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Site-Selective Occupancy of Cr^{3+} Enabling Tunable Emission from Near Infrared I to II in Fluoride $LiInF_4:Cr^{3+}$

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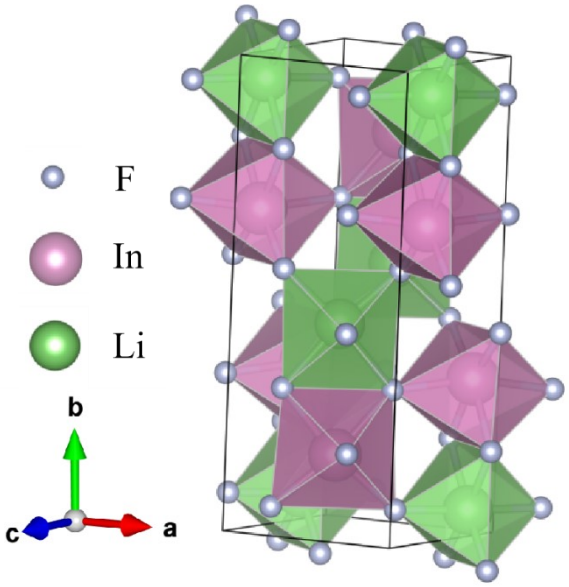

Figure S1. Crystal structure of $LiInF_4$(LIF).

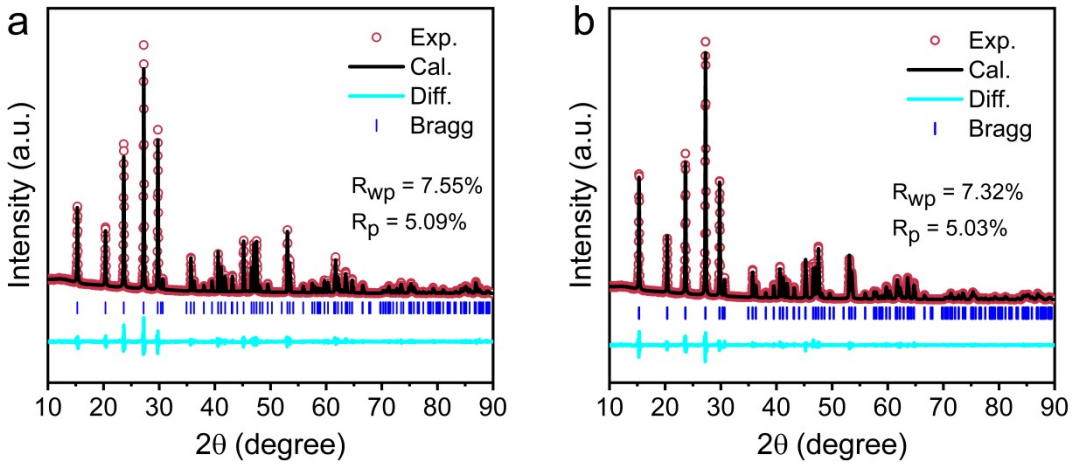

Figure S2. Powder X-ray diffraction (XRD) Rietveld refinements results of (a) LIF and (b) LIF:0.15Cr^{3+} samples.

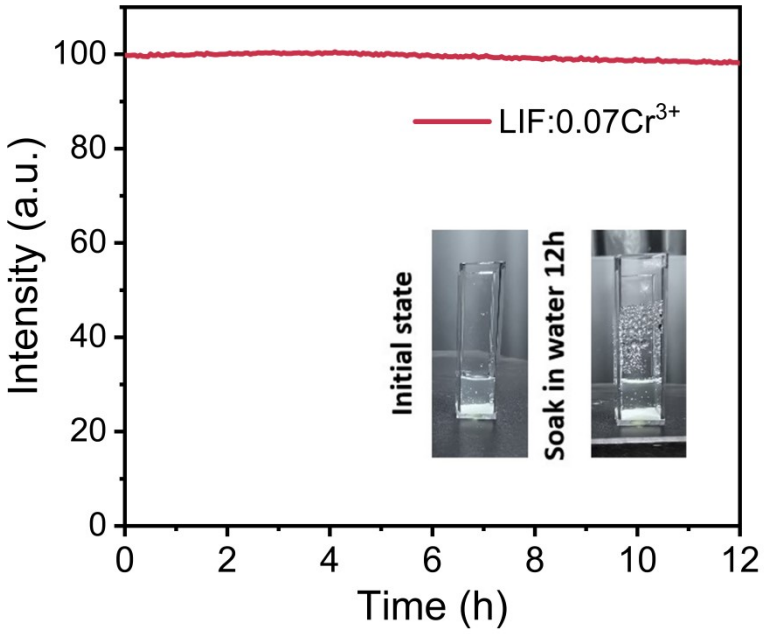

Figure S3. The emission intensity of LIF:0.07Cr^{3+} versus time after being soaked in water.

