Electronic Supplementary Material (ESI) for RSC Advances

Electronic Supplementary Information

for

Dynamic dual stage phosphorescence chromatic change in a diborylated iridium phosphor for fluoride ion sensing with concentration discriminating capability

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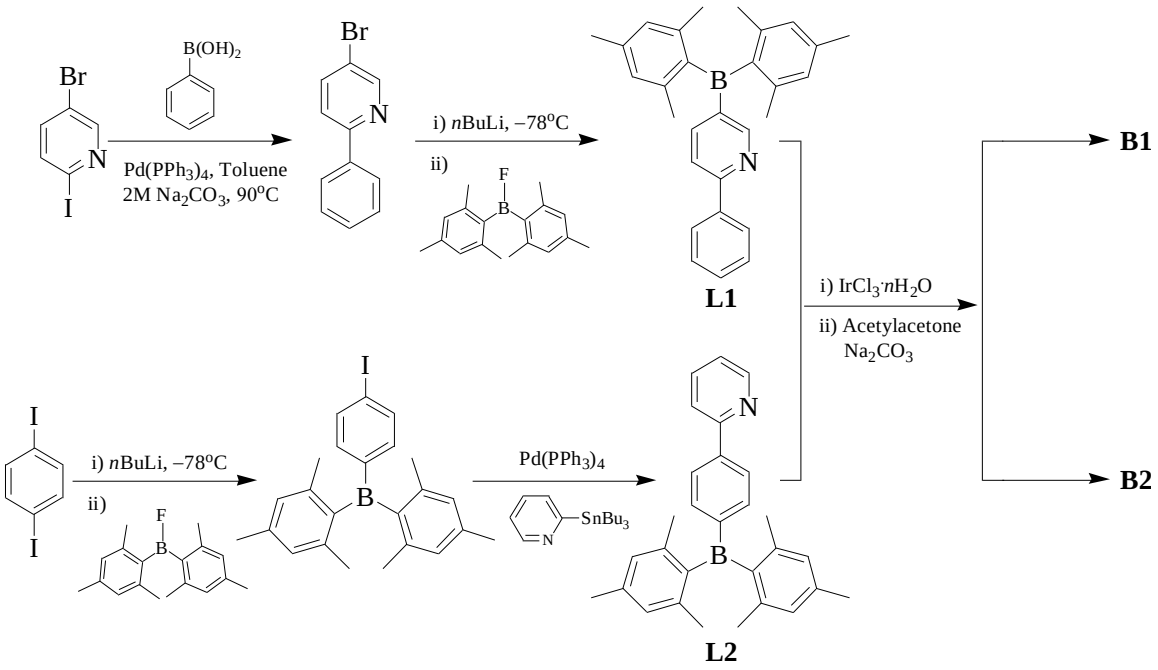
