

Electronic Supplementary Information

Enhanced photon harvesting by embedding cost-effective polystyrene microspheres as light scatterers in the perovskite photodetector

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Figure S1 Energy flow diagram for the device without PS microspheres.

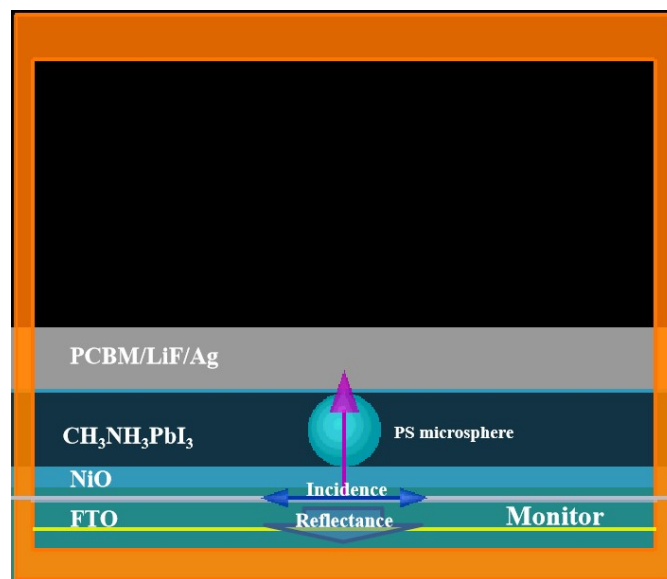


Figure S2 The schematic diagram for simulation experiment in this work.

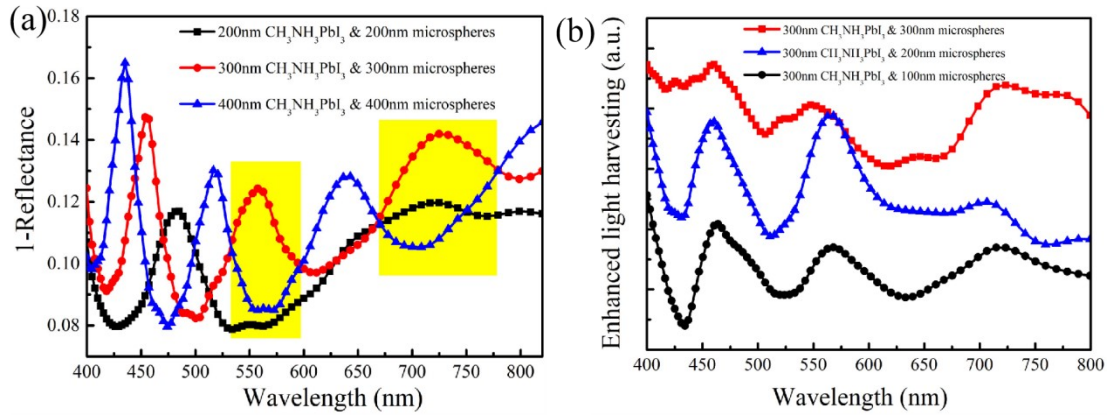


Figure S3 The calculation results of (a) 1-reflectance and (b) enhanced light harvesting with embedded different sizes of microspheres in the $\text{CH}_3\text{NH}_3\text{PbI}_3$ perovskite film.

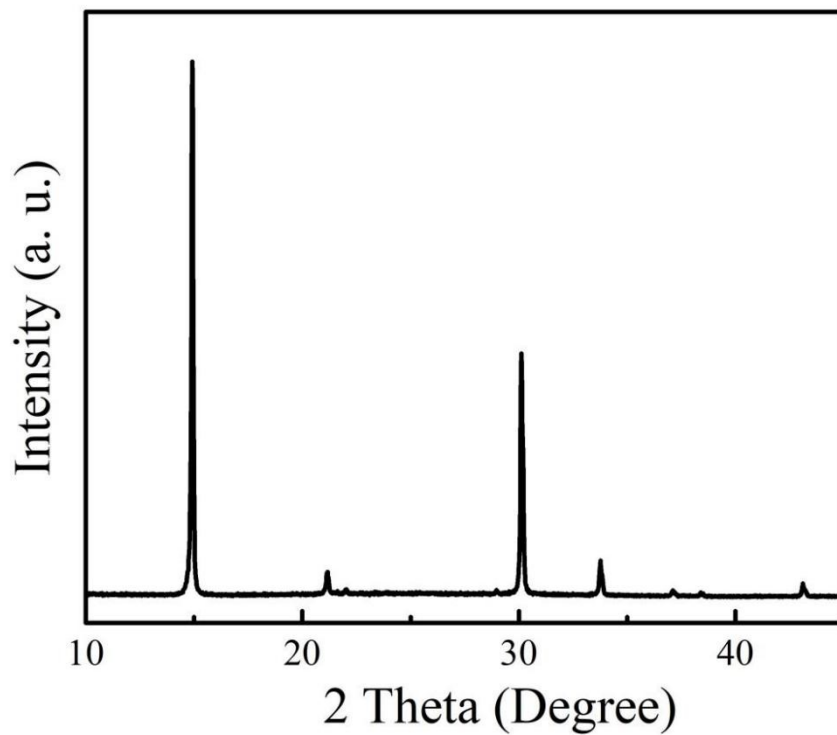


Figure S4 The XRD pattern of the $\text{CH}_3\text{NH}_3\text{PbI}_3$ perovskite film in this work.

