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## Director's Matters

*Guest column by Philip W. "Bo" Hammer, associate vice president, Physics Resources*



### Physics in industry

One of the biggest challenges and most exciting opportunities for physicists is to contribute to the global goal of achieving a sustainable energy future that transitions away from fossil fuels and moves toward renewable sources with lower greenhouse impact. AIP and AVS continued a collaborative exploration of this issue by co-organizing an Industrial Physics Forum (IPF), "Energy Transition to a Sustainable Future," held during the recent AVS International Symposium in Nashville, TN. Speakers from industry, academia, and national labs covered a broad range of policy, scientific, and technical issues that would broaden participants' perspectives on the current state of achieving a sustainable energy future and how physicists can contribute. The broader goal for the IPF is to build bridges between the industrial and academic physics communities as a way to enhance interactions among them and to expose faculty and students to a broader array of opportunities for people with a degree in physics.

Some 2011 Nashville IPF highlights—

Ed Steinfeld of MIT delivered a talk titled "Technology Innovation and China's Skyrocketing Demand for Energy" in which he traced the development of energy technology from innovative R&D, to demonstration project, to a fully scaled energy system. Steinfeld argued that the United States continues to excel in energy innovation—a relatively low-cost endeavor—and takes advantage of its excellent university and national lab system. However, as the requisite capital investment costs and risks increase, the US fails to take these innovations from the lab to larger scale projects, whereas China is increasingly adept at making the broad investments necessary to deploy a range of energy innovations.



From the left: Speakers Ellen Williams (BP plc UK), John Kassakian (MIT), Harold McFarlane (Idaho National Laboratory) participate in a panel discussion following their prepared remarks.

Harold McFarlane from the Idaho National Laboratory provided his perspective on nuclear energy in the US. His talk, which is particularly important in the post-Fukushima context, discussed the technical challenges and other issues surrounding further development of nuclear energy in achieving our energy goals. Also informing the forum's theme were speakers from BP, Applied Materials, General Motors, and IBM—companies that use physics to compete in a rapidly evolving technological environment. Ellen Williams, AVS fellow and chief scientist at BP, discussed the range of BP

projects underway to prepare for a time when fossil fuels are in limited supply and for meeting demands to limit atmospheric carbon dioxide. BP commits significant R&D resources to biofuels and carbon capture and sequestration. Om Nalamasu, chief technology officer of Applied Materials, illustrated how his company is leveraging its work in supplying equipment and services to the semiconductor industry by applying its expertise to novel displays and photovoltaics. Harkening back to Steinfeld's talk, Nalamasu related that currently, 80% of Applied Materials' workforce is located in the US, whereas its markets are mostly overseas, with China at the forefront.

*Physics Today's* online editor Charles Day and associate editor Jerney Matthews attended the IPF sessions and promptly wrote excellent summaries of the talks; see the [IPF blog in PTOL's Singularities](#) department. The blog has proved popular with online readers, with more than 2700 readers in the two weeks immediately following the IPF. See the Physics Resources Matters column for a preview of the 2012 IPF.



From the left: A conference attendee with speaker John Kassakian (MIT), session moderator Rich Sears (MIT), Corporate Associate Advisory Committee members Jim Hollenhorst (Agilent) and Rudy Ludeke (retired IBM), and Florence Ludeke.

## Publishing Matters

AIP online journals offer MathJax to display mathematics



AIP has partnered with [MathJax](#), an open-source JavaScript display engine that produces high-quality math in all modern browsers, without special set-up requirements.

Using MathJax, readers of AIP online journals can now copy equations from journal articles and paste them directly into Word and LaTeX documents, science blogs, MathType, and research wikis. Equations can also be copied and pasted into calculation software like Maple, Mathematica, and others. MathJax supports the use of [STIX fonts](#), which will improve MathJax's speed when rendering mathematics.

As a partner, AIP is supporting MathJax with funding to further develop the service. To see MathJax in action, visit the 50th Anniversary issue of the [Journal of Mathematical Physics](#). Select *read online* for any article, and once in the HTML view, go to the navigation bar and turn on MathJax. We'd like to hear about your experience. Please email [Rob Wheeler](#), product manager, with feedback and suggestions for improvement.

## Physics Resources Matters

Building capacity for industrial physics

The AIP Industrial Outreach team is planning the next Industrial Physics Forum in partnership with the International Center for Theoretical Physics (ICTP) in Trieste, Italy, to take place April 16–20, 2012. Forum talks and discussions will focus on the theme "[Capacity Building for Industrial Physics in](#)

[Developing and Emerging Economies.](#)" Given the continuing globalization of advanced technological development, the goal of the IPF is to enlarge the scope of applied and industrial research by promoting links between scientists and industry. This interface is a crucial step in bridging science and society, leading to sustainable technological advancement or "capacity building."

The 2012 Industrial Physics Forum will have a rich array of sessions:

- Workshops on inquiry-based physics education and educational technology, focusing on the role of pre-college, college, and graduate physics education in building local capacity
- Sessions on the science and technology policy of capacity building
- A wide range of technical talks, including the perennially popular Frontiers of Physics session

This forum is aimed at a general audience of physicists and advanced-degree students. The target audience also includes science policy administrators and leaders who would like to build the capacity for industrial physics in their regions. The IPF is being planned with support from the Academy of Sciences of the Developing World, the American Physical Society, the Central European Initiative, ICTP, and the Institute of Physics.

## Around AIP

Art exhibit opens at ACP: *The Space Between*



From the left: Artists Marcos Smyth, Kristy Simmons, and Lylie Fisher with Curator Sarah Tanguy.

ACP welcomed a new art exhibit on Monday, November 7. Curator Sarah Tanguy introduces the exhibit and theme:

"With works by Lylie Fisher, Kristy Simmons, and Marcos Smyth, *The Space Between* charts a fluid zone between the seen and the unseen, the known and the unknown, and the temporal and the infinite. In the hands of these artists, distinctions seem to dissolve as time, matter, and empty space create an alternate reality, a

metaphoric world of the imagination, full of passion, movement, and pattern."



Marcos Smyth, *Petranome*, 2011, wood, copper sheet, stone, steel wire, and steel screws, 16 x 17 x 8 in., courtesy of the artist.



Kristy Simmons, *Bathtub and Towel*, 2009, acrylic on Plexiglass, 18 x 24 in., courtesy of the artist.



Lylie Fisher, *In Search of Meaning #5*, 2007, digital black and white print, acrylic pigment and gels, 24 x 36 in., courtesy of the artist.

Read more about the artists and their work in the [exhibit brochure](#).

## Coming Up

November 29–December 1

- [Online Information](#) Conference 2011; "London Online" (London, United Kingdom).

December 5–9

- 2011 AGU Fall Meeting (San Francisco, CA)