Revision

The TMS membership has voted to approve shortening "Section 3.3 Composition" of the Society bylaws to read as follows: "The Board of Directors shall consist of 15 directors with responsibilities as described in the Administrative and Policy Manual."

The change was required to accommodate the formation of a new Content Development and Dissemination Committee, and is effective as of February 1, 2011. The membership ballot was distributed in the December 2010 issue of *JOM*.

John Allison Elected to NAE



John Allison, 2002 TMS president and professor, Department of Materials Science and Engineering, University of Michigan, has been elected to the National Academy of Engineering (NAE). Prior to joining the University of Michigan faculty in 2010, Allison served as technical leader with Ford Motor Company where he led teams developing integrated computational materials engineering (ICME) methods.

Allison earned his bachelor's degree from the United States Air Force Academy. While serving as an officer in the U.S. Air Force, he worked as a materials engineer at Wright Aeronautical Laboratories and obtained his master's degree in metallurgical engineering from The Ohio State University. He earned his Ph.D. in metallurgical engineering and materials science from Carnegie-Mellon University. After a year as a visiting scientist at the Brown-Boveri Corporate Research Center in Switzerland, Allison joined Ford in 1983. He is internationally recognized for contributions to automotive casting technology and computational materials engineering.

Pradeep Rohatgi Receives Distinguished Professor Award



The Foundry Educational Foundation (FEF), in cooperation with the American Foundry Society (AFS) has named Pradeep Rohatgi, Distinguished Professor of Materials Engineering, University of Wisconsin-Milwaukee (UWM), the recipient of the 2010 FEF/AFS Distinguished Professor Award. Rohatgi was recognized for his demonstrated personal interest in his students, as well as his knowledge of the industry. He has trained more than 80 doctoral and master's degree students and has worked with nearly one hundred undergraduates in his laboratory.

Rohatgi established the FEF program at UWM in 1996 and has served as an FEF Key Professor since that time.

Rohatgi was honored at the TMS 2006 Annual Meeting with the Rohatgi Honorary Symposium on Solidification Processing of Metal Matrix Composites. He has published more than 400 research papers, co-authored and co-edited 11 books, holds 20 U.S. patents, and has received numerous awards and honors for his research and public service.

The symposium honored Rohatgi's 40 years of pioneering contributions to cast metal-matrix composites. An honorary dinner marked the event as well.



TMS Member Profiles

Meet a Member: Nikhil Gupta Brings Materials Science to the Masses

By Lynne Robinson

“Here, we are free to break stuff.”

Nikhil Gupta smiles at the camera and gestures about his lab. The narrator of the *Scientific American* video segment then describes his work: “His job is to smash things and see how they react.”

This is obviously a very simple explanation for the sophisticated studies that this associate professor of Mechanical and Aerospace Engineering has been conducting at the Polytechnic Institute of New York University (NYU). But, explains Gupta, “Even the most groundbreaking advancements in materials science may not be recognized by a non-scientific audience if they are not communicated in a simple and visual manner through public media.

For a number of months, Gupta has been on a mission to educate the public about how his research directly relates to every day life and has educated himself about how to communicate effectively through a variety of media, including broadcast, print, and the internet. “The first challenge is to simplify cutting edge scientific information to the level that it can be communicated to a broad audience without losing scientific accuracy,” he said. “The second challenge is to give precise examples that can illustrate the impact of scientific discoveries in a person’s life. I watched a lot of videos to see how

people have been presenting scientific information in popular science-based shows, which was very helpful in understanding these aspects.”

Gupta’s work focuses on developing lightweight materials with high damage tolerance for body armors and automobile structures. Along with Paulo G. Coelho, an assistant professor of biomaterials and biomimetics at the NYU College of Dentistry, Gupta has recently examined how bones behave in impact situations in order to develop next-generation protective materials. Using Gupta’s custom-built device that replicates the compression force experienced in a variety of impacts, Gupta and Coelho discovered that the speed at which a bone is compressed plays a significant role in the type and extent of injury. When subjected to high compression rates, such as in a blast from an Improvised Explosive Device (IED), Gupta said, “The bones endured extensive micro-sized damage, which could go undiagnosed using regular medical imaging equipment. Only a scanning electron microscope showed the damage.”

In addition to researching bone injuries, Coelho and Gupta tested protective foams and found that, much like bone, these materials behave differently as the rate of compression changes. Foams that seemed soft when slowly compressed actually became

much stiffer under higher compression speeds. This insight, according to Gupta, highlighted the dangers of using protective materials under conditions for which they were not designed, as well as the importance of using the right foam in helmets, armor, and other protective gear.

“These findings are important for engineers so that they can design armors that can avoid these damage mechanisms,” said Gupta. “Medical doctors also need to be aware of the possibilities of these types of injuries so that they can develop more effective diagnostic and treatment methods.”

To raise awareness of how their discoveries could affect everyone from soldiers in the field to high school football players, Gupta and Coelho decided to alert the general news media to their findings, in addition to publishing in scientific journals. Their work has been featured on the Discovery Channel, WNBC news, and an array of other print and electronic media outlets.

“By making technical information accessible and meaningful to a mass audience, scientists can play a role in elevating the importance of science in our culture,” said Gupta. “These platforms can also help policymakers in recognizing and understanding the outcomes of taxpayer investment and can help guide policy decisions for future investments.

“Public outreach is an important dissemination platform that is seldom used by scientists and engineers,” Gupta said, “but they should consider every avenue to disseminate the implications of their research findings.”



Nikhil Gupta (left) tests a lightweight composite foam with NYU students Momchil Dimchev (back) and Ryan Caeti (foreground). Gupta developed simple demonstrations of his research for the news media to visually convey his findings in a few seconds. One that has been featured in a number of segments is a slow motion recording of a rabbit bone shattering under pressure, scattering shards of debris that would otherwise be undetectable to the naked eye.

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.