

AEROSPACE & MECHANICAL ENGINEERING



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

SPEAKER: Erika A. Parra
Berkeley Sensor and Actuator Center
University of California, Berkeley
Berkeley, California

TOPIC: TOWARDS MOTHER NATURE'S APPROACH
TO ENERGY: ELECTRICITY FROM METABOLISM

DATE: Thursday, February 25, 2010

TIME: 3:30 p.m.

PLACE: 126 DeBartolo Hall

ABSTRACT

The surge in oil prices along with growing concerns over global warming has motivated the search for both short and long term sustainable alternatives to current energy conversion technology. A novel approach involves the direct conversion of simple sugars and alcohols into electricity using microorganisms as catalysts. Termed microbial fuel cells, these electrochemical devices harvest energy from microbial metabolism as electrons and protons to produce electric power. Although this promising approach offers the advantage of renewable catalyst and fuel, producing power densities that compete with other technologies has proven challenging. In this presentation, I will provide a brief overview of the field followed by our efforts to fundamentally understand the energy conversion and transfer from the microorganisms to the electrodes by developing microfluidic tools that provide controlled experimental characterization. Specifically, I will discuss electrochemical, electrokinetic, and fluorescence techniques that we have developed to characterize electron transfer rates and transfer impedance on a per cell basis among many parameters that are of interest.

NOTE: *If you are interested in meeting individually with
Erika Parra, please contact Evelyn at 631-5431*