Solar researchers across country join forces with industry to boost U.S. solar manufacturing

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Story by Suzanne Offen, Clean Energy Institute

Working together with leading domestic solar companies, the University of Washington and its Washington Clean Energy Testbeds, the U.S. Department of Energy's National Renewable Energy Laboratory, the University of North Carolina at Chapel Hill and the University of Toledo have formed the U.S. Manufacturing of Advanced Perovskites Consortium, or US-MAP. This research and development coalition aims to accelerate the domestic commercialization of perovskite technologies.

Perovskites are an emerging class of materials that can be inexpensively made from abundant elements and engineered to convert light to electricity at high efficiencies — ideal for solar energy. The universities and National Renewable Energy Laboratory will offer the participating companies access to, and support in, their complementary cleantech fabrication, characterization and testing facilities. In turn, representatives from each of the member companies will form an industry advisory board that will guide the efforts performed at the research institutions.
US-MAP harnesses the power of the best perovskite researchers and resources in the nation to help U.S. solar companies continue to innovate and bring this exciting technology to market,” said J. Devin MacKenzie, UW materials science & engineering and mechanical engineering associate professor and Washington Clean Energy Testbeds technical director. “Indeed, UW's Washington Clean Energy Testbeds, an open-access facility for developing and testing energy devices and systems, has been working with solar startups and we're eager to help other U.S. companies tap into our staff scientists' expertise and utilize our best-in-class instruments, including our multi-stage roll-to-roll printer for flexible electronics.”

US-MAP founding member companies include: BlueDot Photonics, Energy Materials Corporation, First Solar, Hunt Perovskites Technologies, Swift Solar and Tandem PV. As members of the industry advisory board, company representatives will shape R&D directions and priorities and will be engaged actively in selecting and evaluating projects. The founding organizers — the University of Washington, the National Renewable Energy Laboratory, the University of North Carolina at Chapel Hill and the University of Toledo — will serve on the executive board and oversee delivery of projects.

BlueDot Photonics is a Seattle-based startup building next-generation solar panels and other photonic devices.

“US-MAP will help startups like ours access critical expertise required to prove manufacturability and product reliability, while maintaining ownership of intellectual property,” said BlueDot Photonics CEO Jared Silvia [UW BS Biochemistry '05, BS Chemistry (ACS-certified) '05]. “This network and its facilities will assist us in de-risking key hurdles to commercialization that will benefit all perovskite-based technologies. This will allow companies like ours to shorten the development cycle for products to satisfy customers and our investors.”
In addition to solar energy, perovskites have shown tremendous promise in a range of other technologies, including solid-state lighting, advanced radiation detection, dynamic sensing and actuation, photo-catalysis and quantum information science. Early investments by the U.S. Department of Energy's Solar Energy Technologies Office and its Office of Science into perovskite research at the founding organizations have enabled the U.S. to engage at the forefront of many of these technology areas and fostered a vibrant community of industrial leaders.

“Washington state has long been a leader in clean energy innovation and institutions like UW continue to play a critical role in moving our nation's vital energy research needs forward,” said U.S. Senator Patty Murray, D-WA, a senior member of the Senate Appropriations Committee. “I am encouraged by the work of UW's Washington Clean Energy Testbeds and its potential for scaling up clean energy adoption — and perovskite technologies, in general — and will continue fighting in the Senate for strengthened investments in these research and technology developments that will help families and communities thrive.”

“UW has played an incredible role in renewable energy and is now bringing together some of the best researchers and innovators in the country to develop this next-generation technology to expand the use of solar to more homes and businesses across the country,” said U.S. Senator Maria Cantwell, D-WA.

“This coalition represents what America does best: partnership for innovation and societal benefit,” said U.S. Rep. Pramila Jayapal, D-Seattle, whose district includes the UW. “The United States should and can lead in solar manufacturing, water power and wind energy — and I know Washington can play a role in getting us there through our outstanding public research institutions like the University of Washington and our promising startups.”

Researchers and companies looking to access resources, capabilities, and expertise within the consortium should visit the US-MAP Consortium website.

For more information, contact Suzanne Offen with the UW's Clean Energy Institute at soffen@uw.edu.

Chemistry personnel highlighted in this article include:

BlueDot Photonics CEO Jared Silvia, PhD (Visiting Scientist; UW BS Biochemistry '05, BS Chemistry–ACS-certified '05)

Dr. Daniel Kroupa (Postdoctoral Scholar with Daniel Gamelin; Chief Technical Officer, BlueDot Photonics) and Professor David Ginger (Chief Scientist, UW Clean Energy Institute) [US-MAP Consortium photo, far left and fifth from left, respectively].
People Involved: Daniel R. Gamelin, David S. Ginger

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