

Abstract Submitted
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Evidence for localized surface plasmon polaritons in a liquid crystal containing gold nanoparticles¹ KUNAL TIWARI, ANKIT SINGH, SURESH SHARMA, University of Texas at Arlington — We report an observation of the localized surface plasmon polaritons (SPPs) in a nematic liquid crystal containing 14 nm diameter gold nanoparticles (Au NPs). We observe attenuated total reflection (ATR) of p-polarized laser beam incident upon a high-index prism/liquid-crystal-Au-NPs/glass structure used in the Kretschmann configuration.¹ Unlike the ubiquitous ATR configuration, in which the prism base is coated with a noble metal thin film, our experimental set up does not utilize any such coating. The ATR observed at a specific incident angle and only for p-polarized laser reflects the excitation of localized SPPs at NP/liquid-crystal interface. We discuss possible SPPs related effects, which can significantly change the electro-optical properties of polymer-dispersed liquid crystals.²

¹1. E. Kretschmann, Z. Phys. 241, 313 (1971); 2. A. Hinojosa and S. C. Sharma, Appl. Phys. Letts., 97, 081114 (2010)

Suresh Sharma
University of Texas at Arlington

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