Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics
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Supporting Information

Organic Solar Cells with Plasmonic Layers Formed by Laser Nanofabrication

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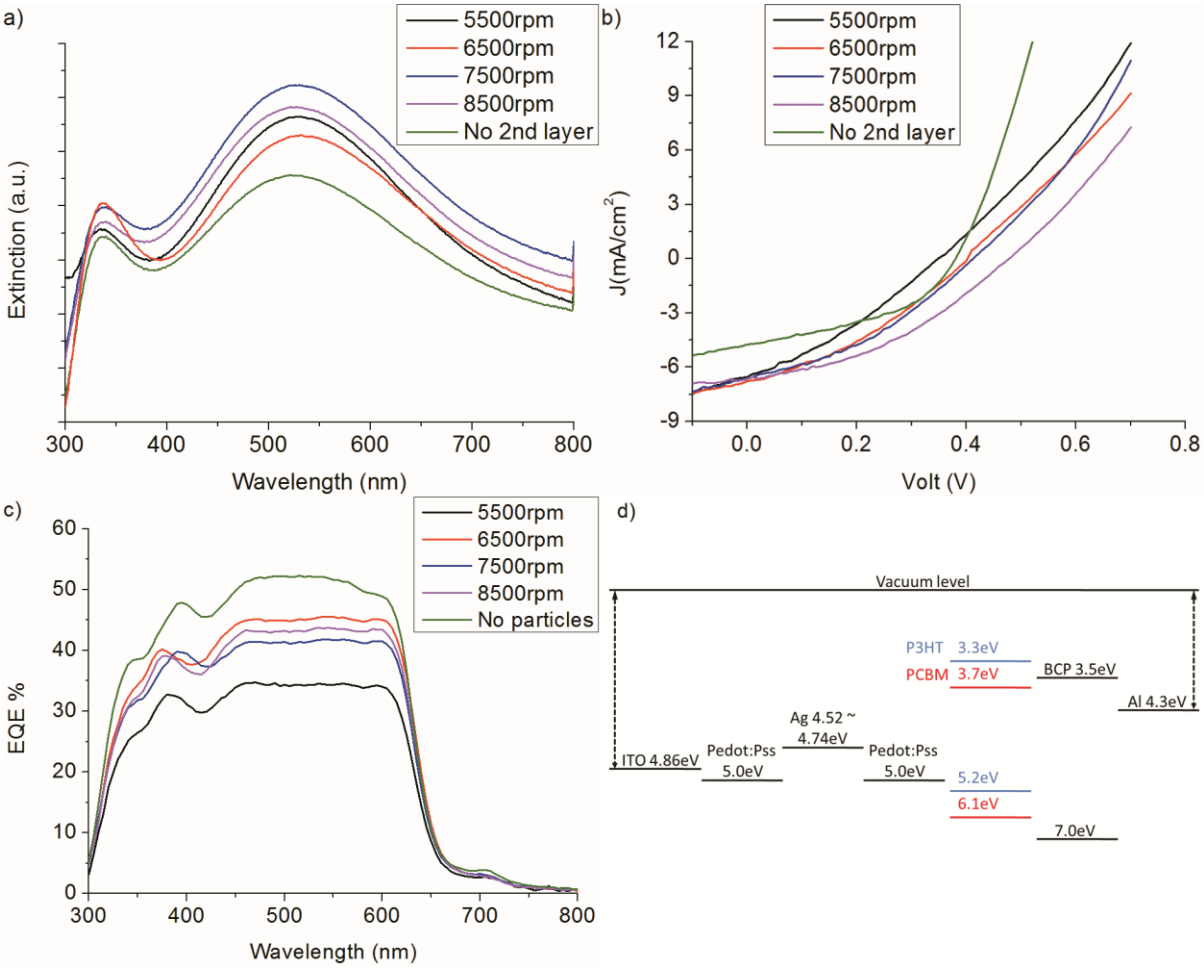

Figure S1 a) real measurements of extinction for all substrates with Ag nanoparticles, before the active layer deposition. b) J-V Curves under AM 1.5G at 1000W/m^2, c) EQE characterization for all cells with different PEDOT:PSS layer thicknesses. Colours are representing results for substrates with the same spin speed for coating the second PEDOT:PSS layer at different

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thicknesses, black for 5500rpm, red for 6500rpm, blue for 7500rpm, pink for 8500rpm and green for no second PEDOT:PSS layer (reference), and d) band alignment diagram for cells with silver nanoparticles in the front contact.

The lower efficiencies recorded for the Ag nanoparticles substrates can be attributed at two factors. First, the mismatched Fermi level of Ag 4.52-4.74eV compared to PEDOT:PSS 5.0eV and the HOMO level of P3HT 5.2eV which can cause a charge trapping area due to energy levels' misalignment (Figure S1 d). Secondly, the strong absorption of photons between wavelengths 400nm and 600nm (Figure S1 a) in the Ag particles results to reduced photons' flux in the active layer. The characteristic peak near 350nm observed on all absorption curves (Figure S1 a) it can be attributed to PEDOT:PSS.