Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.

Supporting information

Photoluminescence enhancement of carbon dots induced by hybrids of photonic crystal and gold-silver alloy nanoparticles

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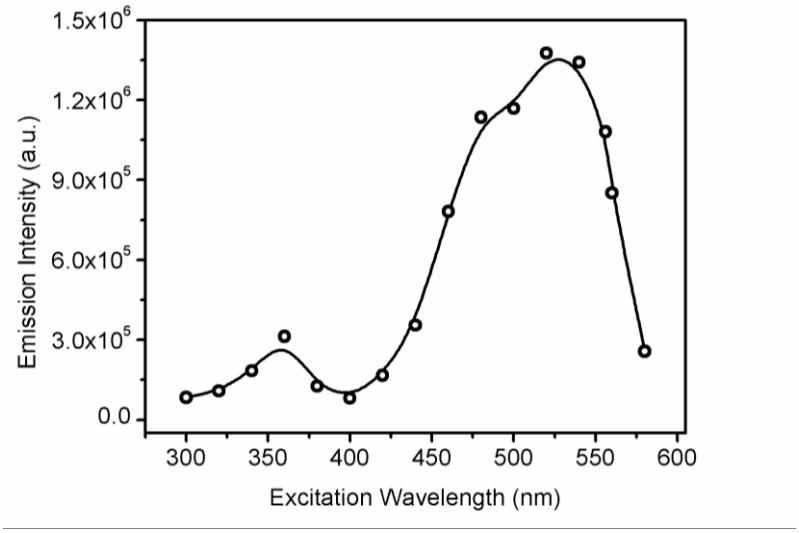

Fig. S1 The emission Intensity dependents excitation wavelength.

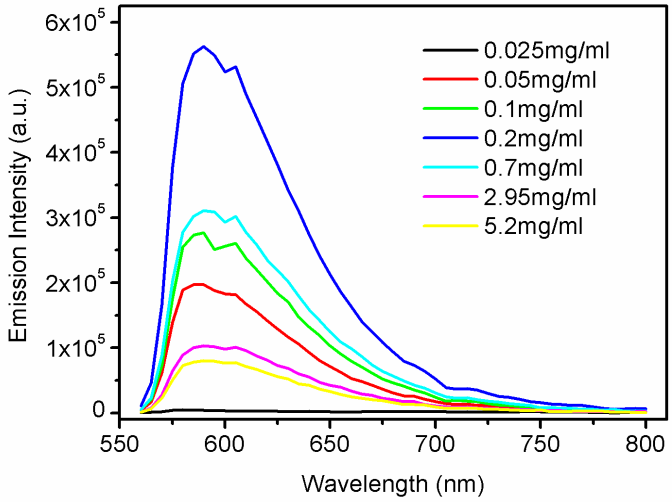

Fig. S2 The emission intensity of OCDs films with different OCD NPs.

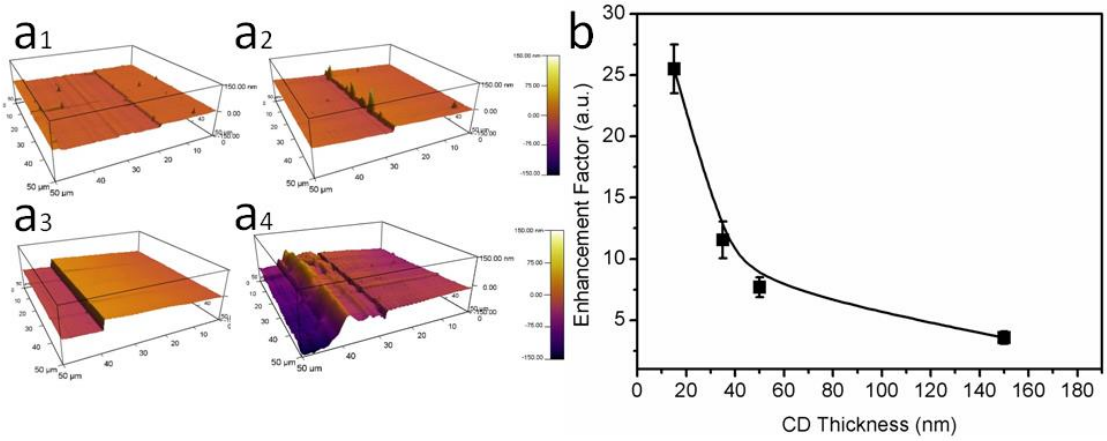

Fig. S3(a) AFM of OCD films with different PVP concentration of a1) 0.002 g/ml, a2) 0.005 g/ml,

