

**** SEMINAR ANNOUNCEMENT ****

SPEAKER: Dr. Hua Meng
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TOPIC: Numerical Modeling of Polymer Electrolyte Fuel Cells

DATE: Thursday, February 17, 2005

TIME: 3:30 p.m.

PLACE: 138 DeBartolo Hall

Abstract

Polymer electrolyte fuel cell (PEFC/PEM) is considered as a promising alternative power source for transportation application because of its high efficiency, low emission, and low noise. In the past decade, numerical modeling of PEFC has received much attention, and many multi-dimensional multi-physics models have been successfully developed, which provide important tools for engineering design and optimization. In this presentation, a three-dimensional, electrochemical kinetics and transport fully coupled, two-phase, multi-physics PEFC model is introduced. The fundamental electrochemical kinetics and transport phenomena are analyzed. Numerical results, including those from model validation and large-scale computation, are presented. Some unresolved issues in PEFC modeling are further discussed.

In the second part of this presentation, numerical results from my previous research work in propulsion and combustion are also provided, including those related to supercritical droplet vaporization and turbulent jet dynamics. This part of research is critical for understanding and improving the performance and combustion stability of rocket and gas turbine engines.