Electronic Supplementary information

Synergistic Plasmonic Enhancement in PM6:Y6 Organic Solar Cells Using Hybrid Gold Nanostars and Gold Nanoparticles Embedded in the AZO Electron Transport Layer

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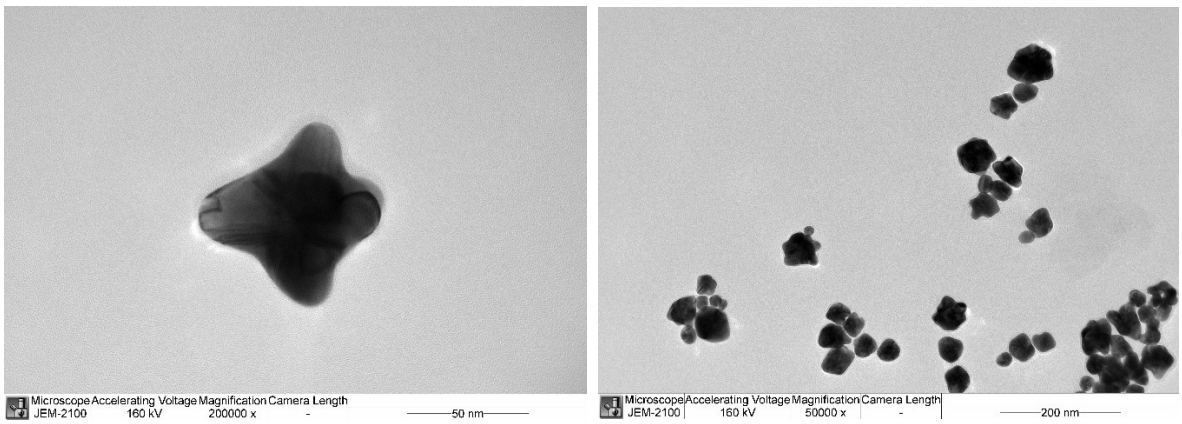

Fig. S1 TEM images of the synthesized nanostructure

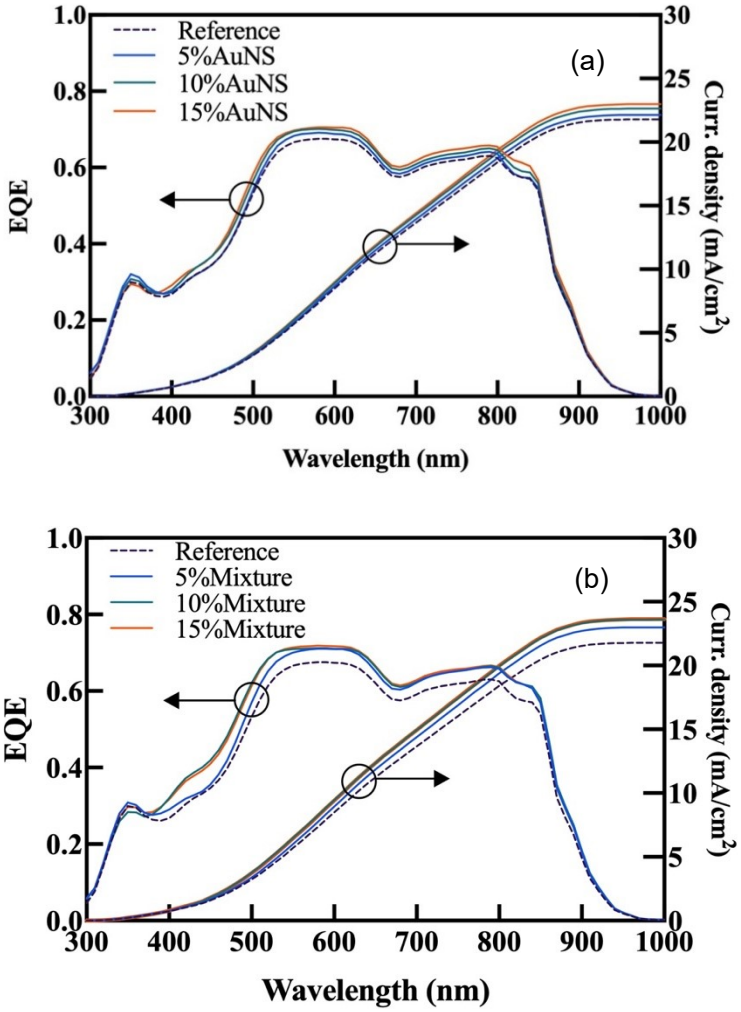

Fig. S2 EQE spectra of OSCs and EQE-integrated J_{SC} incorporating (a) AuNSs and (b) hybrid AuNSs/AuNPs at different volume ratios.

