

Abstract Submitted  
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**Light harvesting and carrier transport in core/barrier/shell semiconductor nanocrystals.** PATANJALI KAMBHAMPATI, EVA DIAS, SAMUEL SEWALL, McGill University — Excitation transfer pathways in colloidal core/barrier/shell nanomaterials are investigated in the CdSe/ZnS/CdSe system. Absorption of light in the outer CdSe shell results in emission from the band edge of the CdSe core. The CdSe quantum shell acts as a light harvester which indirectly increases the brightness of the CdSe quantum dot core. Spectroscopic evidence is provided which suggests that the CdSe core and shell are coupled by tunneling of excitons through the ZnS barrier. Competition kinetic analysis shows that charge transport competes effectively with hole capture by pyridine at the outer CdSe shell, and exciton relaxation within the outer CdSe shell. Femtosecond experiments are underway to monitor and control the charge transport dynamics in these core/barrier/shell nanostructures.

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