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Supporting Information

Efficient All-inorganic Perovskite Light-emitting Diodes Enabled by Manipulating Crystal Orientation

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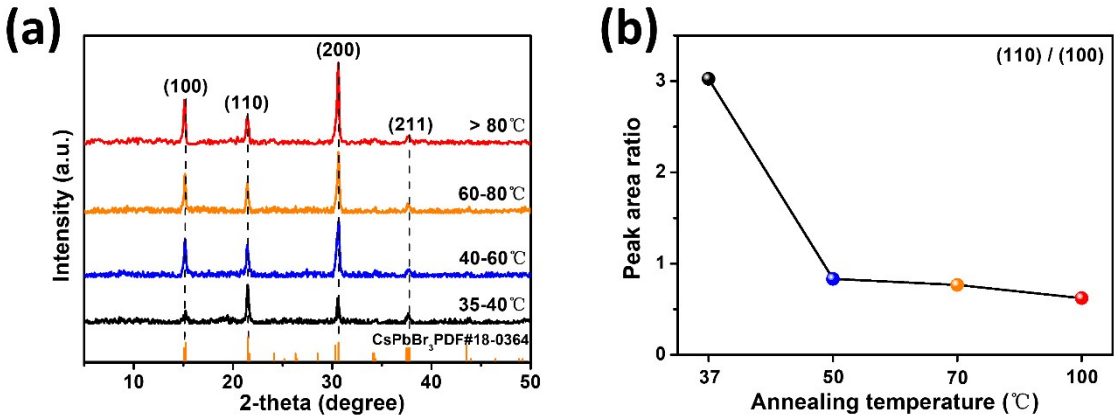

Figure S1. a) The XRD patterns, b) peak area ratio of (110)/(100) plane of perovskite films fabricated at different annealing temperatures.

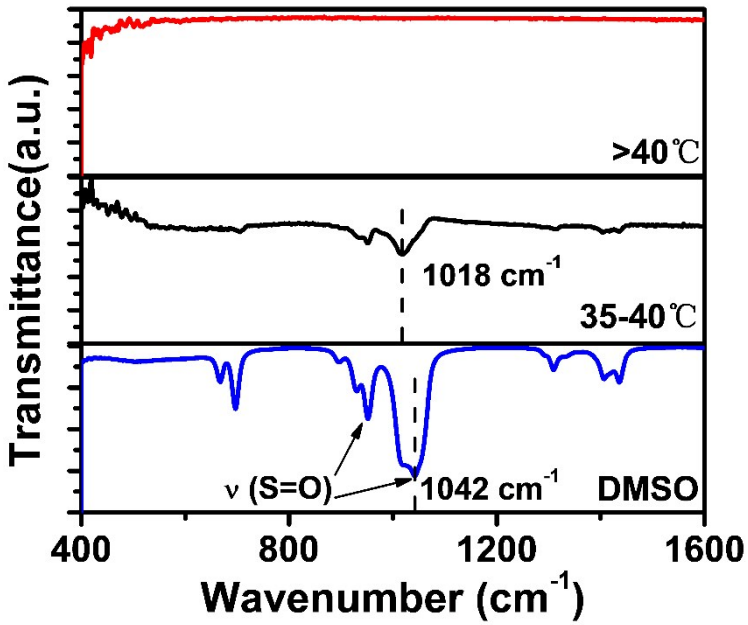

Figure S2. The FTIR patterns of pure DMSO and perovskite films fabricated at different annealing temperatures.

