

Richard Lunt Wins NSF CAREER Grant

January 3, 2013

Richard Lunt, assistant professor in the Department of Chemical Engineering and Materials Science at Michigan State University, has received a National Science Foundation (NSF) CAREER Award.

Funding from this five-year, \$409,800 grant, which began January 1, 2013, will support Lunt's work in the development of transparent photovoltaics (PVs), a new paradigm for solar energy harvesting.

The project will develop a new class of near-infrared excitonic semiconductors, which can be utilized to selectively capture and convert ultraviolet and near-infrared light into electricity, and design the next generation of high efficiency transparent solar cells.

The technology enables the use of transparent surfaces such as windows and displays for generating electricity. A benefit of the new technology is that windows are already large, flat surfaces that are manually assembled during building construction. The incremental cost of installing a "PV" window, or retrofitting a window with a flexible PV film, is expected to be substantially less than the cost of installing a separate PV panel.

Transparent PVs have the potential to impact U.S. energy production, as well as the energy utilization efficiency of buildings, by reducing the energy cost for PV deployment, reducing cooling costs similarly to low-e coatings, and imparting a net-negative carbon footprint. Further, transparent PVs could become an important route for autonomously powering mobile electronics.

This NSF funding will also be used to establish a coordinated outreach and educational effort that includes organizing hands-on renewable energy workshops through the MSU College of Engineering CoRe (Cornerstone and Residential) Experience, initiating an art-of-science competition at MSU to promote science appreciation, advising a student-run initiative to retrofit buildings on campus with renewable energy solutions, and supporting students from underrepresented groups.

Lunt received his BS degree from the University of Delaware in 2004 and his PhD from Princeton University in 2010. Just prior to arriving at MSU in 2011, he worked as a postdoctoral associate at the Massachusetts Institute of Technology (MIT).

He recently co-founded the company Ubiquitous Energy Inc. to commercialize technologies for ubiquitous solar energy deployment, including solar windows. His preliminary work on developing these devices was highlighted in the Applied Physics Letters 50th Anniversary Collection: Editor's Picks of Most Recent Publications as one of the most important articles published in recent years.

The Faculty Early Career Development (CAREER) Award is among the NSF's most prestigious honors, recognizing young faculty members who are effectively integrating research and teaching.

Within the past four years, eleven MSU College of Engineering faculty members have been named NSF CAREER Award winners.

[View Lunt's NSF award abstract](#)

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