

Supporting Information

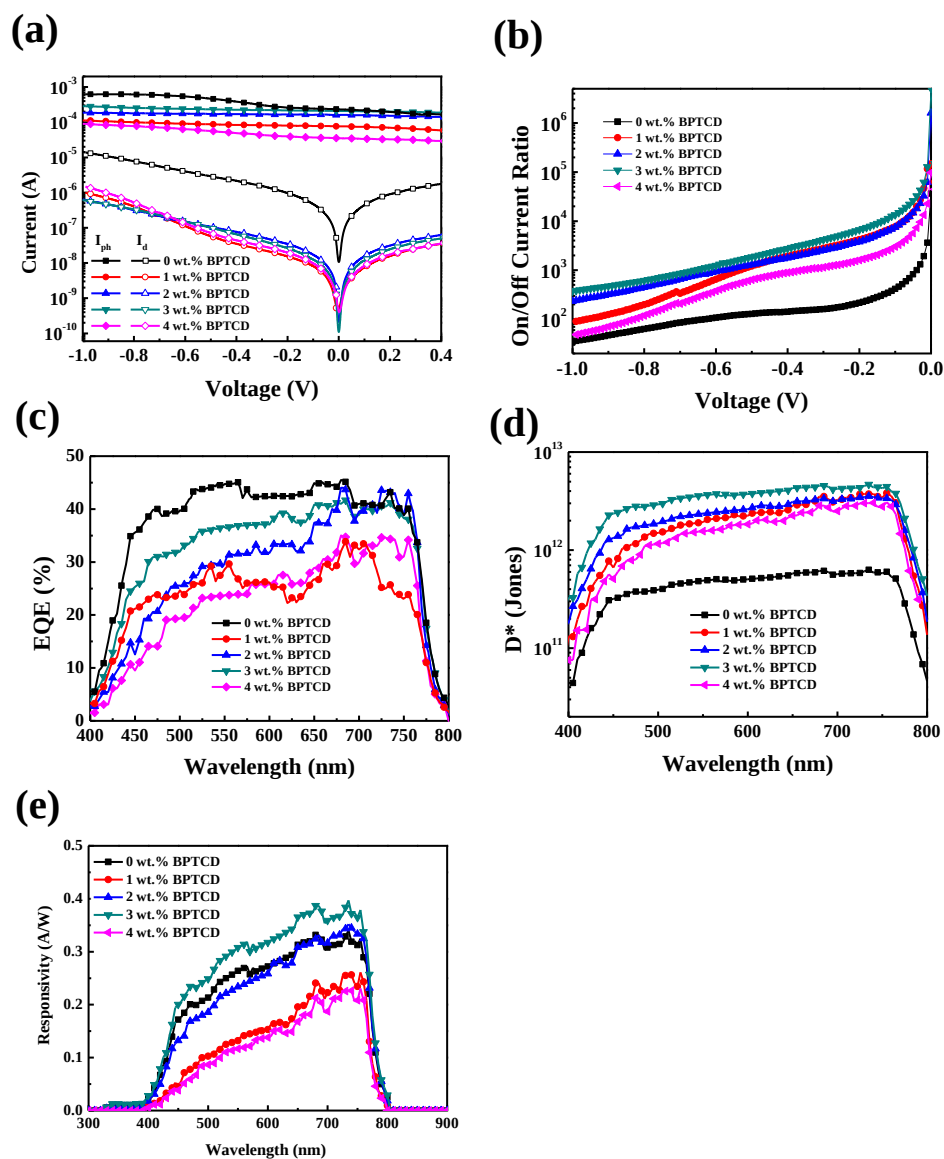


Figure S1. (a) Semilog J-V characteristics, (b) On/off current ratio (c) Measured EQE spectra and (d) Calculated D^* values at -0.1V of PePDs with various concentrations of BPTCD additive (e) Calculated responsivity values -0.1V of PePDs with various concentrations of BPTCD additive.

