

Abstract Submitted
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Electro-optical properties of quantum dots dispersed in chiral nematic liquid crystal¹ J. KIRCHHOFF, Florida State University, R.H. INMAN, S. GHOSH, L.S. HIRST, University of California Merced — The electro-optical properties of quantum dots can be significantly altered if they are assembled in close proximity to each other. The partial ordering of liquid crystal molecules can be utilized to form directed quantum dot assemblies. Typically, this results in a red shift in the emission spectrum of the dots as the induced order leads to enhanced dipolar interactions, resulting in electronically coupled states. Spherical cadmium selenide quantum dots of different diameters are dispersed in various concentrations in a chiral nematic liquid crystal phase. The quantum dots are seen to aggregate, the sizes of the aggregates depend on the size and concentration of the dots as well as the mixing time. Optimum mixing times and quantum dot concentrations are determined for dots of different sizes to achieve a uniform quantum dot dispersion. Quantum dots with emission peaks ranging from 490 nm to 640 nm were studied using polarized optical microscopy and scanning microscopy photoluminescence measurements.

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J. Kirchhoff
Florida State University

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