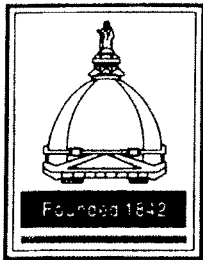


AEROSPACE & MECHANICAL ENGINEERING



2010 COLLOQUIUM 2011 SEMINARS ARE OPEN TO THE PUBLIC

INFORMAL COFFEE PERIOD BEFORE THE SEMINAR IN ROOM 365 FITZPATRICK HALL
UNIVERSITY OF NOTRE DAME, NOTRE DAME, INDIANA 46556

SPEAKER: **Theodore (Ted) J. Heindel**
Bergles Professor of Thermal Science
Interim Chair, Department of Mechanical Engineering
Iowa State University
Ames, Iowa

TOPIC: **AN OVERVIEW OF MULTIPHASE FLOW RESEARCH:
PAST, PRESENT, AND FUTURE**

DATE: Thursday, December 2, 2010

TIME: 3:30 p.m.

PLACE: 136 DeBartolo Hall

ABSTRACT

Multiphase flows are commonly found in many industries such as petroleum-based fuel production, energy generation, chemical production, mineral processing, textile processing, pulp and paper processing, wastewater treatment, food processing, and biological organism and pharmaceutical production. Although multiphase flows are widely utilized, their operation is very complex. An improved understanding of the fundamental hydrodynamic and transport processes are necessary to develop improvements and optimization, as well as to develop and validate fundamental models of their operation. This seminar will provide an overview of the multiphase flow research performed in the Experimental Multiphase Flow Laboratory at Iowa State University. A key feature of this research is the use of a unique X-ray flow visualization facility that can perform X-ray radiography, stereography, and computed tomography imaging. X-ray radiography is the act of producing a 2D projection of a 3D object based on the X-ray absorption characteristics of the object. X-ray stereography uses information from two radiographic projections to determine 3D information. X-ray computed tomography produces a time-average 3D density map of an object showing internal details. Several examples of each of these imaging methods will be discussed relative to various multiphase flows. The seminar will conclude with a discussion of future multiphase flow research directions and opportunities.