

**CENTER FOR MATERIALS SCIENCE AND
ENGINEERING
IN COLLABORATION WITH
DEPARTMENT OF CHEMISTRY
DEPARTMENT OF PHYSICS
DEPARTMENT OF MICROELECTRONIC ENGINEERING
AND
MATERIALS RESEARCH SOCIETY**

ANNOUNCES A DISTINGUISHED SPEAKER SEMINAR
ON

Interfacial Field Effects and Materials Design for Adaptable, Chemically
Sensitive, and Fast Switching Organic Semiconductor Devices.

BY

**PROF. E. KATZ, PROFESSOR OF MATERIALS SCIENCE
AND ENGINEERING, JOHN HOPKINS UNIVERSITY**

Abstract

The anticipated advantages of organic field-effect transistors (OFETs) and diodes are low-cost processing and functionality not easily obtained from silicon devices. Currents through these devices are influenced by local fields at the semiconductor interfaces as well as voltages applied from gate electrodes. Local field effects can be utilized to radically tune the input-output relationships in OFETs, transmit information about chemical vapor adsorbance to a circuit, and tune the switching voltage of diodes. This seminar will cover organic semiconductor design, semiconductor-dielectric bilayer optimization, and our latest results on the creation, stability, and utilization of internal fields to enable new architectures and applications. The relevant chemistry includes both compound synthesis and surface modifications. Highlights include enhanced sensitivity to nerve gas simulants using semiconductor bilayers and alloys, and carrier type inversion in an organic FET. Initial results on lateral pn diodes, which are controlled by both metal-semiconductor and semiconductor pair interfaces, will also be presented.

Tuesday April 24th, 2007

12.00 pm

08-3365