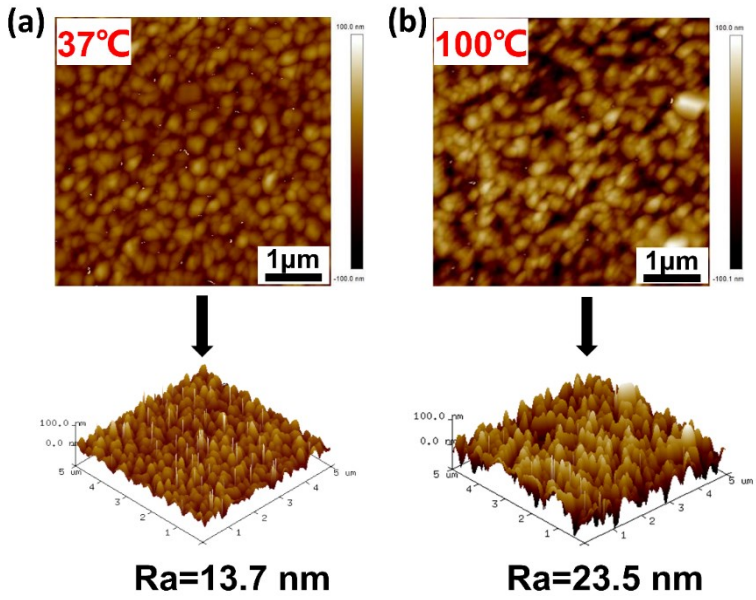

Figure S3. The AFM images and root-mean-square roughness (Ra) of perovskite films at the annealing temperature of a) 37℃ and b) 100℃.

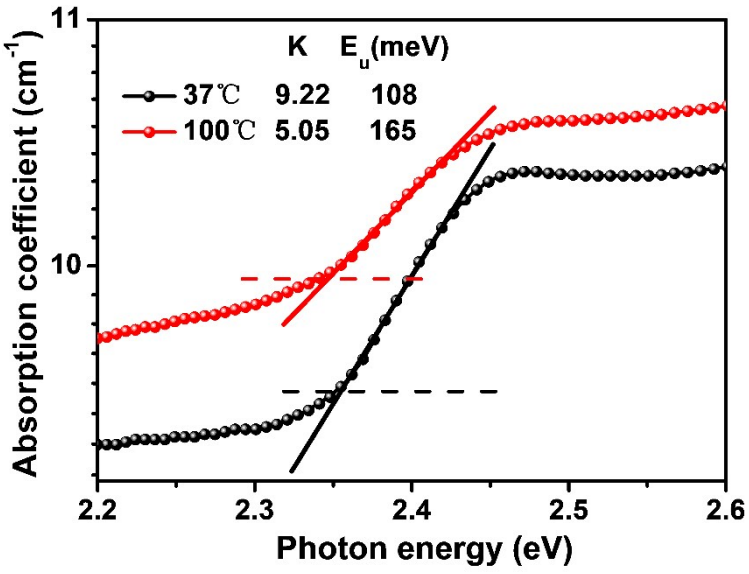

Figure S4. Absorption coefficient as a function of photon energy of the perovskite films with annealing temperatures of 37℃ and 100℃.

