Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Liquid Crystalline Orientational Control via the Electric Field of Localized Surface Plasmons[1] MAKIKO QUINT, LINDA HIRST, SAYANTANI GHOSH, University of California, Merced — We probe the effect of induced electric fields of localized surface plasmons (LSPs) generated by self-assembled gold nanoparticles (AuNPs) on the directional orientation of a thin film of nematic liquid crystal, 4-cyano-4′-pentylbipenyl (5CB). We excite the composite AuNP-LC with excitation tuned on and off resonance with the LSP absorption peak, and track the birefringence of the LC. Our results demonstrate re-orientation of the director of the LC when the LSPs are excited resonantly, and that this effect is temperature dependent. Our studies indicate LSP generated electric fields may offer an all-optical protocol to locally control LC orientation.

[1]This work was funded by NSF.

Makiko Quint
University of California, Merced

Date submitted: 15 Nov 2013 Electronic form version 1.4