

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Single-molecule spectroscopy study of interfacial charge separation and energy transfer between quantum dots and conjugated polymers ZHIHUA XU, MIRCEA COTLET, Center for Functional Nanomaterials, Brookhaven National Laboratory — Blends of semiconducting quantum dots (Qdots) and conjugated polymers (CPs) are promising materials for light-emitting diodes or photovoltaic devices. Effective design of optoelectronic devices relies on further understanding of the photophysics in these hybrid materials, including charge separation (CS) and energy transfer (ET). We have studied the photophysics of the blends of two water-soluble conjugated polymers and CdSe/ZnS quantum dots with varying shell thickness, which enable us to control the competitive CS and ET processes by tuning energy-band alignment and interfacial distance. Combining single-molecule spectroscopy with ensemble-based measurements provides deeper understanding of the dynamic interactions at inhomogeneous interfaces.

Zhihua Xu
Center for Functional Nanomaterials, Brookhaven National Laboratory

Date submitted: 13 Dec 2010

Electronic form version 1.4