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**Magnetic Field Effects: Triplet-Charge Annihilation versus Triplet-Triplet Annihilation in Organic Semiconductors** BIN HU, MING SHAO, LIANG YAN, MINGXING LI, University of Tennessee — Triplet-charge reaction and triplet-triplet annihilation are two important processes in generating magnetic field effects in organic semiconductors. This presentation reports experimental studies on triplet-charge annihilation (TCA) versus triplet-triplet annihilation (TTA) in organic semiconductors. Specifically, we separately adjust the triplet-charge and triplet-triplet interactions towards the generation of TCA and TTA by changing triplet density, charge confinement, and charge/exciton ratio based on organic light-emitting diodes. We then use magnetic field effects of electroluminescence ( $MFE_{EL}$ ) to study the TCA and TTA through spin interactions. We observe that the electroluminescence can clearly show negative response to applied magnetic field when triplets and charges are simultaneously confined within close proximity. On contrast, the electroluminescence only exhibits positive  $MFE_{EL}$  when triplets are confined within close proximity. Therefore, it can be concluded that the TCA is a major process to annihilate triplets through Coulomb interaction in organic semiconductors.

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