

CCST Seminar:

- › Thursday, January 22, 2009
- › 11:00 A.M. (refreshments available at 10:45 a.m.)
- › 366 Colburn Laboratory

Dr. Ivan C. Lee

U.S. Army Research Laboratory (ARL)

Dr. Ivan Lee joined ARL as a research chemical engineer in December 2001 after receiving his Ph.D. degree in chemical engineering from the University of Illinois at Urbana-Champaign, where he received the Drickamer Research Fellowship. Born in Hong Kong, he was studying biochemistry at the University of Hong Kong before he came to the U.S. in 1994. He completed his B.S. in chemical engineering at the University of California, Davis where he performed research studies in polymer thermodynamics. Before going to graduate school, he did a summer internship to study low-k dielectric materials at the IBM Almaden Research Center. Dr. Lee was the recipient of the Richard Glenn Award for the best paper presented in the Fuel Chemistry Division at the American Chemical Society National Conference in 2004. His expertise includes fuel reformation, fuel processing for fuel cell applications, fuel chemistry, nanomaterials, catalysis and surface science.

“Zeolite-Based Catalysts in Jet Fuel Reformation for Power and Energy Applications”

Fuel reformation converts complex mixtures of heavy hydrocarbons in transportation fuels to hydrogen, carbon monoxide and other small hydrocarbons. This reformat gas is a potential gaseous fuel for auxiliary power units for military and commercial applications. Some investigators developed novel perovskite-based, ceria-based and mixed oxide catalysts to reform surrogates of jet fuel and gasoline. Despite some recent success of making hydrogen from sulfur containing jet fuel, there is a critical need to develop new catalysts for better coke resistance and for higher sulfur tolerance. This presentation will first introduce the concept of surrogate fuels for the understanding of reaction mechanism, and we will also review some recent jet fuel reforming catalyst development in the literature. In addition, we will discuss the use of zeolite for autothermal reformation of real jet fuels with high sulfur content.