

# Supporting Information: Improved performance of blue perovskite light-emitting diodes with a NaCl doped PEDOT: PSS hole transport layer

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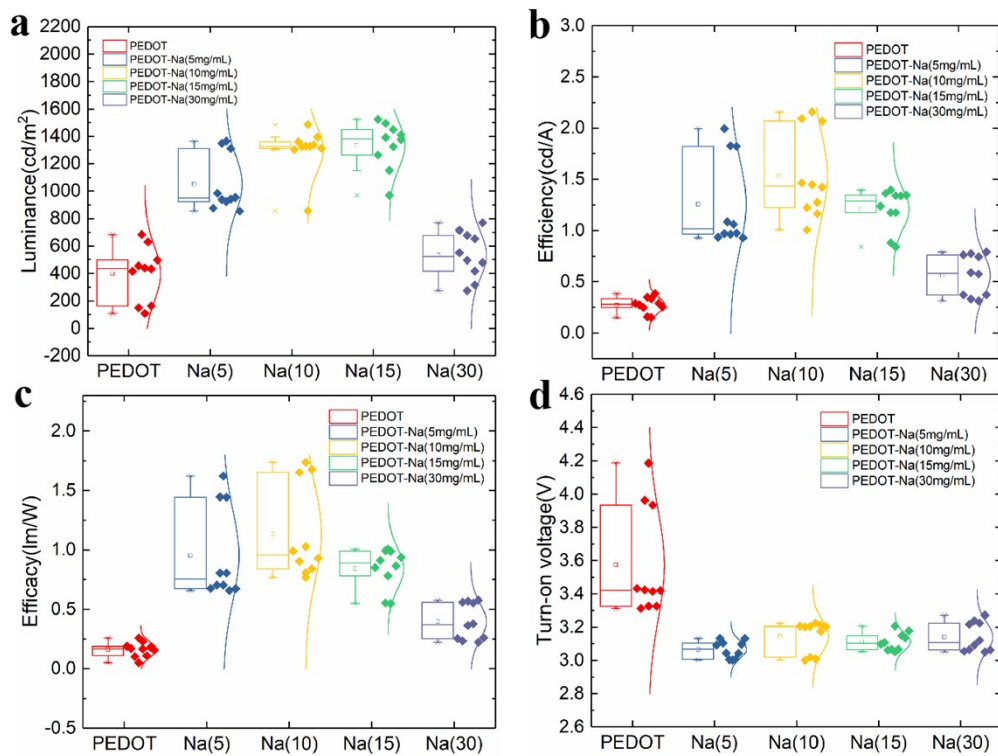
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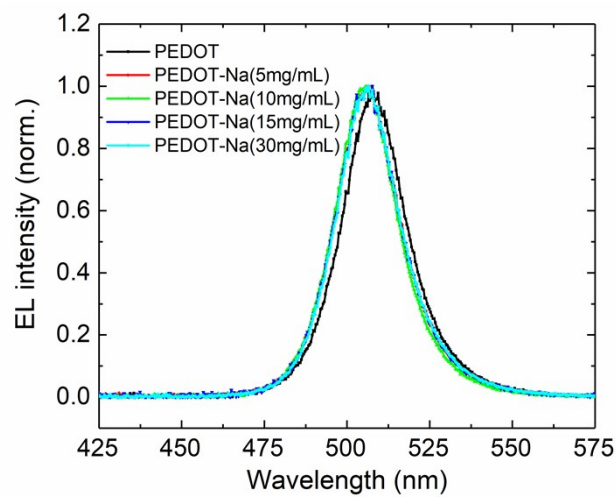
## AUTHOR INFORMATION

