SCHOOL OF CHEMICAL, BIOLOGICAL & MATERIALS ENGINEERING

And

UNIVERSITY OF OKLAHOMA BIOENGINEERING CENTER

100 E. Boyd, Sarkeys Energy Center, T-335 405-325-5811 The University of Oklahoma Norman, Oklahoma 2010 – 2011 Seminar Series

PLEASE NOTE TIME CHANGE TO 2:30 FOR THIS WEEK!

DR. RADHAKRISHNA SURESHKUMAR

PROFESSOR
CHAIR, DEPARTMENT OF BIOMEDICAL AND CHEMICAL ENGINEERING
DEPARTMENT OF PHYSICS
SYRACUSE UNIVERSITY
SYRACUSE, NEW YORK

Will present a seminar on

"HARNESSING LIGHT USING NANOMATERIALS: IMPLICATIONS FOR A RENEWABLE ENERGY FUTURE"

Sustainable production, storage and transportation of renewable energy are among the greatest challenges of the 21st century. Harnessing Sun's energy for powering our planet has long been a dream of scientists and engineers. Despite much progress, the efficiency of commercial solar energy systems remains well below desirable levels. This is a major concern for new generation photovoltaics, which utilize thin films (~ 1 micron) of the photoactive material. Hence, traditional light trapping techniques such as optical gratings (~ 10 microns) employed for bulk cells are not applicable. Metallic nanocomposites offer much promise in light trapping in thin film photocells. The central idea is to exploit the resonant interaction between electromagnetic waves and the localized oscillations of the free electron gas density at the nanoparticle-dielectric interface. The first part of the talk will focus on the design and optimization of such materials for renewable energy applications. In the second part of the talk, robust manufacturing route for such materials, namely laser-induced melting and self-organization of ultrathin (~ nm) metal films deposited on a suitable substrate as well as solution phase self-assembly, will be discussed. [Relevant references: APL 91, 043105 (2007); Phys. Rev. B, 75, 235439 (2007); Nanotechnology, 17, 4229 (2006); Phys. Rev. Lett., 101, 017802 (2008); APL 97, 043703 (2010); Nature 466, 799 (2010)].

THURSDAY, APRIL 28, 2011
COOKIES AND COFFEE -- 2:15 P.M.
SEMINAR - 2:30 P.M.
SARKEYS ENERGY CENTER, ROOM M-204

THIS IS A REQUIRED SEMINAR FOR CHE 5971

Accommodations on the basis of disability are available by contacting the office above three days before the event.