Tuesday, February 12, 2019, 12:30 pm
Seaver Science Library, Room 150
SSC Auditorium next to the library

Dr. Mark Allendorf
Sandia National Laboratories

Defects in MOFs: Blessing or Curse?

Metal-Organic Frameworks (MOFs) are a class of coordination polymer in which metal ions and organic electron donors (“linkers”) assemble to form crystalline structures with stable nanoporosity. As a result of well-understood principles governing inorganic coordination chemistry and the rigidity and topology of the linkers, rational design principles have been established that allow MOFs to be designed and synthesized with properties selected for specific applications. However, it is now becoming clear that MOFs are not the pristine materials implied by their crystal structure and that defects can play a determining role in their properties. This presentation will consider how we define a “defect” in a MOF and then illustrate the effects of these on properties such as electrical conductivity and optical properties. MOFs with both 3D and 2D topologies will be used as exemplars to demonstrate how the definition and properties of a defect can be exploited to create MOFs with properties suited for electronic devices and sensing applications. The importance of film growth and methods used to infiltrate MOF pores with “guest” species will also be discussed.

Hosted by Professor Smaranda Marinescu

The scientific community is invited

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