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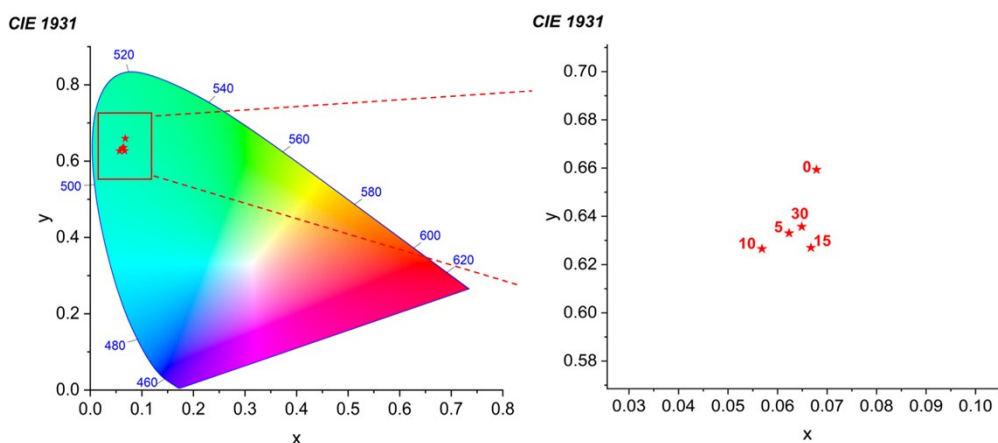
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**Figure S1.** Detailed histograms of the device performance with different concentrations of NaCl doping.



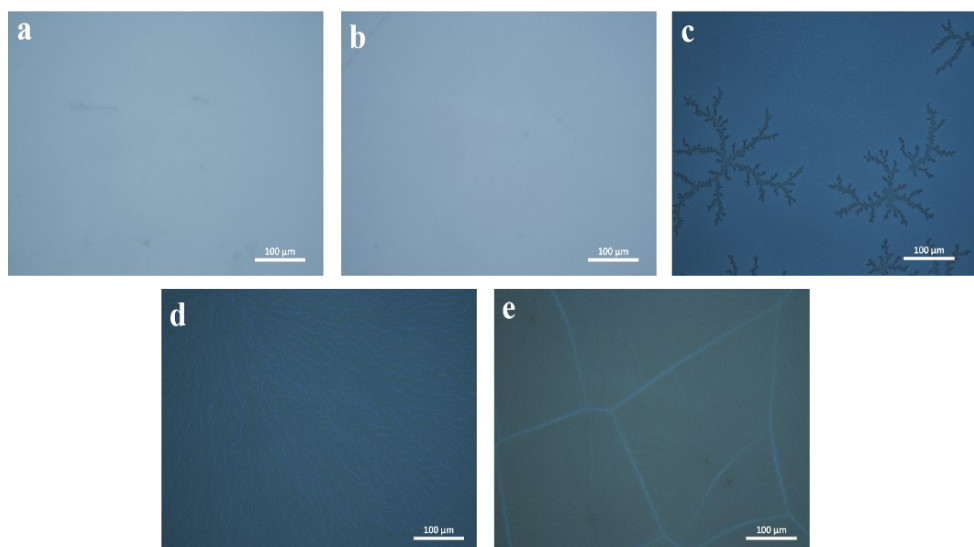
**Figure S2.** Normalized EL spectra of blue PeLEDs with different concentrations of NaCl doping (under the bias of 4V).



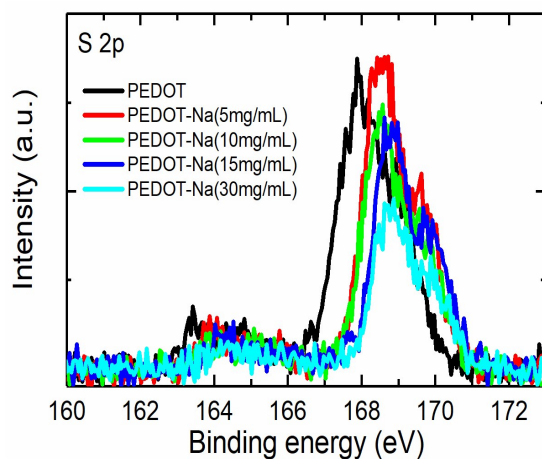
**Figure S3.** CIE coordinates of EL peaks in the manuscript. The labels “0”, “5”, “10”, “15”, and “30” represent the 0, 5, 10, 15, and 30mg/mL NaCl doped PEDOT:PSS, respectively.

