

manufacturers for nearly 40 years, and the bill's inclusion of smart manufacturing solutions within the assessment program seeks to produce even greater energy savings, waste reductions, and improvements in manufacturing productivity.

The second provision from the SMLA that is included in the EPMA addresses access for small- and medium-sized manufacturers to DOE national laboratories, with specific focus on high-performance computing facilities. These facilities house some of the world's fastest supercomputers, which are capable of running complex simulations that could be used to optimize manufacturing practices. The bill mandates a study be conducted to identify ways by which DOE can increase access to high-performance computing facilities, and directs the Secretary of Energy to facilitate access for small- and medium-sized manufacturers.

The EPMA was passed out of the ENR committee and placed on the Senate Calendar on September 9, 2015. The inclusion of the key provisions from the SMLA in the EPMA signals bipartisan

support for these measures. In addition, while it used to be common practice to incorporate a large number of energy-related bills into a comprehensive package for Senate consideration every few years, the recent increase in partisan tension has derailed this process. The Energy Independence and Security Act of 2007 (Pub. L. 110-140) was the last successful omnibus energy bill, and in recent years the ENR committee has not even attempted to put together a comprehensive energy package. While the existence of the EPMA and its success through the committee process shows that it is now possible to find common ground on some of the important energy issues facing the country, it is impossible to predict whether these issues will be considered a priority, especially as the 2016 elections draw near.

The Materials Research Society (MRS) was asked by Senator Shaheen's office to support the SMLA—"a direct result of the MRS's continued presence and interactions on the Hill," said Damon Dozier, MRS Director of Government Affairs. As with any legislation MRS

considers supporting, the Government Affairs Committee (GAC) consulted with executive leadership to "consider the impact on and value to the materials research community," said Duane Dimos, GAC Policy Subcommittee Chair. MRS provided a letter of support for the SMLA stating, "the adoption of smart manufacturing as outlined in your legislation can add a real benefit to the improvement of industrial processes ..." and offered to provide further input as the bill proceeded through the legislative process.

"Materials research is critical to enabling the essential advances in materials design, processing, and control necessary for smart manufacturing," said Todd M. Osman, MRS Executive Director. While the bill does not specifically fund materials research, Osman said, "MRS is encouraged to see strong support for smart manufacturing by key members of Congress, which we anticipate will broaden awareness of the role of materials research in advanced and high-tech manufacturing."

**Jennifer A. Nekuda Malik**

### Australia's national outlook is bright

[www.CSIRO.au/nationaloutlook](http://www.CSIRO.au/nationaloutlook)

A report has found that Australia is well placed to secure prosperity over the coming decades despite the challenges of an uncertain and possible resource-constrained future.

However, this prosperity is not a given—instead Australia's future will be shaped by innovation and technology.

According to Australia's national science agency CSIRO, the *Australian National Outlook*, released recently, is the most comprehensive quantitative analysis yet of the interactions between economic growth, water-energy-food use, environmental outcomes, and living standards in Australia.

CSIRO Executive Director Alex Wonhas said *National Outlook* focused on the "physical economy" that contributes to about 75% of natural resource use

and produces about 25% of Australia's gross domestic product (GDP).

"The *National Outlook* is a first attempt to understand and analyze the connections in Australia's physical environment many decades into the future," Wonhas said.

"It has a particular focus on understanding two aspects: The 'water-energy-food nexus' and the prospects for Australia's materials- and energy-intensive industries."

*National Outlook* finds a number of key insights and potential opportunities across the Australian economy. And as Australia's population grows, so too does water demand.

"Despite projections of a doubling of our water use, Australia could meet this growth as well as enhance urban

water security and avoid increased environmental pressures through increased water recycling, desalination, and integrated catchment management," Wonhas said.

The results of CSIRO's *National Outlook* show that energy and other resources could remain a pillar of the Australian economy well into the future, and that energy-intensive industries could be well positioned to continue to grow, even in scenarios where the world is taking global action to significantly limit greenhouse gas emissions.

"The key to this success will be innovation and application of smart technologies," Wonhas said. "We hope the *National Outlook* will help Australia chart its future in an increasingly complex and interconnected world."

The *National Outlook* explores over 20 possible futures for Australia out to 2050 against the backdrop of the past 40 years. □

## Atom Probe Tomography (APT) and Applications in Materials Science

Wednesday, January 20 | 12:00 pm – 1:30 pm (ET)

Atom probe tomography (APT) has emerged as an important analytical technique and an ultimate characterization technique for surface science, especially for obtaining atomistic structure and chemical composition information at nanometer and atomistic length scales. The January 2016 issue of *MRS Bulletin* focuses on the applications of APT and how these are leading to new insights in materials research. This webinar will expand on the topics explored in the articles in this issue of *MRS Bulletin*.

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