a3) 0.01 g/ml and a4) 0.02 g/ml on the glasses. (b) Enhancement factor versus thickness OCD films under the PMMA OPCs and glasses.

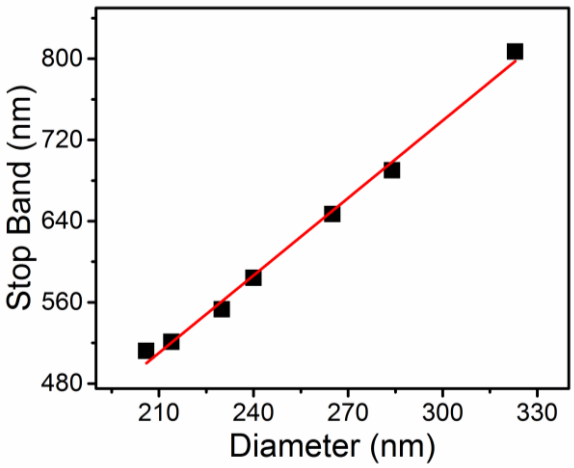

Fig. S4 The stop band of OPCs versus diameter of PMMA spheres.

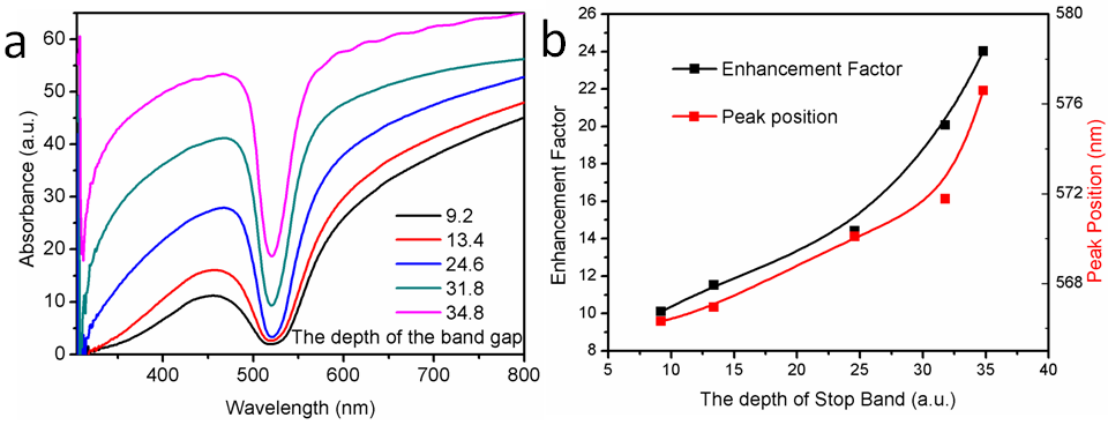

Fig. S5(a). The absorption of OPCs films with different depth of band gap. (b). The enhancement factor and peak position versus the stop band's depth of OPCs films.

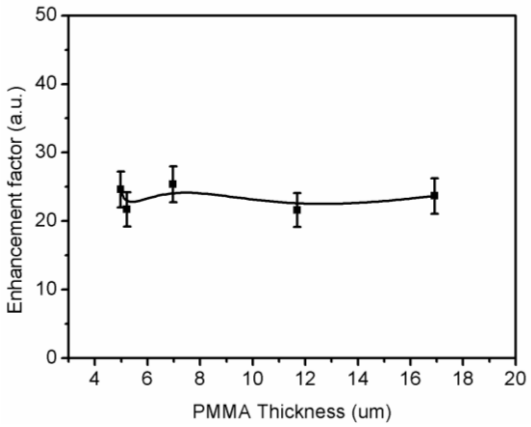

Fig. S6 The enhancement factor of OCD NPs/ OPCs films versus the PMMA OPCs thickness.

