

Abstract Submitted
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Optical and Transport Study of Nanocomposite Film of Polymer and PbS Quantum Dots JIAN ZHANG, XIAOMEI JIANG, Department of Physics, University of South Florida — Optical studies have been done with nanocomposite of conjugated polymers with colloidal lead sulfide PbS quantum dots (QDs). Partial quenching of polymer photoluminescence by PbSe QDs showed the co-existence of energy and charge transfer within this system. Further investigation by means of cw spectroscopy (including photoluminescence action spectroscopy, photo-induced absorption spectroscopy and photoluminescence quantum efficiency) have been rendered for comprehensive study regarding photogenerated charge transfer. Transient transport and time of flight measurements have been employed to conduct mobility and recombination rate study of the same film. The size dependent optoelectronic properties were observed and explained by model fittings. Life time and activation energies were drawn from the fittings. Study also shows improvement on both optical absorption and charge transfer properties with QDs being treated with post-synthesis ligands exchange.

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