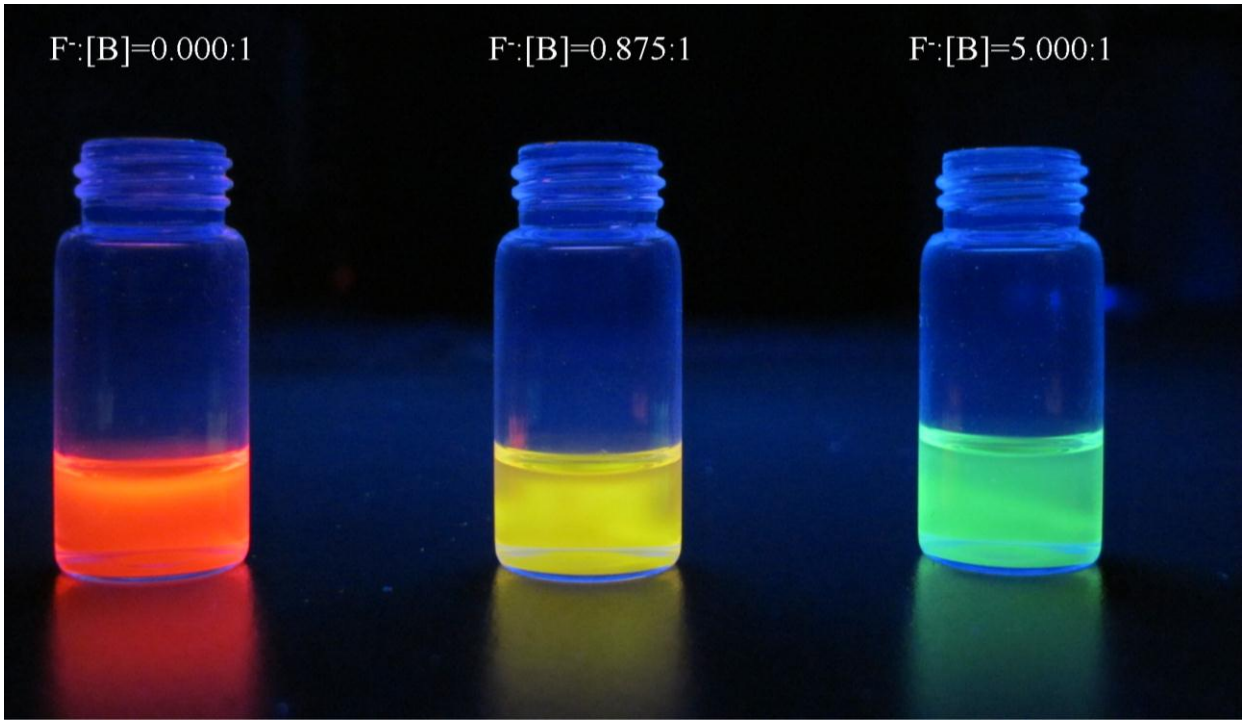
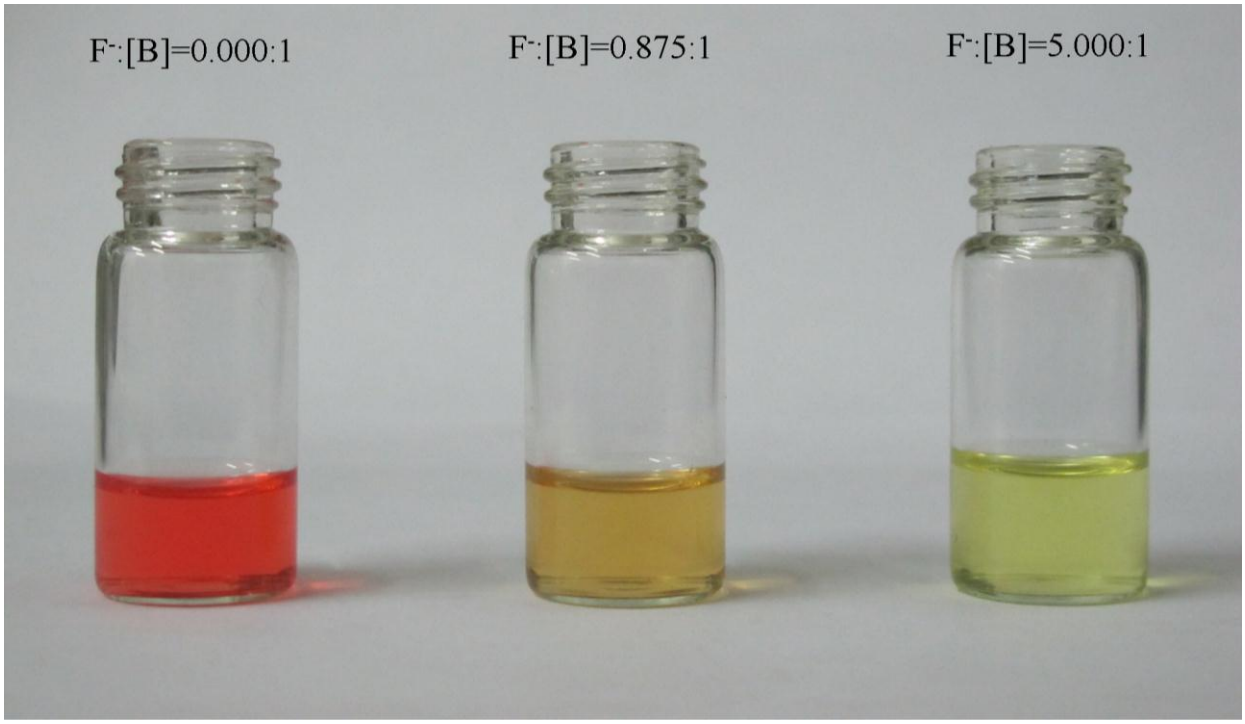


Scheme S1 The synthetic protocol for the iridium(III) complexes **B1** and **B2**.



a)



b)

Fig. S1 a) Emission color response of the **B1** solution in THF to the concentration of F^- ion. b) Solution color response of the **B1** solution in THF to the concentration of F^- ion.

