

Abstract Submitted
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Nonlinear Optical Properties of Quantum Dot Composites ANTHONY KOLODZINSKI¹, Adelphi University — As novel nanoscale materials become more integral to technological advances, a deeper understanding of their fundamental properties is required. A quantum dot is a semiconductor particle fabricated from various materials and at various sizes on the nanometer scale. Our experiments aim to understand the nonlinear optical properties of quantum dot composites, which will pave the way for applications in lithography, optical computing, optical communications, and solar technology. In order to experimentally observe nonlinear optical effects we use a standard Z-scan as our main technique. We use a nanosecond pulsed laser with its beam split. One beam goes to a reference detector while the other is directed through a lens, sample of quantum dot composite, and an aperture. We then move the sample through the beam's focus, and measure the beam's final energy. With the aperture open we measure nonlinear photon absorption, but when it is closed we measure nonlinear diffraction. Our current research involves testing the nonlinear optical properties of liquid composites of CdSe particles suspended in toluene. However, we hope to expand our research to samples of solid composites of different chemical compositions and sizes.

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