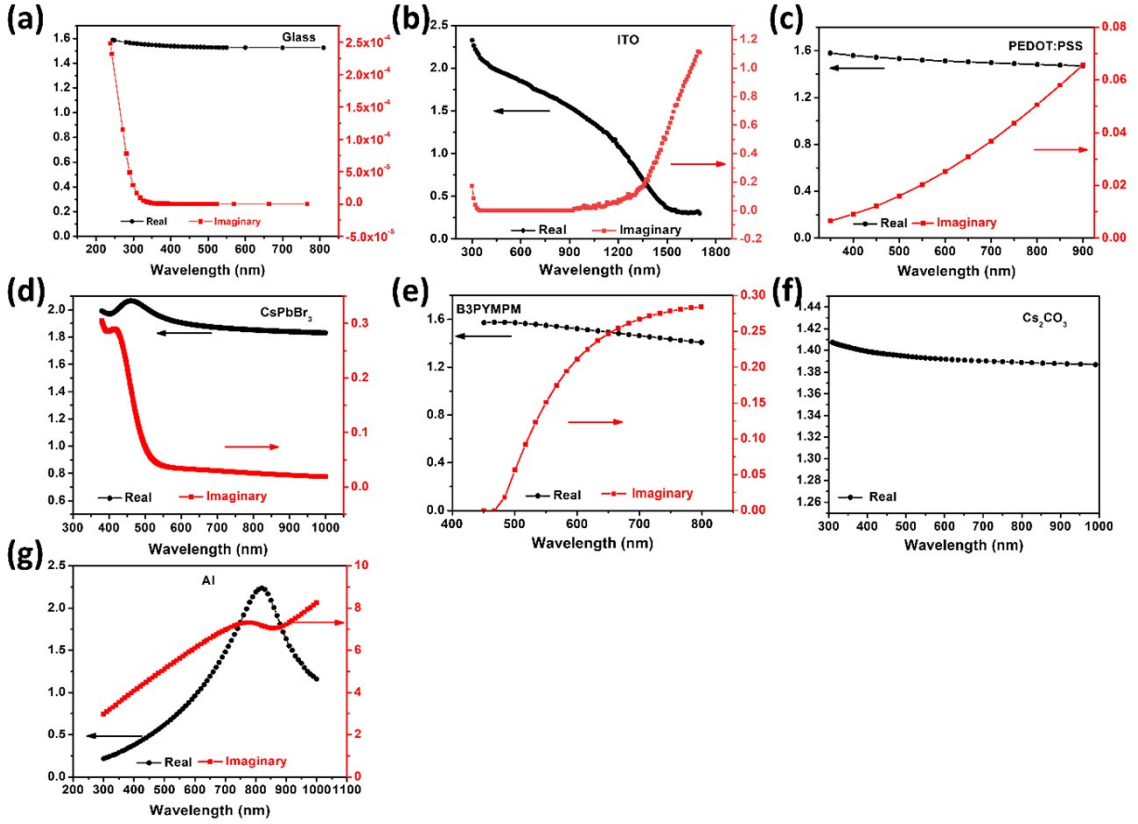

Figure S5. Refractive index of a) Glass, b) ITO, c) PEDOT:PSS, d) $CsPbBr_3$, e) B3PYMPM, f) Cs_2CO_3 and g) Al.

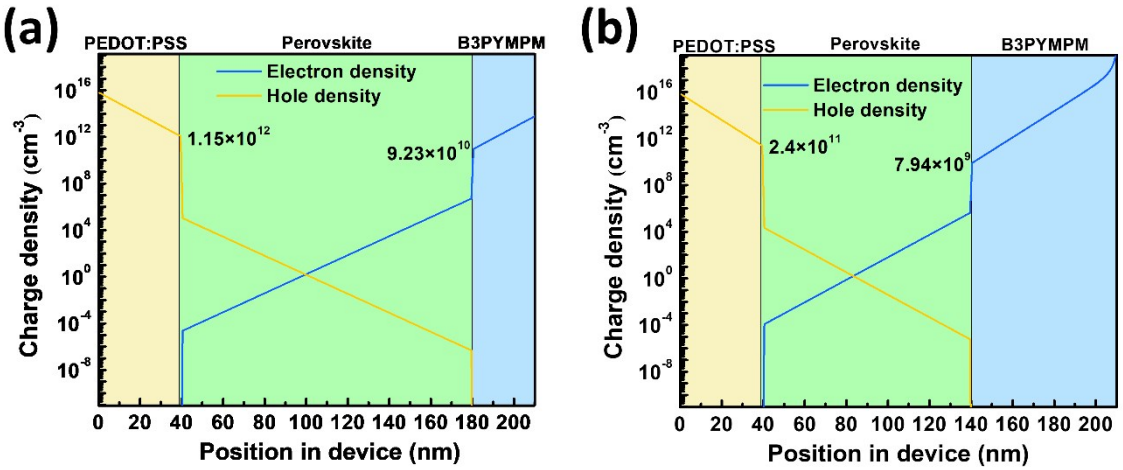

Figure S6. The simulated charge density of PeLEDs of a) 37 °C and b) 100 °C.

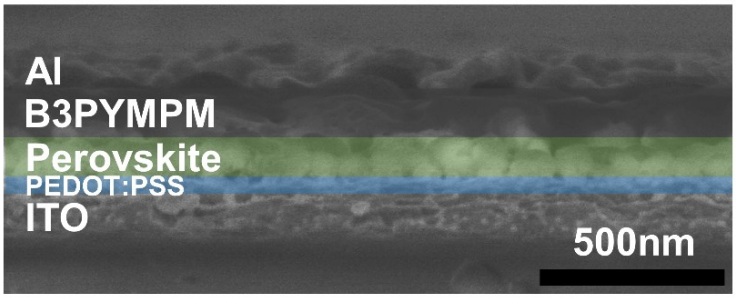

Figure S7. The cross-sectional SEM image of the PeLEDs device.

