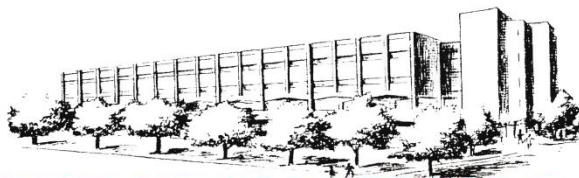


UNIVERSITY OF CONNECTICUT



INSTITUTE OF MATERIALS SCIENCE

POLYMER PROGRAM SEMINAR

“Plasmonics Enabled Chemical Sensors with Thermal Energy Harvesting Attributes”

**Prof. Michael Carpenter
SUNY Polytechnic Institute**

**Friday, September 11, 2015
11:00 AM, IMS Room 20**

ABSTRACT

Metal oxide nanomaterials have served as a foundation for chemical sensor development studies for nearly 20yrs. Recent work has shown that the surface plasmon resonance band of gold nanomaterials embedded in metal oxide heterostructure films is used both as an energy harvesting device structure as well as an optical beacon for the detection of emission gases, CO, NO₂ and H₂, at temperatures ranging between 500 and 800°C. Challenges for their detection include high levels of sensitivity, the selective detection of the gas of interest within a catalytically active environment as well as surmounting future integration challenges. Recent work will be detailed which shows the implementation of plasmonic based sensing arrays for the selective detection of emission gases. Coupled with these recent studies is the novel design of plasmonic arrays that are being developed for their energy harvesting capabilities. First of a kind studies will be detailed on these structures that include their energy harvesting characteristics and subsequent detection of emission gases without the need of an external excitation source.

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