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Fabrication and characterization of photovoltaic devices based on 'self corralled' CdSe nanorods functionalized with polythiophene SURESH GUPTA, QINGLING ZHANG, ALI CIRPAN, FRANK KARASZ, TODD EMRICK, THOMAS P. RUSSELL, University of Massachusetts, Amherst — It has been shown that the CdSe nanorods can be oriented normal to the surface by employing an electric field and a polymer matrix where nanorods phase separate. The nanorods close pack with orientation normal to surface in a thin film when the CdSe nanorods are functionalized with alkane and poly(methyl methacrylate) or poly(3-hexyl thiophene)(P3HT) is the matrix. The film is drop-cast under electric field. The phase separation of the nanorods in polymer matrix can be directed by using a patterned surface. The patterned surface was prepared by soft-lithography. Further, the nanorods functionalized with P3HT are 'self corralled' under electric field by using a polymer matrix and photovoltaic devices are fabricated. The devices are characterized and the results for devices with normally oriented nanorods are compared to the devices with nanorods parallel to surface.

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