Table S1. Measured and EQE-integrated J_{SC} values of OSCs with AuNSs.

Device	J_{SC} (mA/cm^2) (measured)	J_{SC} (mA/cm^2) (calculated)	Relative deviation (%)
Reference	24.94	21.79	-12.6
5% AuNSs	25.13	22.15	-11.9
10% AuNSs	25.24	22.65	-10.3
15% AuNSs	25.36	22.99	-9.3

Table S2. Measured and EQE-integrated J_{SC} values of OSCs with hybrid AuNSs/AuNPs

Device	J_{SC} (mA/cm^2) (measured)	J_{SC} (mA/cm^2) (calculated)	Relative deviation (%)
5% Mixture	24.94	21.79	-12.6
10% Mixture	25.42	23.00	-9.5
15% Mixture	25.51	23.61	-7.4
15% Mixture	25.64	23.64	-7.8

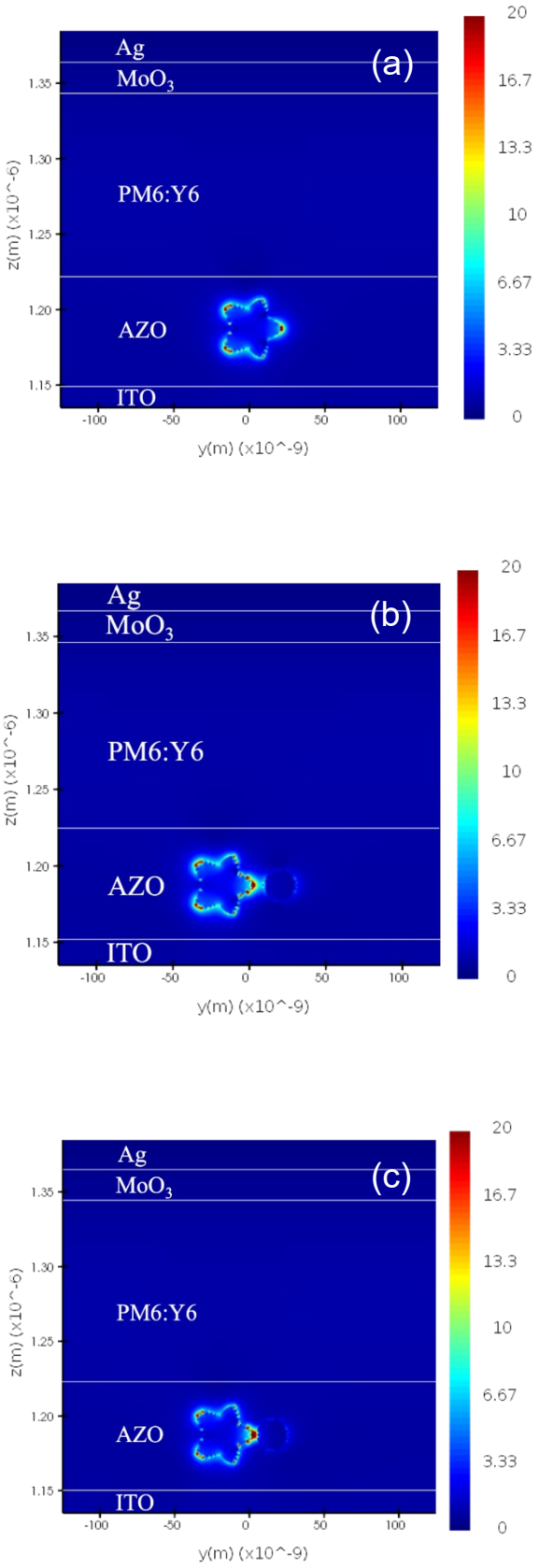

Fig. S3 The electrical field profiles of (a) single AuNS, mixed AuNS/AuNP with gaps of (b) 5 nm and (c) 10 nm in AZO under wavelength of 698 nm (Color scale maximum value 20).