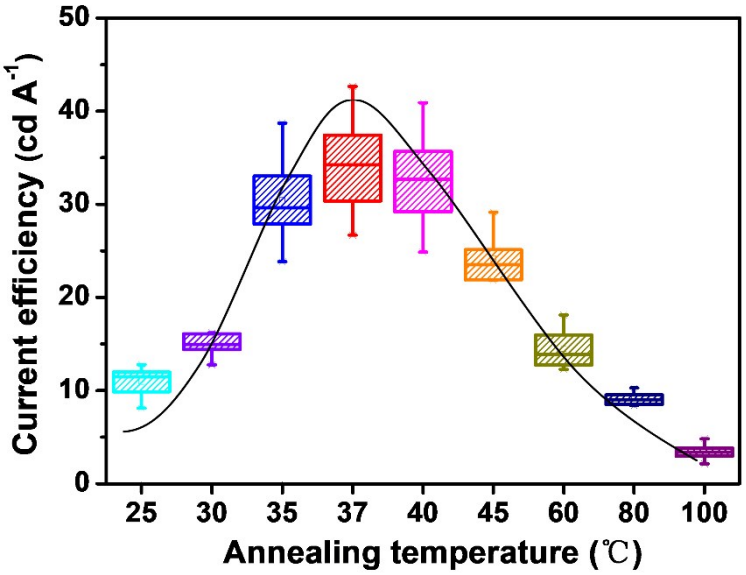

Figure S8. The detailed statistical diagram of CE distribution along with different annealing temperatures.

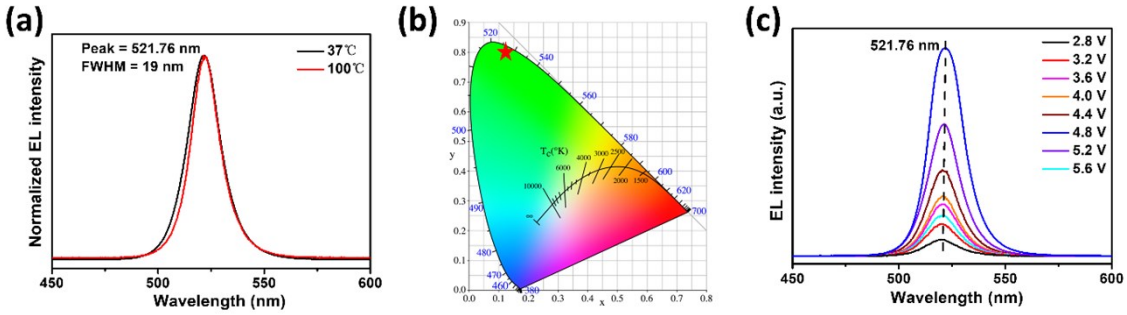

Figure S9. a) Electroluminescence spectra of the PeLEDs devices fabricated at the annealing temperature of 37℃ and 100℃. b) CIE chromatic diagram and c) electroluminescence spectra at various applied voltages of the PeLEDs with the annealing temperature of 37℃.

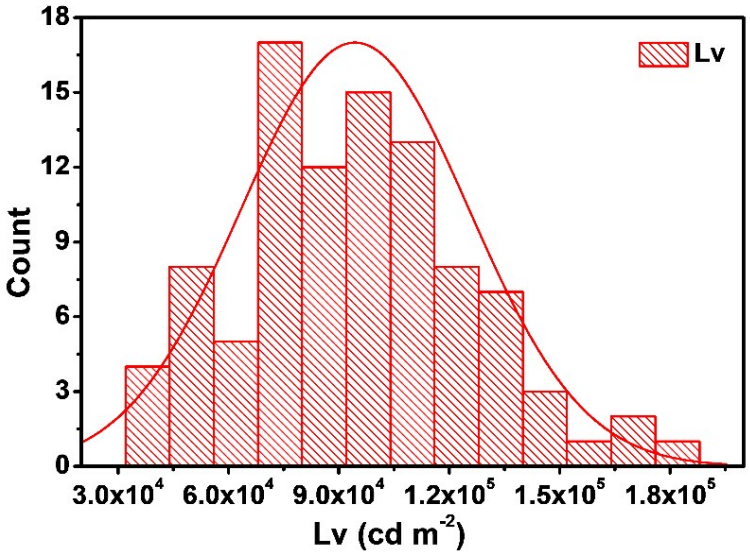

Figure S10. The luminance statistics histogram of 100 PeLEDs devices with the annealing temperature of 37℃.

