Electronic Supplementary Information

Studying the influence of triplet deactivation on the singlet-triplet inter-conversion in intra-molecular charge-transfer fluorescence based OLEDs by magneto-electroluminescence

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Table of contents

SI-1 Fluorescence and Phosphorecence of TPA-NZP measured in glassy o-xylene

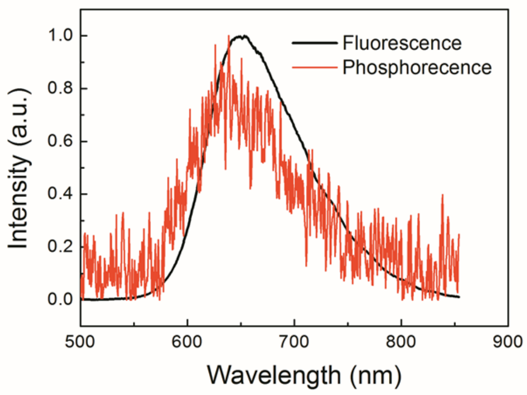

Fig. S1 The fluorescence (black) and phosphorescence (red) spectra of the TPA-NZP in glassy o-xylene matrix at temperature of 77 K, detected by a Laser flash photolysis spectrometer (Edinburgh LP920).

SI-2 Devices structure of DCJTB-based OLEDs

Unlike the TPA-NZP based OLEDs, The efficiency of the non-doped DCJTB based devices is very poor, due to the aggregation-caused quenching. To avoid this, we doped the DCJTB into mCP matrix with a concentration of 1.5 wt.%. In addition, the mCP matrix can confine the triplets of DCJTB, owing to the high energy of the triplets of mCP (~2.9 eV).

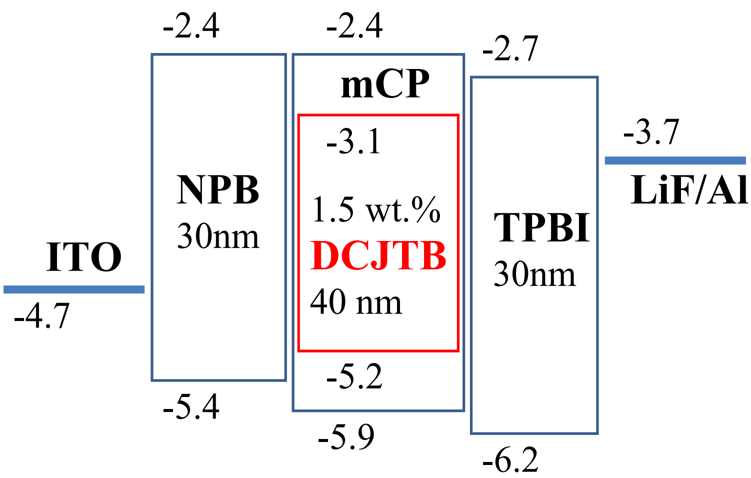

Fig. S2 The structure of the DCJTB based OLEDs. Here the meanings of the abbreviations are:

ITO: indium tin oxide;

NPB: N,N'-di-1-naphthyl-N,N'-diphenylbenzidine;

DCJTB: 4-(dicyanomethylene)-2-tertbutyl- 6-(1,1,7,7-tetramethyljulolidin-4-yl-vinyl)-4H-pyran

mCP: 1,3-bis(9-carbazolyl) benzene;

TPBI: 1,3,5-tri(phenyl-2-benzimidazolyl)-benzene;

LiF: Lithium fluoride;

Al: Aluminum

SI-3 MELs of DCJTB-based OLEDs measured after electrically stressing

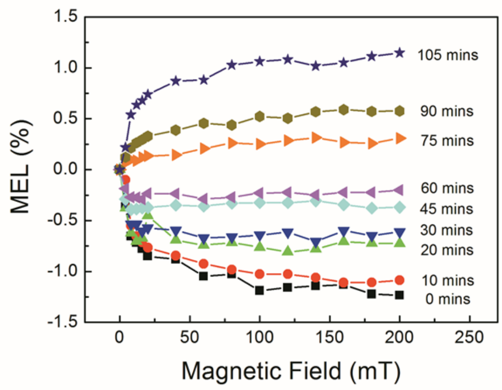

Fig. S3 The MELs at 5 V as a function of the magnetic field. Each set of the MELs was measured after the OLED has been electrically stressed (by a voltage of 11 V) for different time ranging from 0 to 105 minutes.