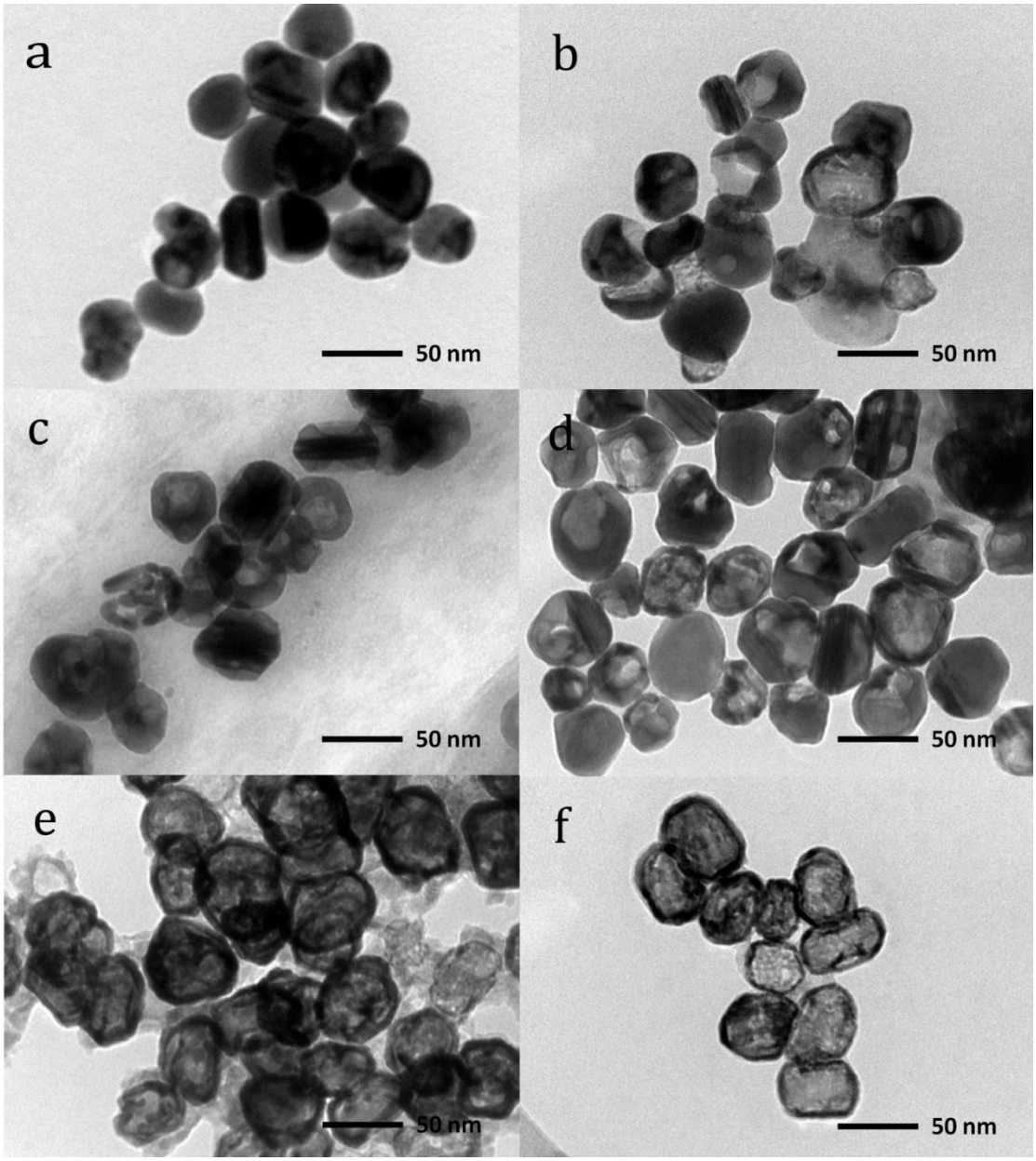

Fig. S7(a-f). TEM images of Au-Ag NPs with different Au contents. (a) 0, (b) 11.55%, (c) 17.23%, (d) 34.76%, (e) 44.38%, (f) 54.20%.

