

ME DEPARTMENTAL SEMINAR

Friday, January 19, 2007

Time TBA

Location TBA

**Professor Charles K. Westbrook
Lawrence Livermore National Laboratory**

***“Chemical Kinetics of Hydrocarbon Ignition
The Origin of Engine Knock, Diesel Ignition,
HCCI Combustion, Explosions and Soot Production”***

Abstract:

Chemical kinetic modeling provides a unique analytical tool to study an enormous variety of practical combustion systems. In the past, we reported how a small number of individual chemical reactions are responsible for the important features of spark-ignition, diesel and HCCI engine combustion. Another small number of chemical reactions lead to explosions, detonations, flame ignition, flame inhibition, and pulse combustion.

This seminar will discuss how it is possible to build on this previous understanding of ignition kinetics in diesel engines and show how soot production is a very natural and seemingly inevitable result of this ignition. At the same time, improved understanding of the details of soot production also leads to simple strategies that can reduce or eliminate soot production in flames and diesel engines.