

Abstract Submitted
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Optical studies of Pt-rich π -conjugated Polymers¹ TOMER DRORI, M. TONG, A. GAMBETTI, S. SINGH, C. YANG, Z. V. VARDENY, Physics Department, University of Utah, S. TRETIAK, Theoretical Division, LANL, Los Alamos — We have used a variety of steady state and ultrafast spectroscopies for studying the photophysics of platinum-containing conjugated polymers, which have potential applications as the active layer of light-emitting diodes. The heavy metal Pt atom that is incorporated in the polymer chain dramatically increases the spin-orbit coupling, and this influences both the intersystem crossing time, T_{ISC} , and the phosphorescence emission intensity. The Pt-polymers were newly synthesized, where the intrachain Pt atom was incorporated into the polymer either in each (Pt-1) or in every three (Pt-3) monomer units. We will discuss an interesting effect for the photoexcited triplets, which dramatically influence the phosphorescence spectral shape vs. temperature. We also observed the existence of circular polarization memory of the phosphorescence emission in Pt-1 polymers, in which the platinum atoms are separated by only one phenyl ring; but not in Pt-3.

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