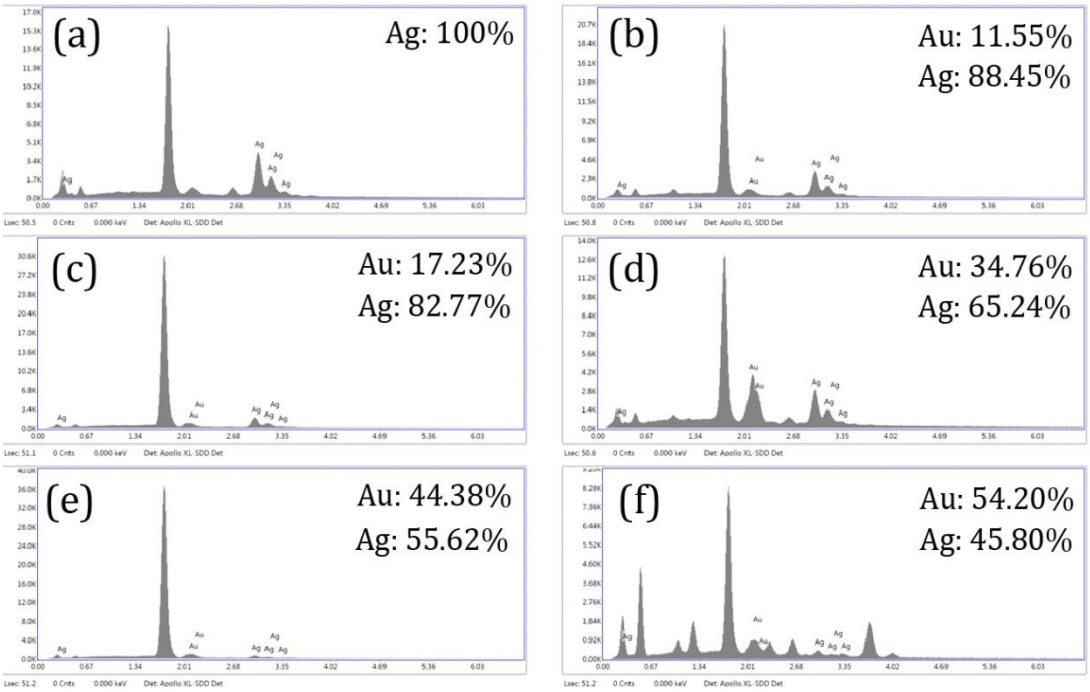

Fig. S8 The EDAX of different AgNPs and Au-AgNPs, and their atomic content of Au and Ag elements.

