2009-2010

Graduate Seminar Series

The Department of Mechanical Engineering – Engineering Mechanics

Proudly Presents

Assistant Professor Seong-Young Lee
Michigan Technological University

Dr. Seong-Young Lee is an Assistant Professor in the Department of Mechanical Engineering — Engineering Mechanics at Michigan Technological University. He received his Ph.D. degree in mechanical engineering from the Pennsylvania State University in 1998. Dr. Lee conducts interdisciplinary researches in the areas of gas turbine, spray combustion, pulse detonation engine, and fundamental flames. Dr. Lee has authored or co authored over 66 refereed journal and conference papers. He received the Distinguished Paper Award on Laminar Flames at Thirty-Second International Symposium on Combustion 2009. Dr. Lee has been very active in Combustion Institute and AIAA.

Thursday, Jan. 28, 2010 3:00 – 4:00 p.m. Room 112, ME-EM Bldg.

Fundamental and Applications of Pulse Detonation Engine

Recent interest in pulse detonation engines (PDEs) has resulted in several experimental and theoretical studies related to realizing multi-cycle detonations in tubes that simulate engine operating conditions. These studies make a clear case that pulse detonation engines provide the potential for higher specific impulse, reduced complexity and lower operational costs as compared to current gas turbine technology. For air breathing applications, hydrocarbon-air propellant combinations are being considered, which are particularly difficult to detonate within a practical length. In addition, a key barrier to the realization of an operational PDE is achieving reliable and repeatable detonations in the shortest distance possible to minimize system weight. Dr. Lee has focused on several areas of fundamental research related to the pulse detonation engine and pulse detonation engine driven ejector. This talk will briefly discuss the fundamental understanding of detonation combustion and its applications including the deflagration-to-detonation transition (DDT) process, detonation transition to a bigger thrust chamber, the PDE-driven thrust augmentation, and the plasma-assisted PDE.

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