



MS<sup>3</sup>

Materials Synthesis and  
Simulation Across Scales

# Impurities in Semiconductor Nanocrystals



**Daniel R. Gamelin**  
Professor of Chemistry  
University of Washington

**April 21, 2015, 10:00 am**  
**EMSL 1077**

In his presentation Dr. Gamelin will discuss the physical properties of inorganic crystalline materials that can be dramatically transformed by controlled introduction of impurities or other defects, without which most semiconductor technologies including transistors, diodes, and solar cells would not be possible. The development of methods for growing high-quality doped inorganic crystals has consequently been a perennial research frontier, laying the foundations for such technological milestones as the ruby laser and silicon microelectronics. Dr. Gamelin will describe some of his group's recent research into the development of doped semiconductor nanocrystals as new forms of matter at this research frontier. He will describe new chemistries for introducing open-shell transition-metal impurity ions or excess free charge carriers into colloidal II-VI semiconductor nanocrystals and discuss some of the unique physical properties and some potential applications of these materials.

Host: Dr. Jim DeYoreo  
[James.deyoreo@pnnl.gov](mailto:James.deyoreo@pnnl.gov)  
(509) 375-6494  
POC: Kristin Lerch  
[Kristin.lerch@pnnl.gov](mailto:Kristin.lerch@pnnl.gov)  
(509) 371-6361