Supporting information

High-Efficiency Red Perovskite Light-emitting Diodes Based on Collaborative Optimization of Emission Layer and Transport Layers

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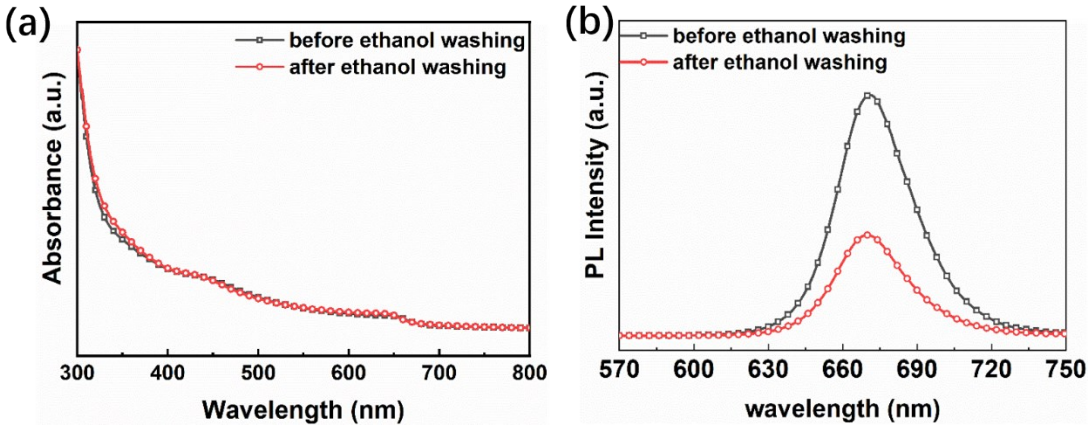

Fig. S1. Comparison of (a) the absorption and (b) PL spectra (500 nm excitation) of PEOX-35% modified $CsPbI_{2.4}Br_{0.6}$ perovskite before and after ethanol washing.

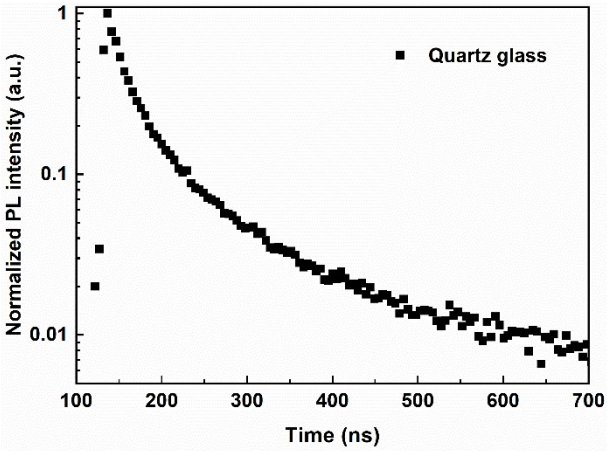

Fig. S2. TRPL spectra of perovskite film on quartz glass.

Table S1. Fitting data of TRPL spectra of perovskite film on quartz glass.

	τ_1 [ns]/f_1 [%]	τ_2 [ns]/f_2 [%]	τ_3 [ns]/f_3 [%]	χ^2	$\tau_{average}$ [ns]
On quartz glass	25.8/31.6	117/43.3	867.2/25.1	1.197	131.362

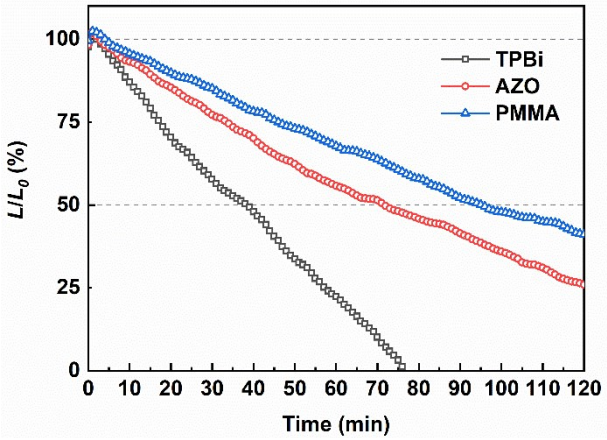

Fig. S3. Comparison of the operation stability measurement of PeLEDs with TPBi ETL, AZO ETL and AZO ETL/PMMA insertion layer, respectively (measured at the initial luminance of 100 cd m^{-2} without encapsulation in glovebox).