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Ultrafast polarization memory dynamics of photoexcitations in π-conjugated polymers. SANJEEV SINGH, MINGHONG TONG, JOSH HOLT, ZEEV VARDENY, Physics Department, University of Utah — For better understanding ultrafast photoexcitation dynamics in π-conjugated polymers, we study the polarization memory dynamics in the pump/probe photomodulation (PM) spectrum of these materials. The transient PM spectrum of polymers contain singlet excitons with prominent photoinduced absorption (PA) band, stimulated emission and photobleaching bands in the near ir/visible spectral range; polarons with PA bands in the mid- and near-ir; and polaron pairs in the visible range. Each of these spectral feature shows polarization memory, P(t) where the PM signal with parallel pump/probe polarizations is $\sim$ twice larger than with perpendicular polarizations. P(t) has a specific dynamics for each photoexcited species, and, in addition it also depends on the excitation pump photon energy. Results for MEH-PPV films and solutions will be thoroughly discussed, in comparison with the photoluminescence efficiency.

Sanjeev Singh
Physics Department, University of Utah

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