## Enhancing the performance of all vapor-deposited electron-conductor-free CsPbBr<sub>3</sub> photodetectors via interface engineering for their applications in image sensing

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Fig. S1. The water contact angle measurement of the as-evaporated CuPc film.



Fig. S2. The large-scope SEM image of the CsPbBr<sub>3</sub> films.



Fig. S3. The Mott-Schottky plots of the CuPc-free and 8 nm CuPc-based PDs.



Fig. S4. (a) The EQE and (b) corresponding responsivity of the CuPc-free and 8 nm CuPc-based PDs.



Fig. S5. XPS survey of the evaporated MoO<sub>3</sub> film.



Fig. S6. The Mott-Schottky plots of the CuPc-free and 8 nm CuPc-based PDs.



**Fig. S7.** (a) The EQE and (b) corresponding responsivity of the MoO<sub>3</sub>-modified PD.



Fig. S8. PCE variations of the MoO<sub>3</sub>-modified PD under persistent thermal attacks at 60 °C.