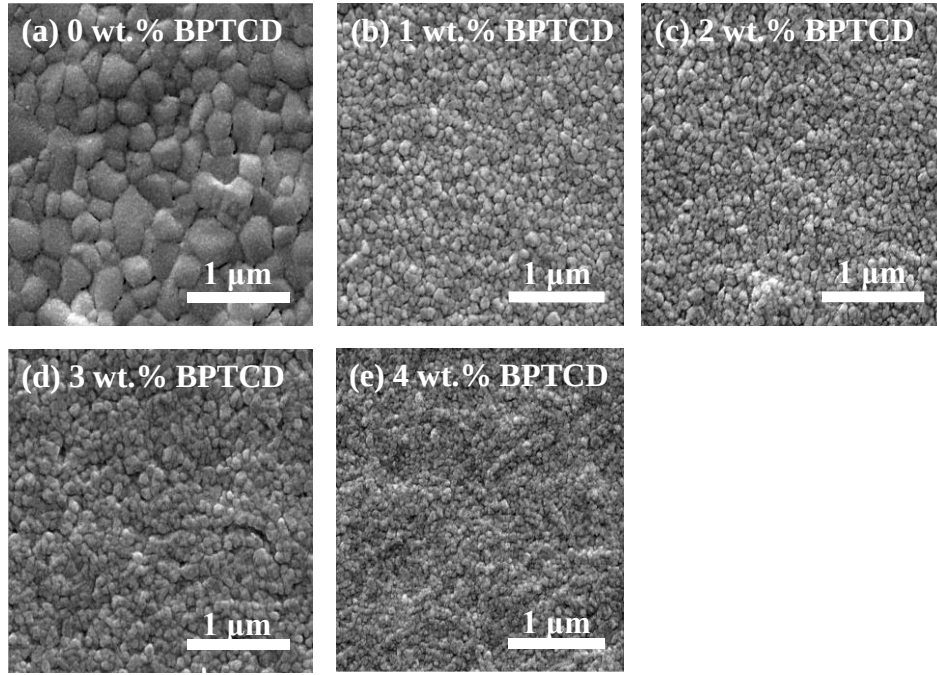


Figure S2. SEM images of perovskite film with different concentrations of BPTCD additive.

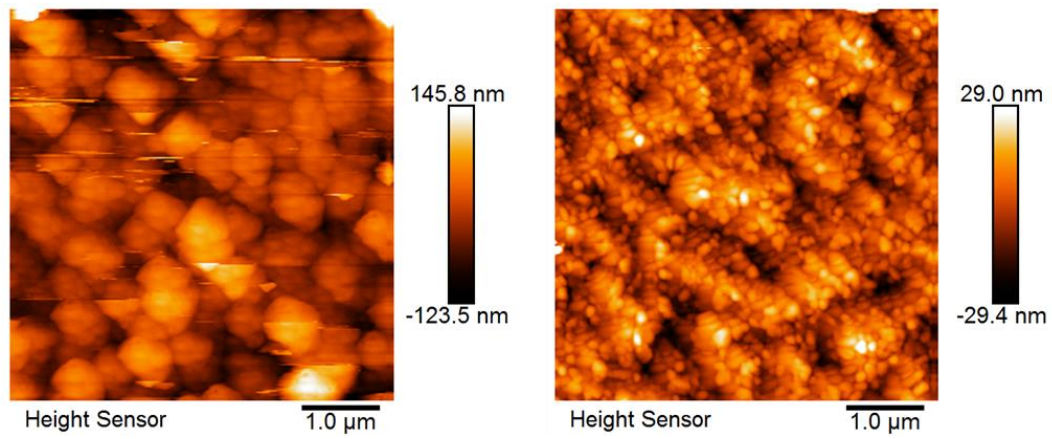


Figure S3. AFM measurement of perovskite films with 3% BPTCD and without BPTCD.