

Abstract Submitted  
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**Organic-Inorganic Photovoltaic Composite Materials Based on Polymer-Functionalized Semiconductor Nanorods** QINGLING ZHANG, SURESH GUPTA, TODD EMRICK, THOMAS RUSSELL, Polymer Science and Engineering Department, University of Massachusetts Amherst — Polymer-based photovoltaics, using composite materials consisting of inorganic particles embedded within the polymer, are considered to be promising candidates for the enhancement of power conversion efficiency, due to the directionality of electron transport enabled by the nanorods. We have demonstrated that oriented nanorods phase separate into close-packed micron-scale arrays within a matrix of photoactive polymer matrix with the assistance of electric field. However, for the material to be useful in photovoltaic applications, the separation distance between elements must be about 10 nm or less due to the exciton diffusion length. Here, we describe the attachment of photoactive polymers to CdSe nanorods. The photoluminescence spectra of these photoactive polymer-functionalized CdSe nanorods exhibited photoluminescence quenching of both nanorods and polymer, indicating charge transfer between donor and acceptor, a prerequisite for a successful photovoltaic material.

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