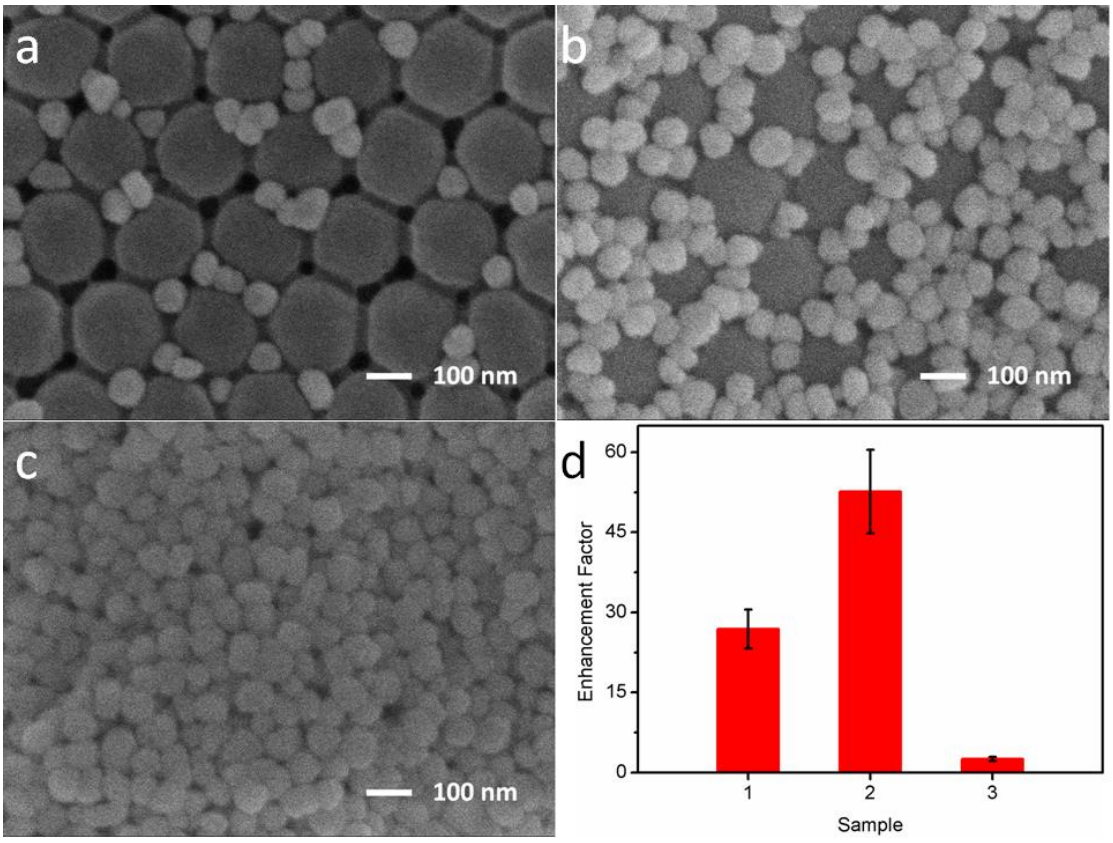

Fig. S9(a-c) SEM images of Au-Ag NPs/OPCs films with different amount of Au-Ag NPs. (a) sample 1, (b) sample 2, (c) sample 3. (d) The enhancement factor versus the amount of Au-Ag NPs.

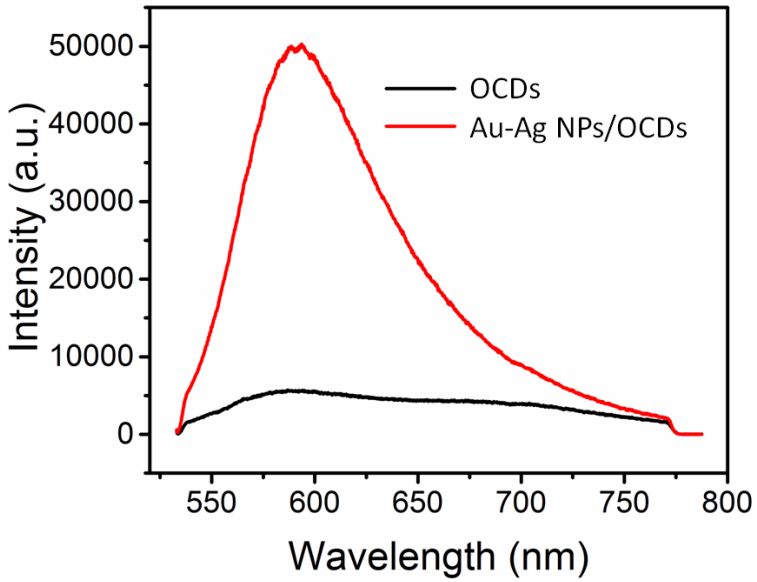

Fig. S10 The comparison of fluorescence spectra about OCDs and Au-Ag NPs/OCDs.