**Table S1.** The corresponding numbers of the above CIE coordinates.

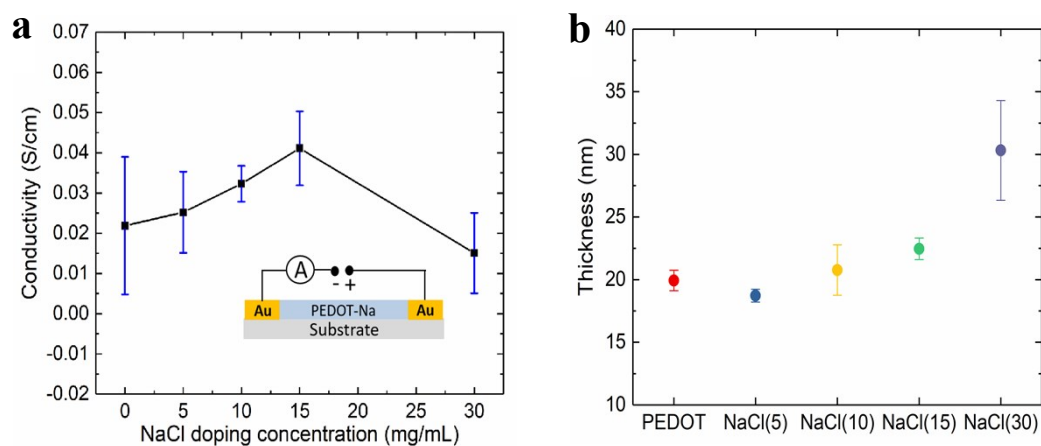
NaCl/mg mL <sup>-1</sup>	0	5	10	15	30
EL	(0.068,0.66)	(0.062,0.63)	(0.057,0.63)	(0.067,0.63)	(0.065,0.64)



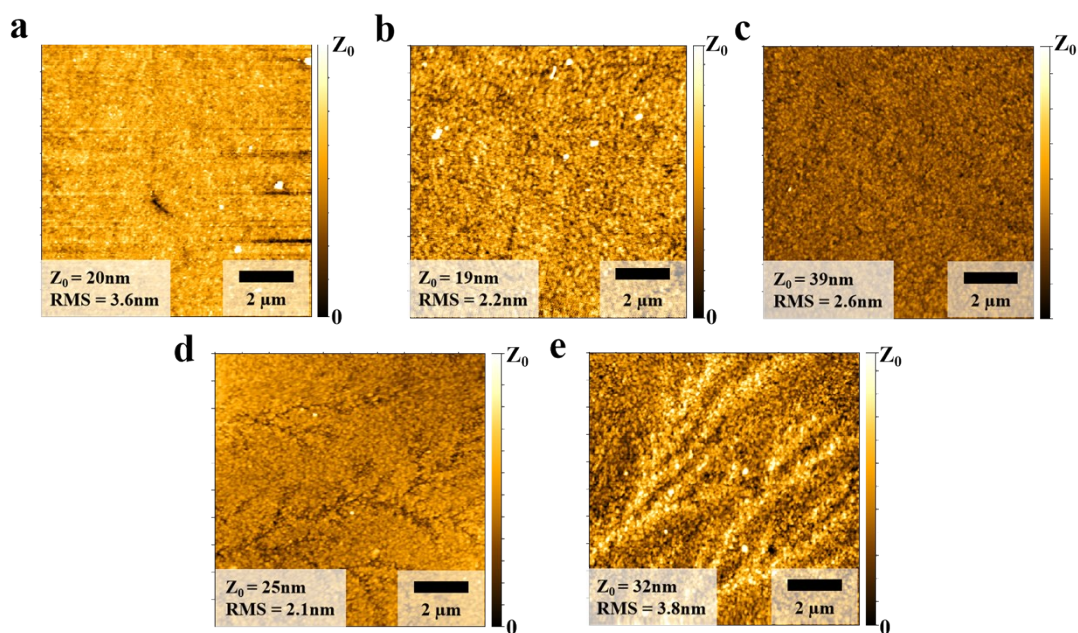
**Figure S4.** The optical microscope images of the PEDOT:PSS films(a), and with NaCl doping of different concentrations(b)5mg/mL, (c)10mg/mL, (d)15mg/mL, (e)30mg/mL.



