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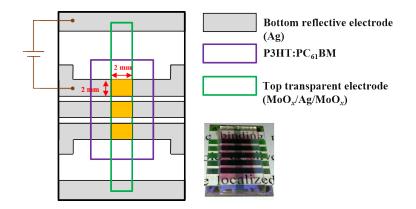
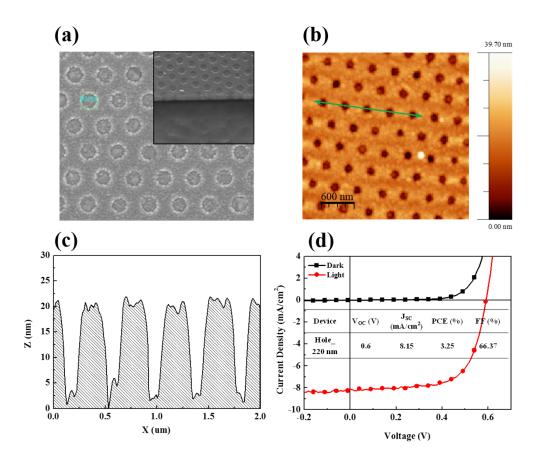


Fig. S1 Schematic diagram of device pattern (The inset shows a photograph of a fabricated device with the nanostructured rear electrode which clearly reveals light scattering/deflection). The gray finger gird denotes the bottom reflective electrode. The purple, green and orange region indicates the P3HT:PC<sub>61</sub>BM layer, the top transparent contact and the active area ( $2 \times 2 \text{ mm}^2$ ), respectively.



**Fig. S2** (a) Top-view and 52° tilted SEM images and (b) AFM topography image and (c) the height profile, along with the indicated green line in Fig. S2(b) of rear Ag electrode with 220 nm wide and 20 nm deep holes. (d) *J-V* characteristics of OPVs with the corresponding rear electrode.