

Seminar Talk

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2101J Systems Research and Academics Building
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3:00 p.m. KH 224

Title:

Epitaxial nanostructures for photovoltaic applications

Abstract:

State of the art photovoltaic (PV) devices have repeatedly shown the ability to reach and breach the 40% efficiency mark. Such high efficiency cells have been largely bound to the III–V multijunction category. Although efficiency improvements are steady, there may be a saturation point associated with current triple- and quad-junction technologies due to lack of available bandgaps. In order to mitigate these restrictions, the use of quantum confinement has been shown to be effective for bandgap engineering to approach otherwise unavailable bandgaps. In this work, results will be shown of both epitaxy-based quantum dot and quantum well modified single junction photovoltaic devices in an attempt to investigate their potential to include them in next-generation multijunction PV architectures.

Biography:

Christopher G. Bailey received the B.S. degree in Mechanical Engineering from the Rochester Institute of Technology, Rochester, NY, in 2003, and the M.S. degree in Materials Science from the University of Rochester, in 2006. He received the Ph.D. degree in Microsystems Engineering from the Rochester Institute of Technology in 2012, where his focus was on III-V Quantum Dot heterostructures for photovoltaic applications. He then received an NRC Postdoctoral Fellowship to work at the U.S. Naval Research Laboratory, Washington, DC, for which he spent 2 and a half years (2012-2014), continuing his work in nanostructures for photovoltaics. He presently is beginning his role as Assistant Professor in the Department of Electrical and Computer Engineering, and continuing his work in the field of photovoltaics and clean energy.