



UNIVERSITY OF CENTRAL FLORIDA

NANOSCIENCE TECHNOLOGY CENTER
ADVANCED MATERIALS PROCESSING & ANALYSIS CENTER

GRADUATE RESEARCH SEMINAR SERIES

Achieving quasiparticle coupling with a tunable plasmonic substrate



Panit Chantharasupawong - Dr. Thomas's Nano Energy and Photonics Group

Abstract: In this presentation, a simple fabrication scheme to produce and optimize large area tunable plasmonic substrates for strong plasmon-exciton interactions will be introduced. By manipulating the geometry of the sub-100nm imprinted nanostructure using a simple plasma etching process, plasmon resonance frequency of such structure can be tuned. Large enhancements of fluorescence and Raman scattering was observed when the plasmon resonance frequency of the structure matched the electronic transition of an organic dye. In addition, as a result of resonance overlapping, the coupled system exhibited an anti-crossing behavior, which is a manifestation of state hybridization. Our fabrication scheme shows great potential for producing a platform for studying properties of hybridized states. This fabrication technique will be beneficial for applications such as sensors, light harvester and optical switches.

Friday
September 26, 2014

12:00 — 1:00PM

NSTC
Conference Room
475

Liquid Crystal-Plasmonic Metasurfaces for Dynamic Color Pixels

Daniel Franklin (12:30-1PM) - Dr. Chanda's Nano-Optics Group

Abstract: Structural color arising from nanostructured plasmonic surfaces offer many benefits to conventional pigmentation based color filtering for display technologies. Such nanostructures offer increased resolution, efficiency, and scalability of their optical response with structure dimensions. However, once these structures are fabricated their optical characteristics remain static. Here, we use liquid crystals to impart tunability to these structures by changing the nanostructure's local dielectric constant, which is in turn, modulated through an applied voltage. In combination with nanoimprinted structures of varying periods, a full range of colors is achieved, paving the path towards dynamic pixels for displays. Such dynamic tunability reduces the number of subpixels required to span the full RGB space, therefore increasing pixel density and resolution.



Pizza and drinks will be provided