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Triplet exciton formation and decay in polyfluorene light emitting diode H.H. LIAO, H.F. MENG, S.F. HORNG, J.T. SHY, K CHEN, C.S. HSU — We study the triplet excitons in poly (9,9-dioctylfluorene-2,7-diyl) (PFO) light emitting diode using infrared induced absorption. The infrared absorption is exclusively due to the triplet excitons and there is no spectral overlap with any other species. A strong suppression of the triplet exciton density relative to the singlet by voltage is observed. Through an unique independent measurement on the triplet exciton lifetime it is shown that the suppression solely comes from triplet exciton quenching by current injection. The triplet-to-singlet exciton formation ratio is independent of voltage as well as temperature, implying a spin-independent exciton formation.

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