Exploring the Physical and Chemical Properties of Hybrid Metal/Semiconductor Nanoheterostructures

Heterostructured hybrid metal-semiconductor nanostructures represent one avenue of advancement over the proverbial spherical semiconductor quantum dot, and are interesting since they potentially combine multiple functionalities within the same architecture or exhibit unique properties that result from the close coupling between the metal and its semiconductor counterpart. We describe our efforts to develop exquisite synthetic control over the shape and composition of these metal-semiconductor hybrid nanostructures, which have a profound influence over their physical and chemical properties. We elaborate on some of the salient properties that we have observed in such hybrid materials, and describe them in the context of possible applications in directed assembly, optoelectronics and catalysis.

Biography of Speaker

Dr. Chan Yin Thai is an Assistant Professor in the Department of Chemistry at the National University of Singapore (NUS). He obtained his B.S. in Chemistry from the University of California, Berkeley in 2001. He then completed his Ph.D. in Physical Chemistry from the Massachusetts Institute of Technology in 2006, followed by a postdoctoral stint at Stanford University from 2006-2008. Dr. Chan joined NUS in July 2008, and was given a joint appointment as a Research Scientist at the Institute of Materials Research & Engineering, A*STAR in 2009.