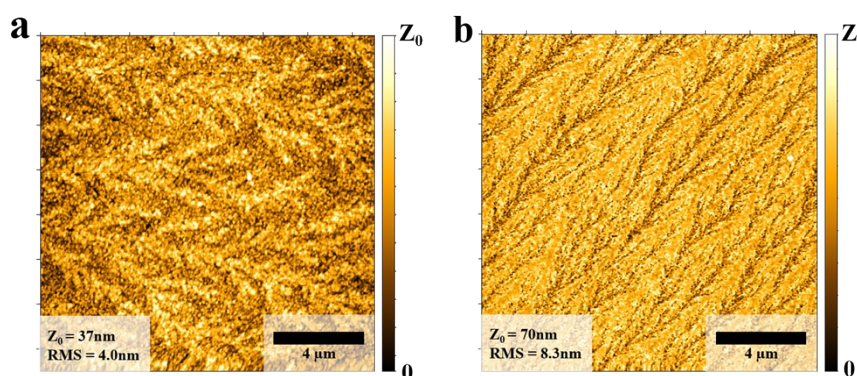
**Figure S5.** XPS spectra of S 2p peaks of the PEDOT:PSS films with different concentrations of NaCl doping.



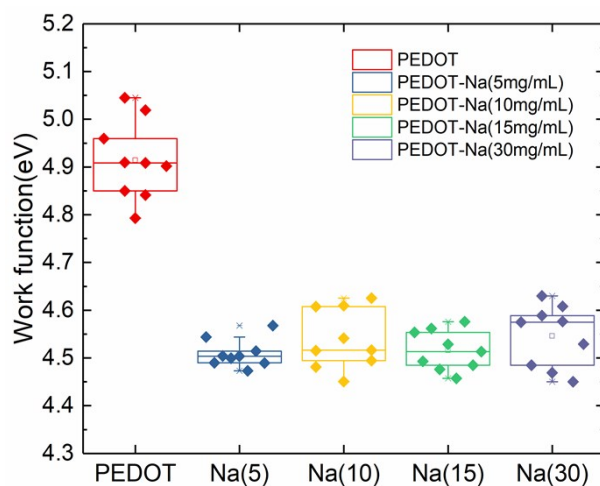
**Figure S6.** (a) Conductivity evolution with the increase of NaCl doping concentration in PEDOT:PSS. (b) Film thicknesses obtained from profilometer measurement, the increased thickness of PEDOT-Na due to precipitated NaCl aggregates on top of PEDOT:PSS layer.



**Figure S7.** The AFM images of the quasi-2D perovskite films deposited on NaCl-doped PEDOT:PSS films of various concentrations.



**Figure S8.** AFM images of the DMSO washed PEDOT-Na films. (a) 15mg/mL, (b) 30mg/mL. The DMSO was spin-coated onto the PEDOT-Na films for 2 min.



**Figure S9.** Work function measurement of NaCl-doped PEDOT:PSS films with various concentrations by ambient Kelvin Probe. The  $\sim 0.4\text{eV}$  reduction confirmed that the work function of PEDOT:PSS was reduced after NaCl doping, in accordance with the XPS valence band spectra.