US interagency meeting for materials science enhances research coordination

Materials research is an extremely multidisciplinary effort that has yielded major advances across a broad range of technologies and industries. But the breadth of materials research has also led to a funding structure, within the United States, that spans a large number of federal agencies and can hinder communication and collaboration and lead to possible duplication of efforts. To address these issues, an annual Federal Interagency Materials Representatives (FIMaR) meeting was established to bring together program managers in materials research across the US federal agencies.

The third annual FIMaR meeting, held on February 1, 2017, at the National Institute of Standards and Technology (NIST) in Gaithersburg, Md., was organized by NIST scientists Nicholas Barbosa, Frank DelRio, James Fekete, and US Department of Energy (DOE) scientist Michael Markowitz. According to Barbosa, "scientists, program managers, and leaders across federal agencies recognized the increasingly complex, multidisciplinary, and critical role that material science plays in supporting the missions of many federal agencies, which led to the initiation of FIMaR." The meetings are only open to US federal employees. The recent 2017 meeting drew over 100 participants from a broad range of government agencies (see Table).

The annual FIMaR meetings focus on different topics each year, but maintain an overarching goal of enhancing coordination between government agencies. Each meeting gives participants the opportunity to discuss key challenges facing the United States and helps to spread awareness of the different areas of materials expertise and available facilities across the government. Barbosa characterized the FIMaR meetings as "a platform connecting different agencies—for coordination, discussion of important current topics, and sharing best practices."

The specific topics covered at the FIMaR meetings have ranged from technical to strategic and are focused on advancing the missions of the agencies. Past technical topics have included additive manufacturing, sustainability issues, and the importance of big data and informatics for materials design (specifically for the Materials Genome Initiative). Strategic topics have covered coordination of Materials Research Centers, the importance of collaboration to push the materials science research frontier, and building advanced experimental and computational user facilities.

The 2017 meeting focused primarily on strategy and collaboration and covered four specific topics: investment planning, partnership, infrastructure opportunities, and investment overlap. Within the investment planning discussion, best practices were shared for strategic long-range planning to drive science and address agency missions within the changing political and technical landscape. Enhancing innovation and competitiveness through partnerships was examined as it applies both to public–private partnerships and partnerships between various federal agencies. Opportunities in infrastructure diverged into two conversations—one focused on ensuring better awareness

Agencies That Have Participated in FIMaR

DOC	National Institute of Standards and Technology (NIST)
DoD	Office of the Assistant Secretary of Defense for Research and Engineering OASD (R&E)
DoD	Air Force Office of Scientific Research (AFOSR)
DoD	Air Force Research Laboratory (AFRL)
DoD	Army Research Laboratory (ARL)
DoD	Army Research Office (ARO)
DoD	Defense Threat Reduction Agency (DTRA)
DoD	US Naval Research Laboratory (NRL)
DoD	Office of Naval Research (ONR)
DoD	US Army Natick Soldier Research, Development & Engineering Center (NSRDEC)
DOE	Office of Energy Efficiency & Renewable Energy (EERE)
DOE	Office of Basic Energy Sciences (BES)
DOT	US Department of Transportation Office of Pipeline Safety (PHMSA)
HHS	US Department of Health & Human Services–National Institutes of Health (NIH)
HHS	US Department of Health & Human Services–Food and Drug Administration (FDA)
National Aeronautics and Space Administration–John H. Glenn Research Center (NASA)	
National Aeronautics and Space Administration (NASA)	
National Science Foundation–Division of Materials Research (NSF-DMR)	
National Science Foundation (NSF)	
USDA	US Department of Agriculture

of the facilities and expertise available within the federal government (including requirements to get access), and one that examined how materials research can support revitalization of the physical infrastructure in the United States. The final topic area of investment overlap focused on multi-agency collaboration to fund areas of common interest and the resulting benefits each agency reaps from the research.

When asked about the outcomes and lessons from the latest meeting, Barbosa highlighted an increasing awareness across federal agencies in three key areas: the value and best means of strategic planning, the need and desire for increased communication across programs and agencies, and the importance of understanding the nature of each agency's mission to better leverage agency-supported research. "Organizations in the US federal government address different mission spaces and vary in operational modes. Understanding the nature of the different mission spaces and how agencies serve them is critical to successful collaboration and leveraging of expertise and capabilities," Barbosa says.

The FIMaR meetings are organized and maintained through volunteers within the agencies. Leadership of the FIMaR meeting rotates annually and is associated with the agency or organization that is responsible for planning and hosting the specific meeting. The first three FIMaR meetings were hosted by the National Science Foundation, the DOE, and NIST. The 2018 FIMaR meeting will be chaired by US Department of Defense representatives and will be held in the Washington, DC, area early next year. Federal scientists and program managers can contact Barbosa (nicholas.barbosa@nist.gov) for more details.

Although FIMaR meetings are open only to US federal employees, they benefit materials researchers and taxpayers at large because they reduce the likelihood of duplicative work across the government by helping "focus our attention on the federal materials science and engineering enterprise, enabling the alignment of activities in major new technology areas and the leveraging of activities across agencies," Barbosa says. The enhanced communication, coordination, and collaboration enabled by the FIMaR meetings help to "maximize the impact and value of each taxpayer dollar committed to advancing materials research in the US," says Barbosa, which has significant value especially given the current focus on reducing budgets.

Jennifer A. Nekuda Malik

Australia's innovative businesses get a kick-start

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A Victorian vehicle manufacturing start-up with ambitions to be Australia's first production electric vehicle and a company developing a disruptive new class of insecticides have been given a kick-start due to a funding initiative in Australia that helps small businesses access the Australian Commonwealth Scientific and Industrial Research Organisation (CSIRO) research expertise and capabilities.

CSIRO Kick-Start is a new initiative that offers dollar-matched funding of up to $50,000 to enable research projects for startups and small businesses that are on their way to becoming Australian success stories.

Tomcar Australia is one of the first six businesses to receive the funding, and is using it for feasibility research into electrification of its modified off-grid, off-road vehicles in collaboration with CSIRO's manufacturing team.

The work will provide an integrated systems solution tailored to Tomcar's vehicles, and builds on CSIRO's electric motors expertise.

Following the feasibility testing, Tomcar plans to continue its collaboration with CSIRO in the development of prototypes and full production of Australia's first electric vehicle, forecasted for a 2018 launch.

"We pride ourselves on being a disruptive vehicle manufacturer, and being able to partner with Australia's research institutes to access engineering capabilities and expertise that we wouldn't normally have access to is what's helping us achieve that," says David Brim, Co-founder and CEO of Tomcar Australia.

"CSIRO's Kick-Start program has taken away the financial burdens that would have prohibited us from taking this next step."

Bio-Gene, an Australian small business developing a new class of synthetic insecticides, has received $50,000 of dollar-matched funding through CSIRO Kick-Start to access CSIRO's proprietary chemistry expertise and equipment.

Keith McLean, Director of Manufacturing at CSIRO, said Australian startups and SMEs were critical in driving Australia's innovation output. "CSIRO Kick-Start is just the beginning of what we hope to be long-standing collaborations and strategic partnerships."

The new CSIRO Kick-Start initiative boosts the national science organization's existing support for SMEs and small businesses, now offering funding and linkage solutions to all Australian businesses with a turnover up to $100 million to undertake research projects that will help their businesses develop and grow. □