



SEMINAR

Rutgers Catalysis Research Center

*****THURSDAY, September 30, 2010*****

*****12:00 PM, Room 260
Wright-Rieman Chemistry Laboratory**

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Electrodes for Solid Oxide Fuel Cells and Electrolyzers

Review work at Penn on electrode development for SOFC and SOE. Because SOFC are based on electrolytes that are oxygen-ion conductors, rather than proton conductors, they are able to operate on a wide range of fuels, including hydrocarbons. Likewise, electrolysis of CO₂ is feasible in SOE. However, to allow stable operation with a wider range of feeds to the electrodes, new electrode materials must be developed. At Penn, we have investigated a method for fabricating electrodes that allows the composition and structure to be varied easily. The electrodes are made by infiltration of the active, electrode components into porous yttria-stabilized zirconia (YSZ) layers that had been pre-sintered with the YSZ electrolyte. The infiltration procedure produces a large three-phase boundary so that the electrodes exhibit low overpotentials. Because fabrication does not require high-temperature calcination, electrodes can be made from materials that would not be stable in conventional ceramics processing. Results for both fuel- and air-side electrodes will be discussed.

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Refreshments at 11:45 am
Courtesy of IAMDN and REI

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