

Abstract Submitted
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Ordering Quantum Dot Clusters via Nematic Liquid Crystal Defects¹ ANDREA RODARTE, R. PANDOLFI, L.S. HIRST, S. GHOSH, University of California Merced — Nematic liquid crystal (LC) materials can be used to create ordered clusters of CdSe/ZnS core/shell quantum dots (QDs) from a homogeneous isotropic dispersion. At the phase transition, the ordered domains of nematic LC expel the majority of dispersed QDs into the isotropic domains. The final LC phase produces a series of QD clusters that are situated at the defect points of the liquid crystal texture. Lower concentrations of QDs are organized in a network throughout the LC matrix that originates from the LC phase transition. Inside the QD clusters the inter-particle distance enables efficient energy transfer from high energy dots to lower energy dots. Because the QD clusters form at defect sites, the location of the clusters can be preselected by seeding the LC cell with defect nucleation points.

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