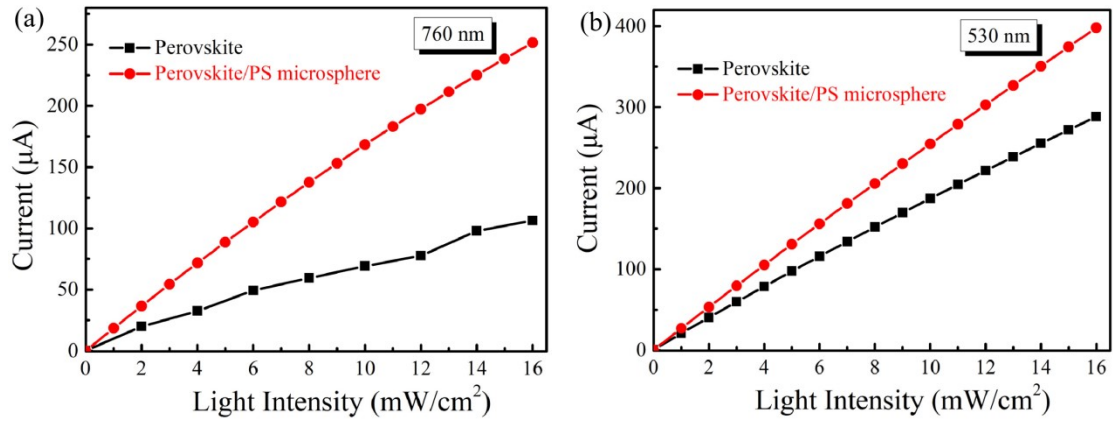


Figure S5 Photocurrent of devices with and without PS microspheres under (a) 760 nm and (b) 530 nm light illumination (form 0 to 16 mW/cm^2).

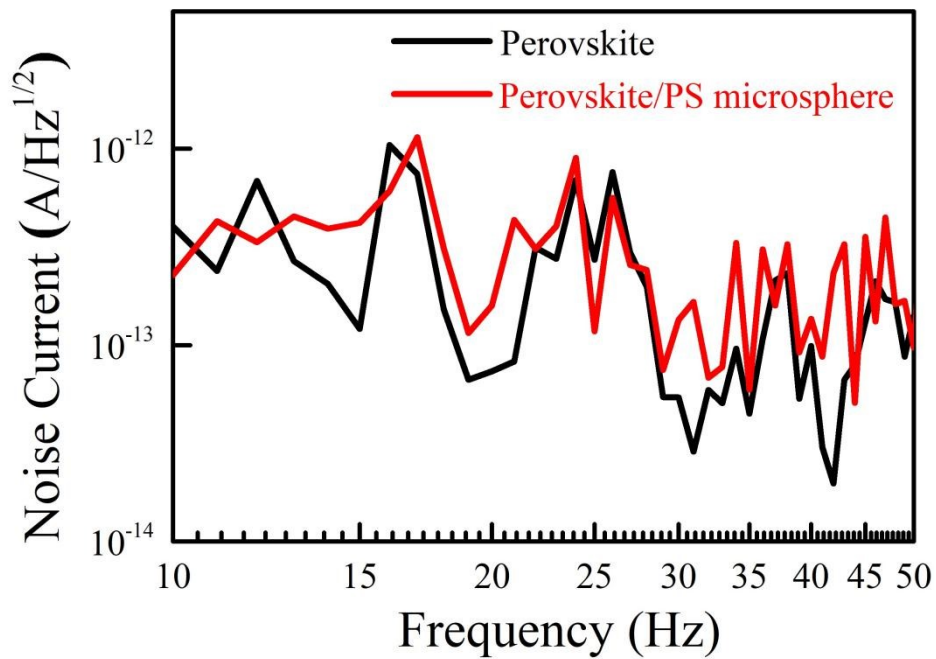


Figure S6 The frequency dependence of the noise current for the perovskite devices.

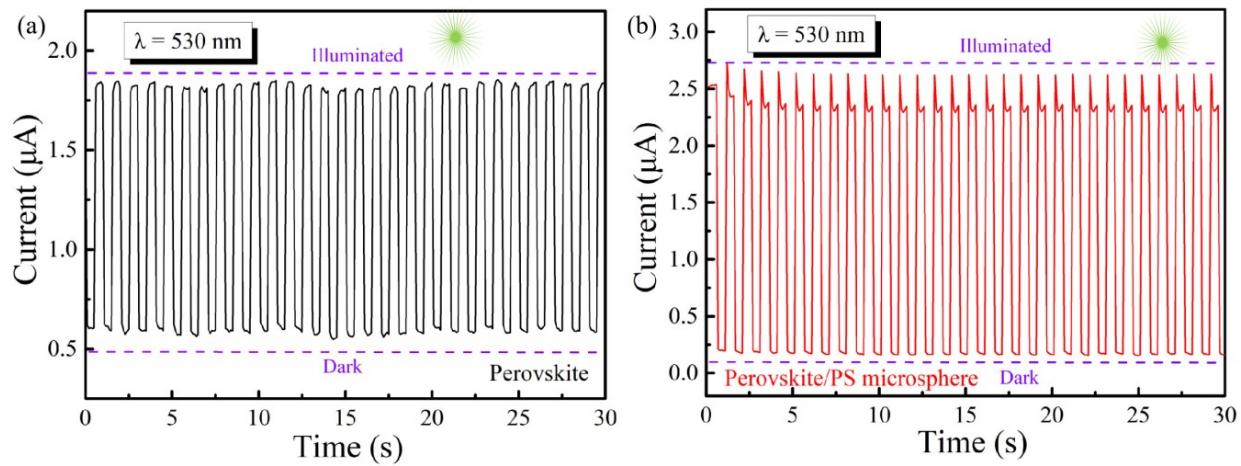


Figure S7 Time-dependent response of PDs irradiated at 530 nm under light power intensity of 0.1 mW/cm².