

Abstract Submitted
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Unravelling the zero-field-splitting parameters in Pt-rich polymers with tuned spin-orbit coupling¹ PETER PERONCIK, RYAN MCLAUGHLIN, DALI SUN, Z. VALY VARDENY, University of Utah — Recently pi-conjugated polymers that contain heavy metal Platinum (Pt-polymers, Scientific Reports 3, 2653, 2013) have attracted substantial interest due to their strong and tunable spin-orbit coupling (SOC). The magnetic field effect (MFE), such as magneto-photoluminescence (MPL) is considered to be a viable approach to address the SOC strength in the organics. Alas conventional MFE up to several hundred Gauss is unable to overcome the relative large spin splitting energies in Pt-polymers due to their strong SOC. To overcome this difficulty we study the MPL response in two Pt-polymers at high magnetic field (up to several Telsa). We found that the MPL response is dominated by triplet excitons that are generated in record time, and from the MPL(B) response width we could obtained the triplet zero-field splitting (ZFS) parameters. We found that the ZFS parameters in the Pt-polymers are proportional to the intrachain Pt atom concentration.

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