

Dept. of Chemistry and Biochemistry
Organic/Inorganic Seminar Series

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Sandia National Laboratories—Livermore

Friday, April 13, 2018

2:30—3:30 pm, 331 KLA

Coffee reception @ 2:00 pm, 377 KLA



Hosted by Chris Hendon

***Designing Metal-Organic Frameworks for
Optoelectronic and Thermoelectric Applications Using
Guest Molecules and Structural Diversity***

Abstract: The structural diversity of Metal-Organic Frameworks (MOF)s and their nanoporosity provide numerous opportunities to design materials for optoelectronic applications. MOFs are crystalline structures in which metal ions or metal-ion clusters are linked by rigid organic molecules, creating a supramolecular network that has permanent porosity. Unwanted “guest” species, which can be solvent molecules or residual reactant, typically can be removed without structural collapse. Although many MOFs are luminescent, creating opportunities for sensing, light-emission, and energy-harvesting, the vast majority of MOFs are not electrically conducting. This presentation will summarize our efforts to combine structural elements of MOFs, such as 2D vs. 3D structure, unsaturated metal coordination sites, and “non-innocent” guest molecules, to create MOFs with new functionality relevant to opto-electronic device applications, in particular for radiation detection, light emission, and thermoelectric devices.