Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Self-Assembly of CdSe Nanorods by Controlled Solvent Evaporation and Applied Electric Field SIRINYA CHANTARAK, TODD EMRICK, THOMAS P. RUSSELL, Polymer Science & Engineering Department, University of Massachusetts, Amherst — We report the synthesis of CdSe nanorods (NRs) having variable aspect ratios and their vertical alignment into a hexagonal arrays over a large area. NRs with a constant diameter of 6 nm and lengths, tunable to over 100 nm, were obtained by controlling the concentration of ligands in solution and injection of Se at defined time intervals. Hexagonal arrays of aligned, alkane covered CdSe nanorods within a polymer matrix were achieved by controlled solvent evaporation in the presence of an applied electric field. The nature of the solvent identity, substrate hydrophobicity, and strength of applied voltage were optimized such that close packing of nanorods was achieved over a large area. Such organized nanocomposites hold potential application in organic-inorganic bullk heterojunction photovoltaic devices.

Sirinya Chantarak
Polymer Science & Engineering Department,
University of Massachusetts, Amherst

Date submitted: 14 Nov 2011 Electronic form version 1.4