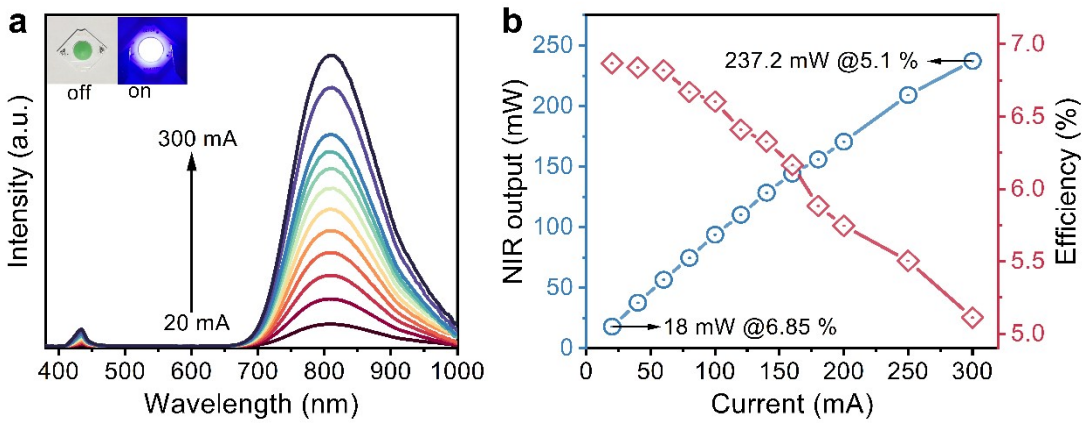

Figure S4. (a) Electroluminescence spectra of NIR I emission pc-LED (LED 2) driving by varied current, the insets show photographs of the LED 2 on and off. (b) The NIR output and photoelectric conversion efficiency of NIR I emission pc-LED (LED 2).

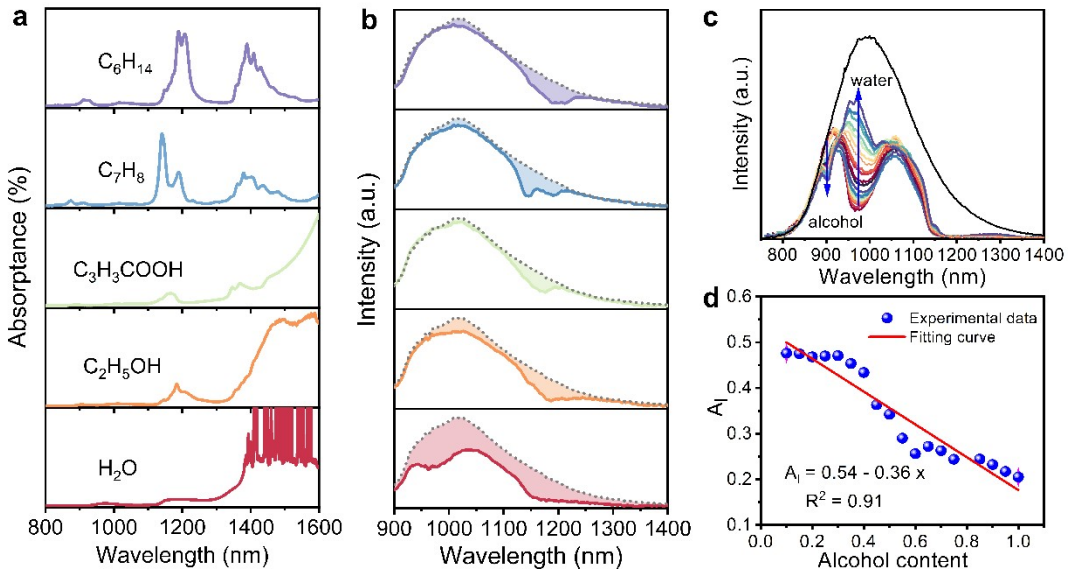

Figure S5. (a) absorption spectra of five organic solvents including H_2O, C_2H_5OH, CH_3OH, C_7H_8, and C_6H_{14}. (b) emission spectra of fabricated NIR II emission pc-LED(LED1) from before (dotted line) and after (solid line) penetrating different organic solvents. (c) emission spectra of LED1 after penetrating the mix solution of H_2O and C_2H_5OH in different concentration ratio. (d) Functional relationship curve of alcohol concentration and NIR light absorbance.

Table S1. Rietveld refinement and crystallographic parameters of LIF and LIF:0.15Cr^{3+}.

	LIF	LIF:0.15Cr^{3+}
Space group	Pbcn (60)	Pbcn (60)
a[Å]	4.75	4.75
b[Å]	11.73	11.73
c[Å]	4.98	4.97
V[$Å^3$]	277.39	276.72
R_{wp} [%]	7.55	7.32
R_p [%]	5.09	5.03
χ^2	3	2.36