



College of Engineering
Department of
Mechanical & Industrial Engineering

The Sidney E. Fuchs Seminar Series

3:00-3:50pm, Friday, January 22nd, 2016
Frank H. Walk Design Presentation Room



Transportation Fuel Oxidative Reactivity and Reaction Kinetics

by **Matthew Oehlschlaeger***

Professor and Associate Dean, School of Engineering,
Rensselaer Polytechnic Institute

The increasing importance of chemical kinetics in modern engine operation and the development of alternative fuels with variable chemical kinetic properties motivates a fundamental understanding of reaction kinetics and in particular the influence of fuel composition/structure on oxidation and ignition. The results of shock tube autoignition and speciation studies for transportation fuels (gasolines, jet fuels, diesels, biofuels) under wide-ranging conditions will be discussed. These studies provide fundamental information about the structure-reactivity relationships for fuels, targets for the development of fuel oxidation kinetic models and assessment of simplified surrogate or other modeling methodologies, and ultimately information that can be used in the design and development of engines and combustors.

* Prof. Oehlschlaeger received a B.S. in Mechanical Engineering from Virginia Tech (2000), and M.S. (2002) and Ph.D. (2005) degrees in Mechanical Engineering from Stanford University. He joined Rensselaer Polytechnic Institute in 2006 where he is currently a Professor of Mechanical, Aerospace, and Nuclear Engineering and the Associate Dean for Academic Affairs in the School of Engineering. His research focuses on combustion with emphasis on chemical kinetics, optical diagnostics, nanomaterial enhanced combustion, and multi-phase combustion. He has co-authored approximately 100 papers and won several national awards including the Presidential Early Career Award for Scientists and Engineers. He is a Fellow of the American Society of Engineers (ASME) and serves as an Associate Editor of the International Journal of Fuels and Lubricants.