Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

**Co-dispersion of plasmonic nanorods in thermotropic nematic liquid crystals**[1] GHADAH SHEETAH, PhD student, QINKUN LIU, PostDoc, IVAN SMALUKH, Professor — Colloidal dispersions of plasmonic metal nanoparticles in liquid crystals promise the capability of pre-engineering tunable optical properties of mesostructured metal-dielectric composites. Recently, concentrated dispersions of anisotropic gold, silver, and metal alloy nanoparticles in nematic hosts have been achieved and successfully controlled by low-voltage fields [1, 2]. However, to enable versatile designs of material behavior of the composites, simultaneous co-dispersion of anisotropic particles with different shapes, alignment properties, and compositions are often needed. We achieve such co-dispersions and explore their switching characteristics in response to external stimuli like light and electric fields. We demonstrated that spectral characteristics of co-dispersions of multiple types of anisotropic nanoparticles in a common nematic host provides unprecedented variety of electrically- and optically-tunable material behavior, with a host of potential practical applications in electro-optic devices and displays. [1] Liu, Q., Yuan, Y., & Smalyukh, I. I. (2014). *Nano letters*, *14*(7), 4071-4077. [2] Zhang, Y., Liu, Q., Mundoor, H., Yuan, Y., & Smalyukh, I. I. (2015). *ACS nano*, *9*(3), 3097-3108.

[1]Ghadah acknowledges support from the King Faisal University (KFU) graduate fellowship

Ghadah Sheetah
PhD student

Date submitted: 06 Nov 2015 Electronic form version 1.4