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Supercontinuum-Excited Z-scan Spectroscopy of CdSe/ZnS Semiconductor Coreshells JAETAE SEO, QIGUANG YANG, Department of Physics, Hampton University, Hampton, Virginia 23668, U.S.A., WILLIAM YU, Worcester Polytechnic Institute, Worcester, Massachusetts 01609, U.S.A., WAN-JOONG KIM, Electronics and Telecommunications Research Institute, Daejeon 305-700, South Korea, SUNGSOO JUNG, Korea Research Institute of Standards and Science, Daejeon 305-340, South Korea — Ultrafast and large nonlinear optical properties of semiconductor nanocrystals are of great interest because of their photonic applications. An ultrafast and white-light continuum Z-scan analysis provides, rapidly and simultaneously, the electronic contribution spectra of nonlinear absorption and dispersive nonlinear refraction of CdSe/ZnS colloidal coreshells, and laser intensity and excitation wavelength. CdSe/ZnS coreshells exhibited different polarities of nonlinear optical properties with resonant and nonresonant excitations which imply existence of electronic two-step absorption and two-photon absorption processes. This work at Hampton University was supported by the National Science Foundation (HRD-0734635, HRD-0630372, and ESI-0426328/002) and the U.S. Army Research Office (W911NF-07-1-0608).

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