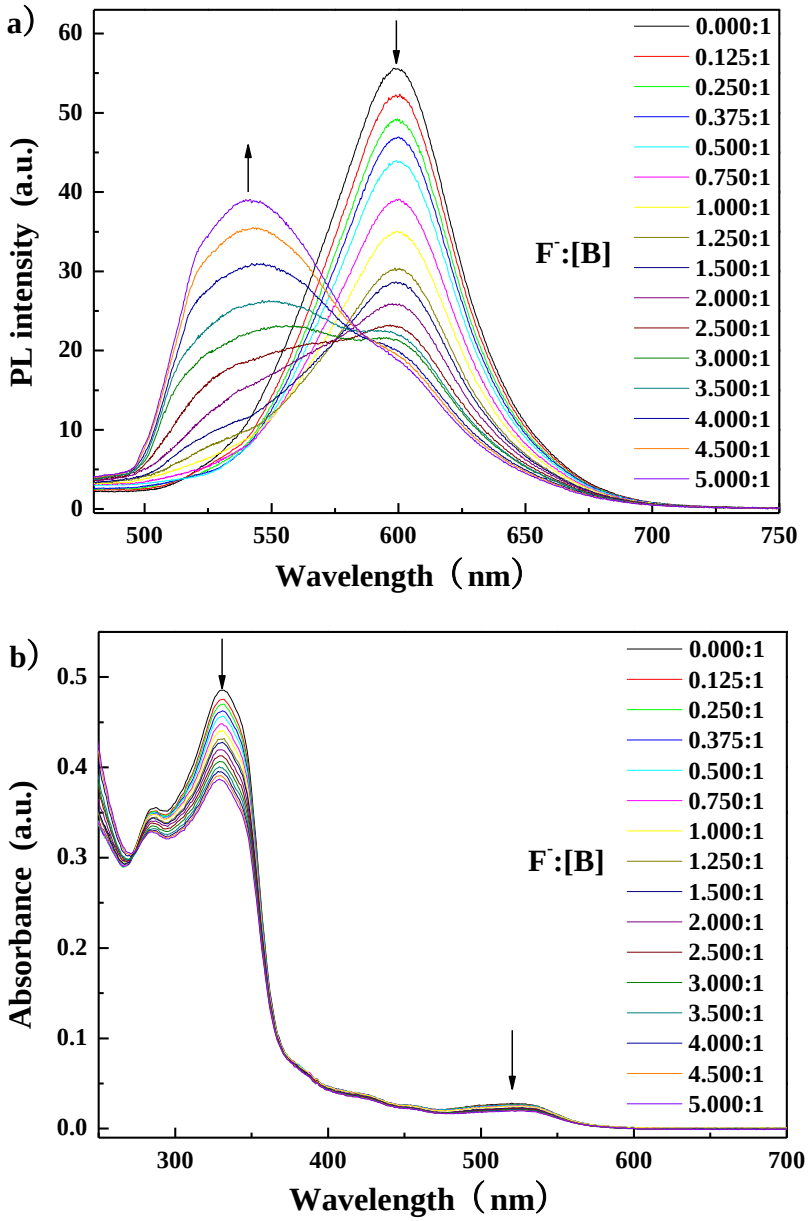


Fig. S2 a) PL response of the **B2** solution in THF to the F^- ion. b) Absorption response of the **B2** solution to the F^- ion.

