Structural, transport, magnetic and thermal properties of type I & II clathrates

GEORGE NOLAS, University of South Florida

Compounds with the clathrate-hydrate crystal structure possess interesting physical properties that are directly related to their structural and chemical properties. Several compositional and stoichiometric variations can be synthesized, particularly in type II clathrates, resulting in a rich assortment of interesting properties that are only now being brought to light, in part due to their interest for potential technological applications in thermoelectrics, opto-electronics and superconductivity. I will present an overview of the recent transport properties of these novel materials with an emphasis on structure-property relationships.