

Abstract Submitted
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Fluorescence decay of CdSe nanoparticles in Liquid Crystals near Phase Transitions DARREN NORTH, SAMUEL BECK, JODIE GRAY, SHANE DRYE, Undergraduate Physics Research, CHANDRA PRAYAGA, LASZLO UJJ, Department of Physics, TIM ROYAPPA, Department of Chemistry — The liquid crystal 4'octyl-4-cyanobiphenyl (8CB) doped with cadmium selenide nanoparticles (Sigma-Aldrich) was injected into a commercially available liquid crystal cell (IN-STECH, Inc). The cell was housed in a temperature controlled environment constructed in the lab and exposed to light from a frequency doubled pulsed Nd: YAG laser. The decay of fluorescence from the sample was measured at several temperatures over the range 25° to 45°C, covering the smectic-nematic and nematic-isotropic phase transitions. The sample was held at each temperature with a stability and resolution of 1mK before taking the measurement. The fluorescence was detected using a high-speed detector and the decay was measured using a boxcar averager. With the temperature control available, it was possible to approach very close to the phase transitions, with milliKelvin resolution. The results show a significant change in the decay of fluorescence near the nematic-isotropic phase transition.

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