

Abstract Submitted
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Nonlinear optical properties of CdS_{1-x}Se_x crystallites-doped glass in femtosecond time-scale.¹ SEONGMIN MA, L. CREEKMORE, K. LEE, QIGUANG YANG, J. T. SEO, T. SKYLES, H. BROWN, A. JACKSON, B. TABIBI, Department of Physics, Hampton University, Hampton, VA 23668 — We report the nonlinear optical properties of CdS_{1-x}Se_x crystallites doped in glass measured with a 150 fs Ti:Sapphire laser at 775 nm wavelength. The nonlinear absorption and nonlinear refraction coefficients were measured to be $1 \times 10^{-20} \text{ m}^2/\text{W}$ and $7 \times 10^{-15} \text{ W/m}$, respectively, by using a single beam Z-scan nonlinear spectroscopy technique. Experimental data is theoretically fitted and discussed. The dominant physical origin of the optical nonlinearity of the material is two-photon resonant electronic process. The large nonlinearity indicates CdS_{1-x}Se_x crystallite doped glass is an excellent candidate for photonic applications, such as defense for homeland security, battlefield enhancements, optical switching, and pulse shaping.

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