



RENEWABLE AND SUSTAINABLE ENERGY INSTITUTE

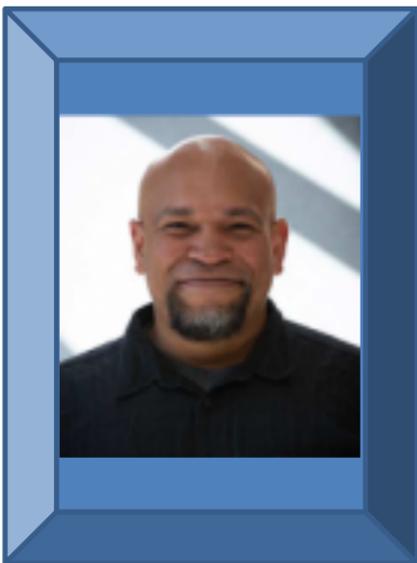
BIG energy seminar series

Addressing global energy challenges in scale and complexity.

Metal Halide Perovskites: An Introduction to Hybrid Semiconductors

Joseph Berry

Senior Scientist, National Renewable Energy Laboratory (NREL)



Date: Wednesday, February 17, 2021; 4pm – 5pm

Please join by Zoom: Join Zoom Meeting

<https://cuboulder.zoom.us/j/95037926739>

Passcode: 183165

We will also be streaming this live on YouTube: <https://youtu.be/jlWWhoOkbAM>

Abstract:

Over the past decade metal halide perovskites (MHPs) have emerged as potentially transformational materials for enabling low-cost high efficiency photovoltaics (PVs). In the time since the initial reports of PV based on these materials, current state-of-the-art devices have reached lab scale solar cell efficiencies exceeding any other polycrystalline thin film technology. In addition, MHPs have shown the promise of creating low-cost high efficiency tandems based on both all-perovskite configurations and in combination with incumbent technologies (i.e., Si, CIGS) to target performance beyond single junction PV efficiency limits. This colloquium will provide an introduction to these materials and their physical properties that have made them truly unique as PV absorbers. Current topics in PV research will be touched upon to indicate some of the motivations for a larger exploration of hybrid organic-inorganic semiconductors more generally. Selected work in this broader class of hybrid materials will be presented to provide a perspective on the opportunities they offer. Finally, some outstanding questions regarding how to understand and ultimately manipulate some of the more unique behaviors of these materials will also be highlighted.

Bio:

Joseph Berry (@joe_jberry) is a senior scientist at the National Renewable Energy Laboratory working on halide perovskite solar cells. His PhD for work was on spin transport and physics in semiconductor heterostructures from Penn State University. His efforts at NREL emphasize relating basic interfacial properties to technologically relevant device level behaviors in traditional and novel semiconductor heterostructures including oxides, organics and most recently hybrid semiconducting materials. He leads the US Department of Energy (DOE) Solar Energy Technology Office's SETO core technology program, "De-risking Halide Perovskite Solar Cells" at NREL. He is also a principle investigator on the NREL lead Department of Energy, Center for Hybrid Organic Inorganic Semiconductors for Energy (CHOISE) Energy Frontier Research Center, exploring basic aspect of hybrid materials.

*Sponsored the Renewable and Sustainable Energy
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