

# MCEN GRADUATE SEMINAR

**Elizabeth M. Fisher**

Associate Professor

Sibley School of Mechanical & Aerospace Engineering  
Cornell University, Ithaca, NY

## **Oxycombustion for Carbon Sequestration**

October 29, 2009 3:30-4:45 PM, ECCR-200

### **Abstract:**

Anthropogenic emissions of CO<sub>2</sub> tend to rise with worldwide energy use, and threaten serious changes to global climate. Among options for reducing CO<sub>2</sub> emissions is carbon sequestration, which holds the promise of continued utilization of vast global fossil fuel reserves. It consists of capturing carbon, generally in the form of carbon dioxide, from combustion products, and storing it in the deep ocean or in stable geological formations.

The cost of carbon sequestration is expected to be dominated by the capture process. Oxycombustion has been proposed as a way of reducing the costs of carbon capture by producing a concentrated CO<sub>2</sub> stream. Oxygen, generally diluted with recycled wet or dry flue gas, is used to burn fuel, producing an exhaust stream of almost pure CO<sub>2</sub> and H<sub>2</sub>O. The current study investigates the differences between oxycombustion and conventional air combustion by performing methane flame extinction measurements with a variety of different oxidant compositions.

### **Biography:**

Dr. Elizabeth M. Fisher is an Associate Professor in the Department of Mechanical and Aerospace Engineering in Cornell University. Prof. Fisher received her BS in physics, summa cum laude, from Yale in 1982. She then worked for two years in the Thermal Sciences Branch of the Solar Energy Research Institute, now known as the National Renewable Energy Laboratory (NREL). Prof. Fisher received her MS and PhD in Engineering Science: Mechanical Engineering from the University of California, Berkeley, in 1987 and 1990, respectively. Since 1991, she has been on the faculty at Cornell. Her research focuses on combustion chemistry. She applies a variety of extractive and in-situ techniques to flame and flow reactor studies, with applications to fire suppression, incineration of hazardous wastes and chemical weapons, complex fuels, air pollution, and oxycombustion. Prof. Fisher is enjoying a sabbatical visit to CU Boulder and NREL, where she is learning about the chemistry of biomass pyrolysis and gasification.