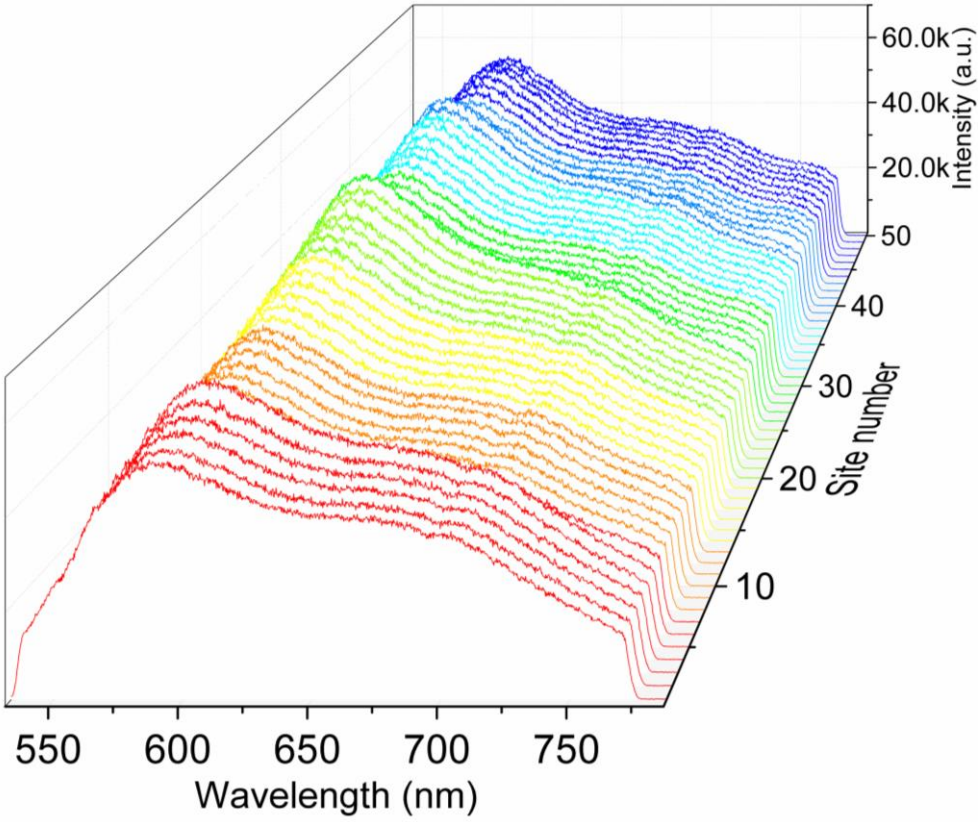

Fig. S11 50 randomly selected fluorescence spectra of OPCs/Au-Ag NPs/OCDs films.

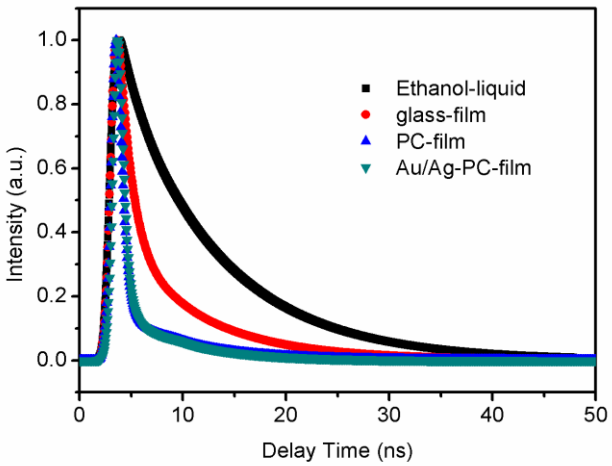

Fig. S12 The decay time of OCDs, OCDs/ glass, OCDs/ OPCs and OCDs/ Au-Ag NPs/ OPCs composite films.

