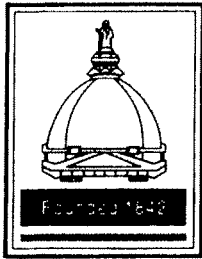


AEROSPACE & MECHANICAL ENGINEERING



2009 COLLOQUIUM 2010 SEMINARS ARE OPEN TO THE PUBLIC

INFORMAL COFFEE PERIOD BEFORE THE SEMINAR IN ROOM 365, ENGR. BLDG.
UNIVERSITY OF NOTRE DAME, NOTRE DAME, INDIANA 46556

SPEAKER: **Andrei G. Fedorov**
Professor & Woodruff Endowed Faculty Fellow
George W. Woodruff School of Mechanical Engineering
Georgia Institute of Technology
Atlanta, Georgia
<http://www.me.gatech.edu/MITF-Lab>

TOPIC: **TOWARDS A SUSTAINABLE “CARBON ECONOMY”
FOR TRANSPORTATION: ENABLING TECHNOLOGIES
FOR DISTRIBUTED H₂/POWER GENERATION
WITH CO₂ CAPTURE**

DATE: Tuesday, March 16, 2010

TIME: 3:30 p.m.

PLACE: 138 DeBartolo Hall

ABSTRACT

Rising greenhouse gas concentrations in the Earth's atmosphere are driving efforts to reduce anthropogenic emissions of CO₂, and all available pathways must be taken to reduce emissions. However, most efforts to capture CO₂ have focused on concentrated sources such as central power stations, and despite the fact that they contribute roughly one-third of global carbon emissions, distributed (point) sources associated with transportation and distributed generation have been largely neglected. It is nearly universally assumed that emissions from small-scale point sources cannot be directly sequestered in an economically plausible way. This common wisdom will be challenged by first establishing the feasibility of capturing CO₂ from distributed sources with concurrent production of hydrogen. Important requirements of related systems include rapid start-up and transient response to changing power demands, high energy efficiency, and lightweight, compact design.

Several system designs will be analyzed, with special consideration given to a novel CO₂/H₂ Active Membrane Piston (CHAMP) approach to precisely controlling reactions for maximizing hydrogen production and separating it from CO₂. The CHAMP concept meets design criteria in an elegant and cost-effective manner, with excellent prospects for accelerated development and commercialization.

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NOTE: *If you are interested in meeting individually with
Prof. Fedorov, please contact Evelyn at 631-5431*