Dual-Ligand Eu-MOF for Ratiometric Fluorescence Sensing and Visual Detection of Fluoride Ions

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Figure S10. The PRXD of Eu-AIP/BDC treated with F^{-} ions before and after.

Table S2. Comparing the performance of various systems of fluorescent probes for F- in terms of response time and detection limit.

Results and Discussions

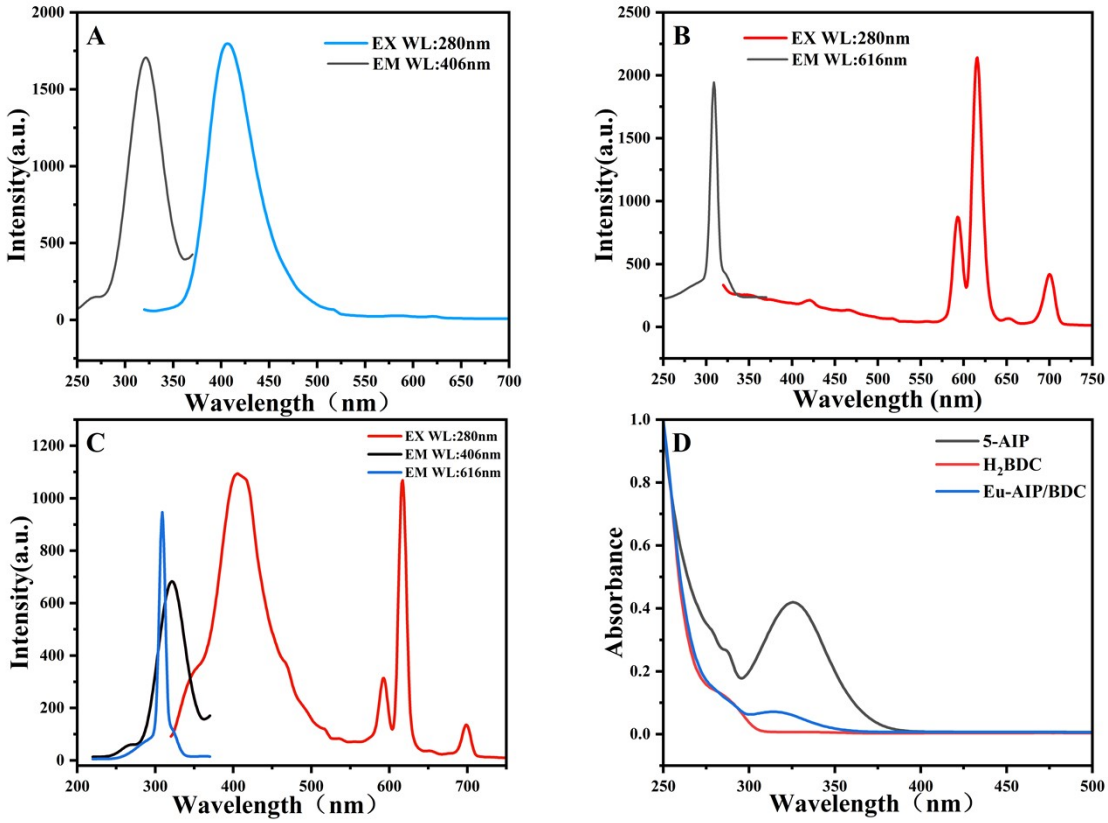

Figure S1. The emission and excitation spectra of (A) Eu-AIP, (B) Eu-BDC, (C) Eu-AIP/BDC, (D) The UV-vis spectra of the 5-AIP (black line), H_2BDC (red line) and the Eu-AIP/BDC (blue line).

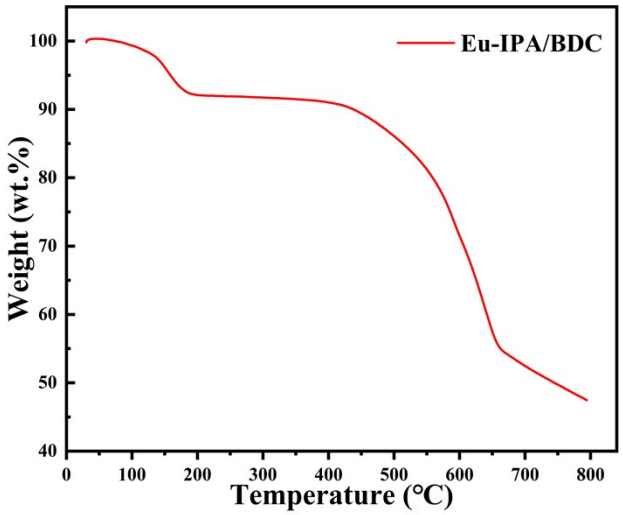

Figure S2. The thermogravimetric analysis (TGA) of Eu-AIP/BDC.