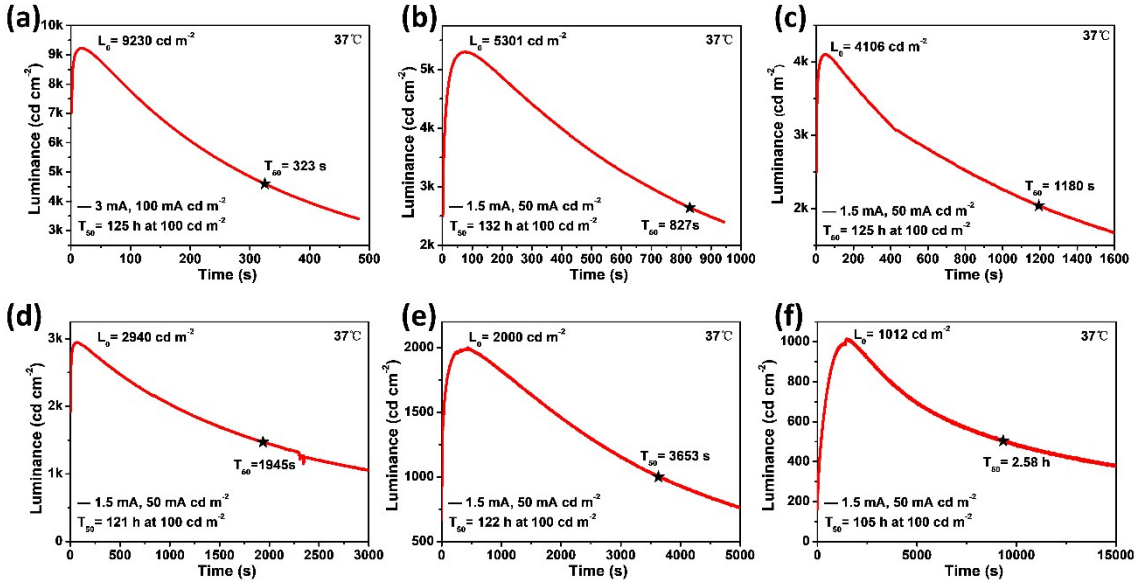

Figure S11. Lifetime measurements with different initial luminance of the PeLEDs of 37℃.

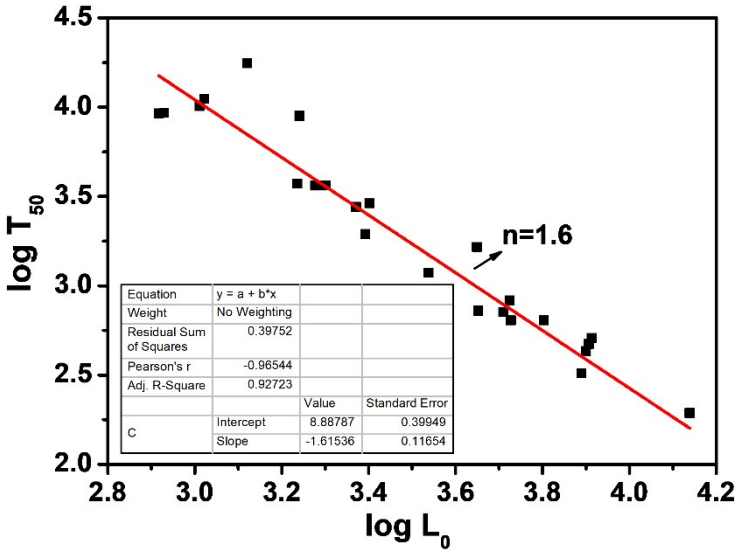

Figure S12. Extrapolation of lifetime from accelerated aging tests, where the acceleration factor (n) was 1.6.