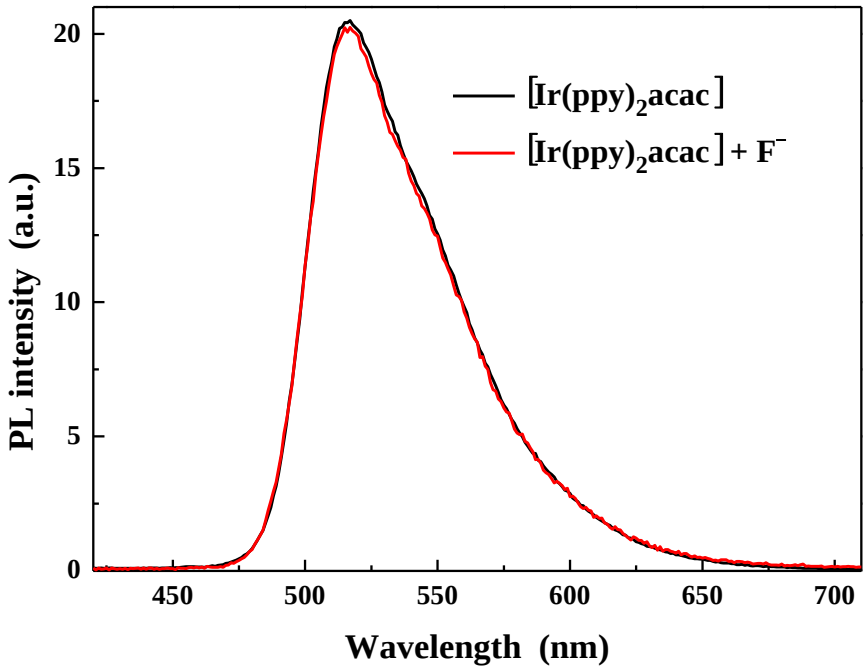


Fig. S3 The PL spectra for [Ir(ppy)$_2$acac] in THF solution before and after adding two equivalents of F^- ion.

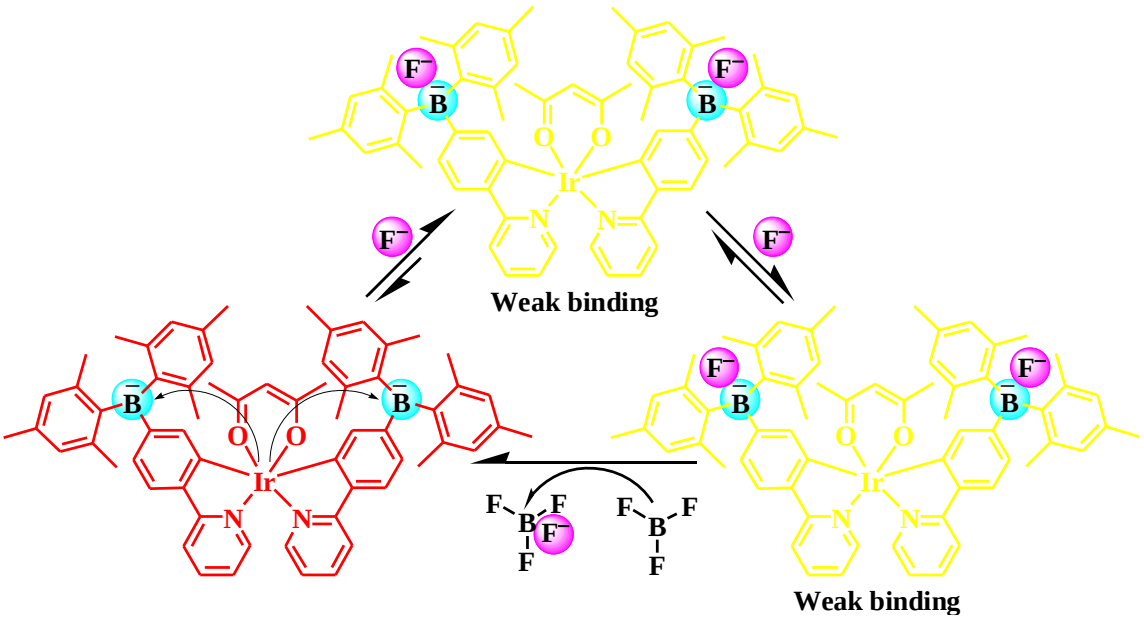


Fig. S4 The proposed color-switching mechanism for the emission response of **B2** solution to the F^- ion and BF_3 added.

