

Abstract Submitted  
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**Ordered Nematic Colloidal Dispersions of Anisotropic Nanoparticles.** IVAN SMALYUKH, QINGKUN LIU, HARIDAS MUNDOOR, Univ of Colorado - Boulder — A promising approach of designing mesostructured composite materials with novel physical behavior is based on combining unique optical and electronic properties of solid nanoparticles with long-range ordering and facile switching of soft matter. We practically realize molecular-colloidal organic-inorganic composites formed via multi-scale self-assembly in dispersions of anisotropic inorganic nanoparticles in liquid crystals. Using charged anisotropic rod-like and platelet-shaped nanoparticles, we demonstrate self-assembly of triclinic colloidal crystals and biaxial colloidal fluids with low-symmetry ordering. We show that these unexpected forms of self-assembly emerge from the competing elastic and electrostatic interactions in the nematic host. We characterize the facile response of these colloidal dispersions to external fields and discuss their potential technological uses.

Ivan Smalyukh  
Univ of Colorado - Boulder

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