

Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Ultrafast dynamics in blends of π -conjugated polymers/fullerenes¹ SANJEEV SINGH, MINGHONG TONG, CHUANXIANG SHENG, ZEEV VARDENY, University of Utah — We have studied the ultrafast dynamics of photogenerated charges and excitons in a variety of π -conjugated polymer/fullerene blends using the transient pump-probe photomodulation (PM) spectroscopy with ~ 100 fs resolution. These composites serve as active layers in organic photovoltaic devices with high power conversion quantum yield, due to the existence of a photoinduced charge transfer (PCT) reaction between the polymer and the fullerene molecules. Our transient PM spectrum spans a broad energy range from 0.1-2.4 eV, and this allows us to monitor the transient behavior of the various photoinduced absorption (PA) bands of polarons and excitons in the PM spectrum; as well as the transient exciton stimulated emission, and photobleaching (PB) of the ground state. The PB dynamics reflect the ground state recovery; hence, it can be used to determine the long-lived polaron photogeneration quantum efficiency in these systems.

¹Supported in part by the DOE grant 04-ER 46109 at the University of Utah.

Sanjeev Singh
University Of Utah

Date submitted: 15 Nov 2007

Electronic form version 1.4