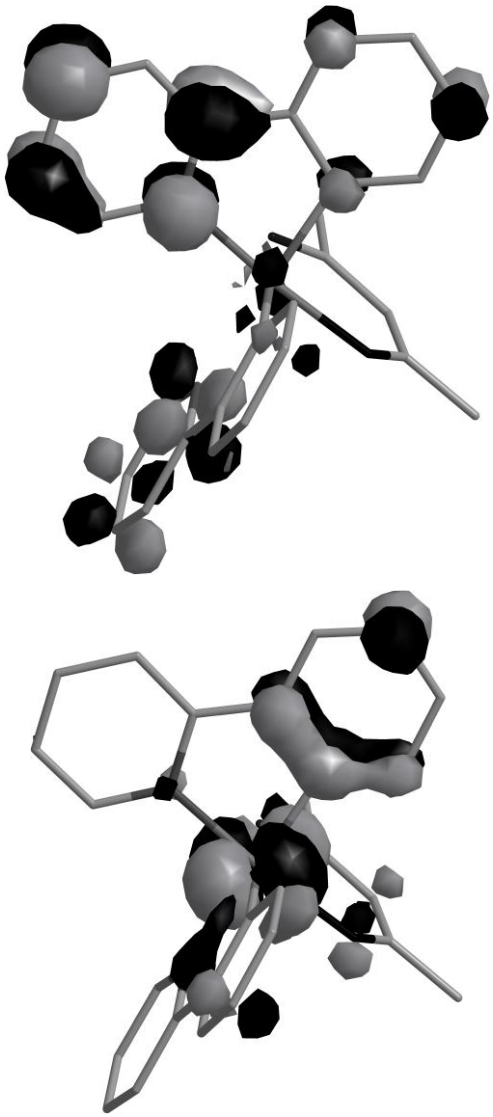


Fig. S5 Plots of the LUMO (top) and HOMO (bottom) for [Ir(ppy)$_2$acac].