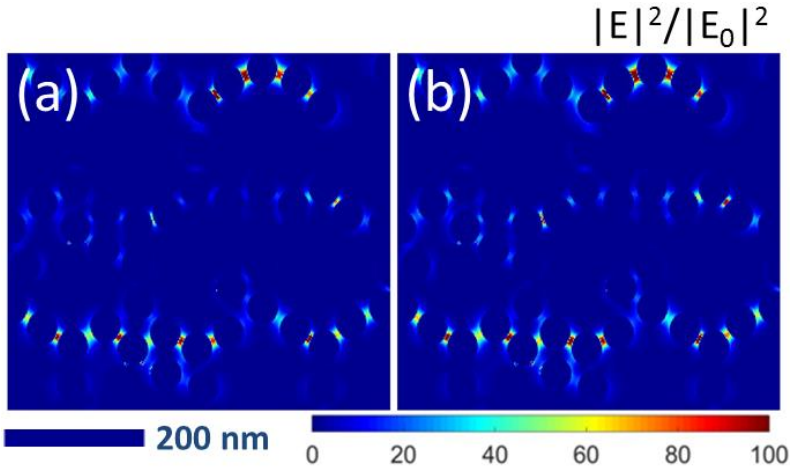

Fig. S13 Simulated local electromagnetic field distribution of AgNPs/PMMA OPCs with same sources center (577 nm) and different wavelength range (a) 2 nm; (b) 100 nm.

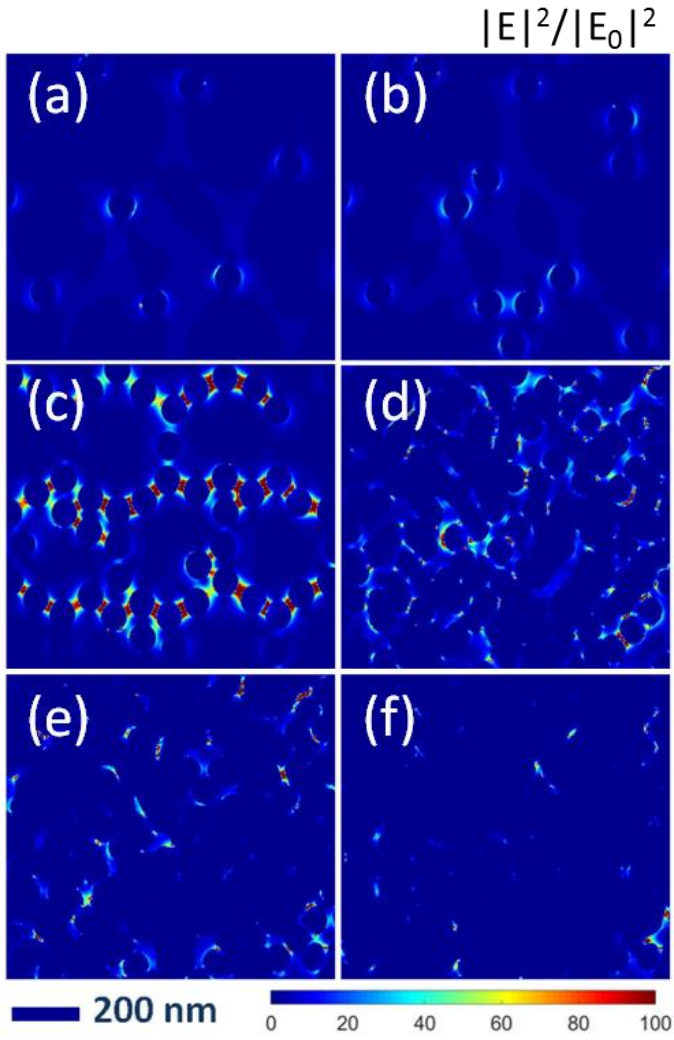

Fig. S14 Simulated local electromagnetic field distribution of Ag NPs/PMMA OPCs varying the amount of metal nanoparticles. The density distribution is (a) 17, (b)30, (c)90, (d) 320, (e) 480, (f) $8*10^2$ particles per 1um∗1um, respectively.