

Photocurable poly(3-hexylthiophene)s for organic photovoltaics

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New poly(3-hexylthiophene)s having methacrylate group was synthesized for the application to organic photovoltaics. The regioregularity of the polythiophenes was controlled by the photoreaction of methacrylate in both ends of the polymer chain. The synthesized copolymer showed good solution processible and photo-patternable properties. Photoconversion of the side chain cross-linking was examined by isothermal photo-DSC and FT-IR study under UV irradiation. The surface morphology and photo-induced charge transport of polymer films were affected by the degree of the photo cross-linking reaction. In addition, the photo conversion efficiency of the organic photovoltaic cells prepared from photopatterned polymer film was highly dependent on the degree of the side chain cross-linking.