

Abstract Submitted
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Carbon Nanotube CdSe Nanoparticle Hybrid Materials: Synthesis and Optical Properties AUSTIN AKEY, CHENGUANG LU, IRVING P. HERMAN, Columbia University — Carbon nanotubes present remarkable opportunities as a base for construction of advanced nanomaterials with unique properties. We report novel heterostructures composed of single-walled carbon nanotubes and monodisperse cadmium selenide nanoparticles (3.5 to 6 nm in diameter). The optical properties of the hybrid material differ significantly from those of the unbound nanoparticles and nanotubes, pointing to the existence of strong electronic/optical interaction effects between the two. Specific differences in absorption/emission behavior and the photoluminescence Stokes shift in the nanoparticles will be presented, along with experiments exploring the underlying mechanisms of this interaction. We believe this system exhibits “hot” excitation-transfer behavior from the nanoparticles to the nanotubes, which makes it of great interest for photovoltaic applications. This work is primarily supported by the Nanoscale Science and Engineering Center at Columbia University, which is supported by the Nanoscale Science and Engineering Initiative of the NSF under Award Number CHE-0641523.

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