SAN FRANCISCO STATE UNIVERSITY

Physics & Astronomy

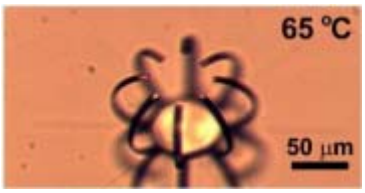
MONDAY, MAY 11TH

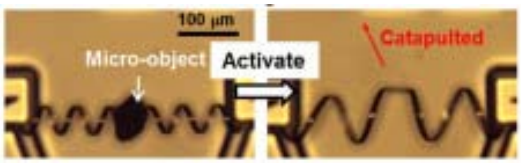
Dr. Junqiao Wu

University of California, Berkeley

4:00 PM in TH 411
Refreshments served at 3:50 PM

Electronic Materials Reaching Out to Mechanical, Optical and Thermal Functionalities: Physics and Applications





Abstract:

Electronic materials are materials in which mobile electrons play an active role in defining their relevant properties. However, their functionalities and applications are not necessarily limited to the electronic sector. In this talk I will discuss our recent efforts in extending our understanding and engineering of electronic materials to fields dominated by mechanical, thermal or optical processes. Specifically, I will highlight three examples: 1) phase transition-driven micro solid engine, where we investigate the thermal behavior of strongly correlated electrons in doped VO2, and utilize it for high-performance micro-actuation; 2) point defects-enhanced thermoelectrics, in which we tune the coupling between charge and heat transport in Bi_2Te_3-Bi_2Se_3 alloys by controlling their native point defects; and time permitting, 3) molecularly gated luminescence in monolayer semiconductors.