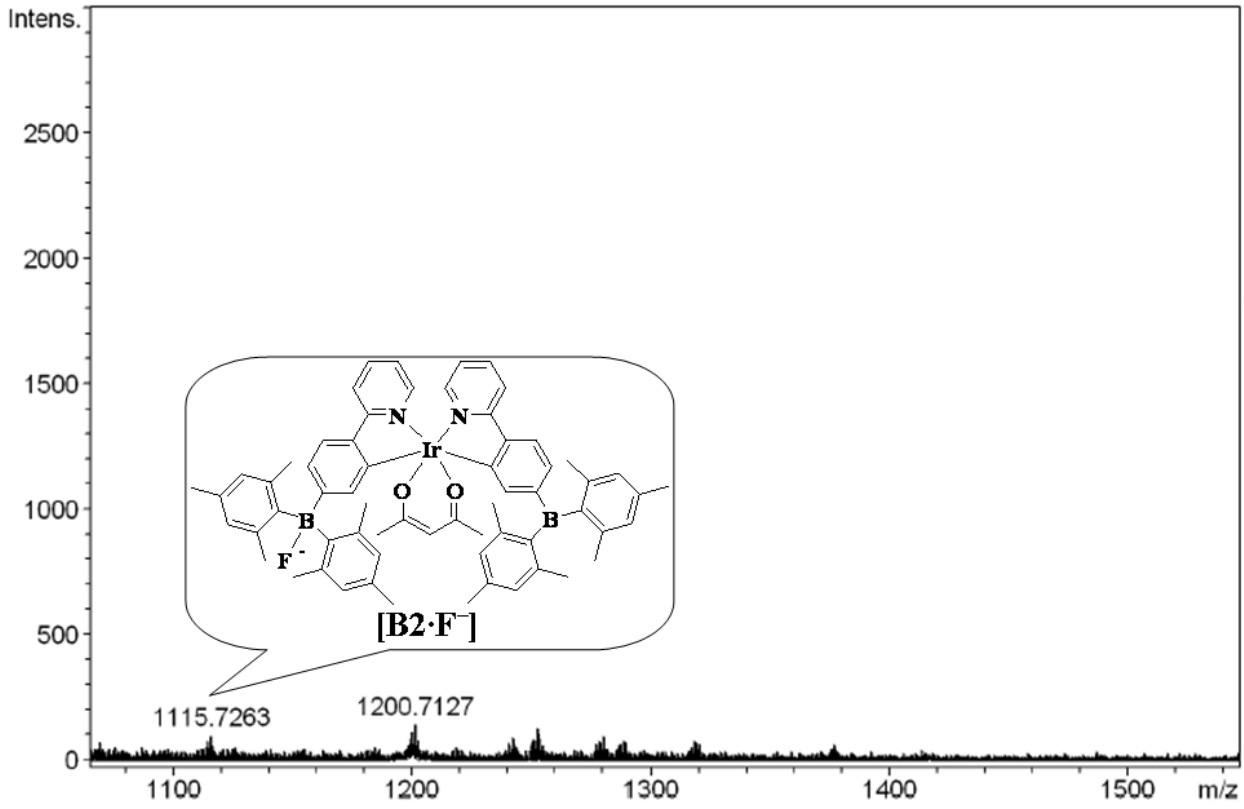


Fig. S6 The TOF-MS spectrum obtained under negative ion polarity mode for the solution of **B2** in THF with F^-:[B] at 5.000:1.

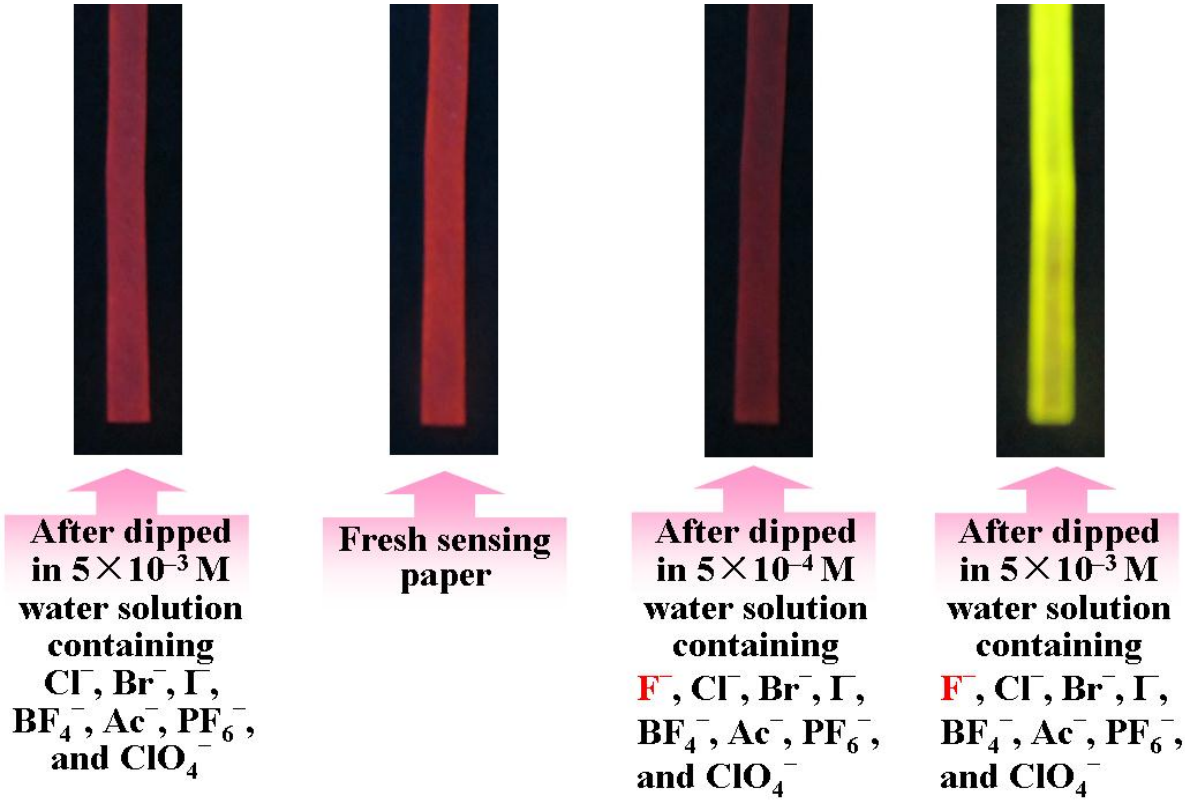


Fig. S7 The emission color response of self-made sensing paper from **B2** to the F^- ion at different concentrations in water.