

MAE Seminar Series

Combustion Chemistry and Laser Diagnostics for Aero-Propulsion and Energy Applications

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Future innovations in the design and optimization of aero-propulsion and energy conversion devices will rely on performance predictions based on multi-physics simulations of the governing coupled chemical-transport phenomena. These simulations must be validated by comparison to controlled experiments, which can provide information pertinent to the various physical phenomena and scales described in the simulation (e.g., elementary chemical reactions to macroscale fluid motion). In this seminar, the results of experimental efforts are presented which: 1) elucidate the combustion chemistry of importance in aero-propulsion engines and provide targets for the development of kinetic models used to describe the combustion of liquid hydrocarbon fuels (e.g., jet fuels and alternatives) and 2) develop sensitive laser diagnostics for species concentration and temperature which can be applied to aero-propulsion engines (and other energy devices) for characterization of performance.

Bio

Matthew Oehlschlaeger received a B.S. (2000) from Virginia Tech and an M.S. (2002) and Ph.D. (2005) from Stanford University, all in Mechanical Engineering. In 2006, he joined the Department of Mechanical, Aerospace, and Nuclear Engineering at Rensselaer Polytechnic Institute, where he is currently an Assistant Professor. His research activities involve studies of the ignition phenomena for liquid hydrocarbon transportation fuels, the development of sensitive laser absorption species concentration and temperature diagnostics for use in shock tube and propulsion applications, and the measurement of rate coefficients for elementary reactions important in combustion. He is the recipient of both the Office of Naval Research (2007) and Air Force Office of Scientific Research (2006) Young Investigator Awards and the Bernard Lewis Fellowship (2004) from the Combustion Institute.

104 Knox Hall
Thursday, September 24th, 2009
3:30 - 4:30 pm

Please contact Dr. David Forliti at dforliti@buffalo.edu for more information or to request a meeting with Dr. Oehlschlaeger.