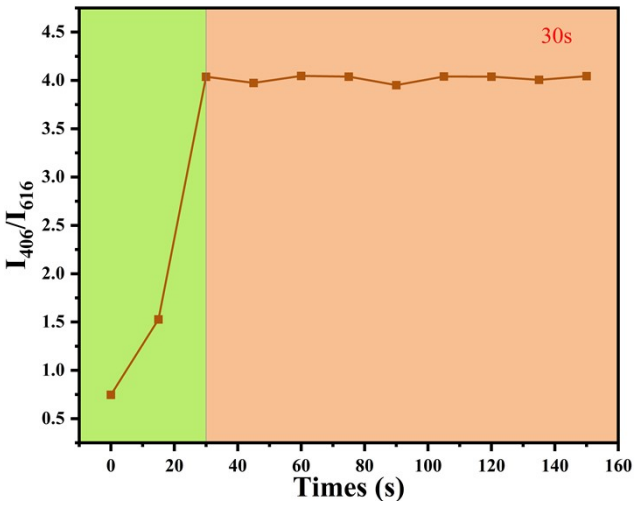

Figure S3. The response time of Eu-AIP/BDC to F^-.

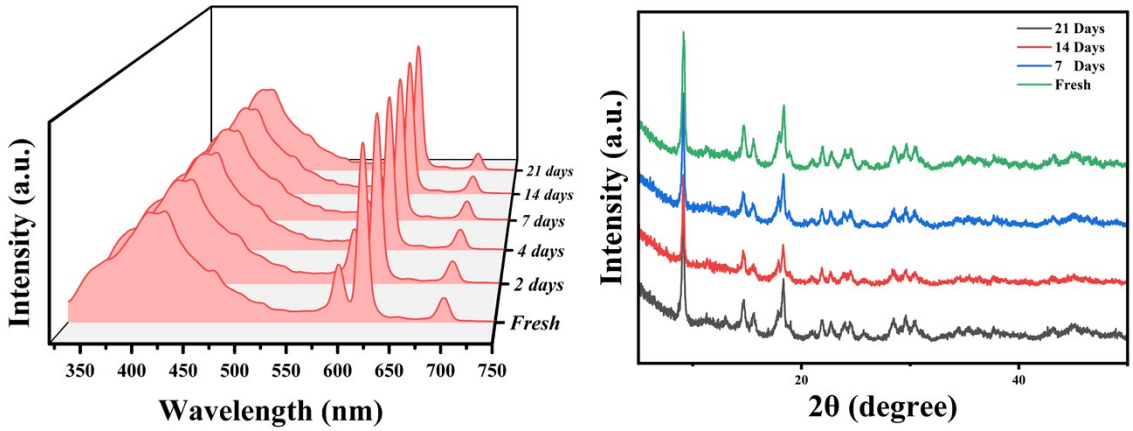

Figure S4. The fluorescence spectra and PXRD patterns of Eu-AIP/BDC after being dispersing in water for different time (λex=280 nm).

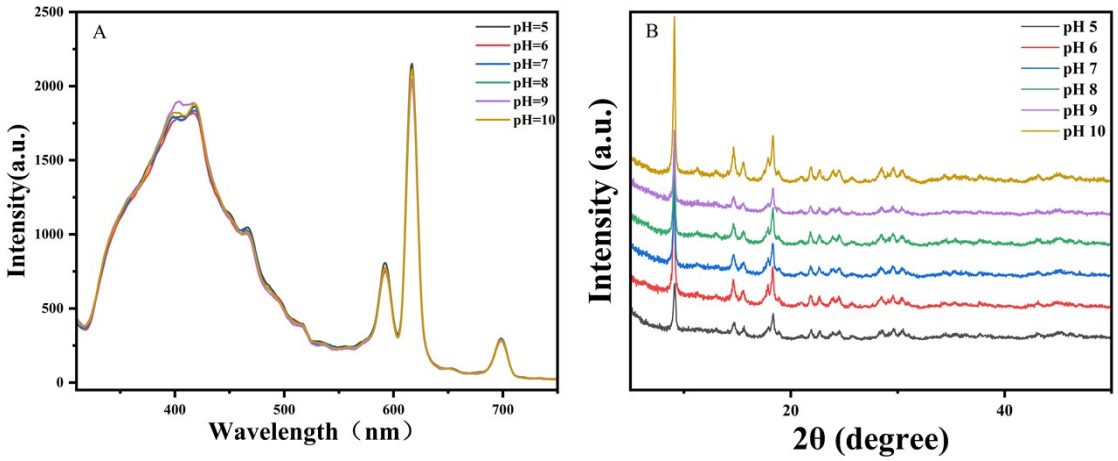

Figure S5. The fluorescence spectra and PXRD patterns of Eu-AIP/BDC with pH 5.0 - 10.0 (λex=280 nm).

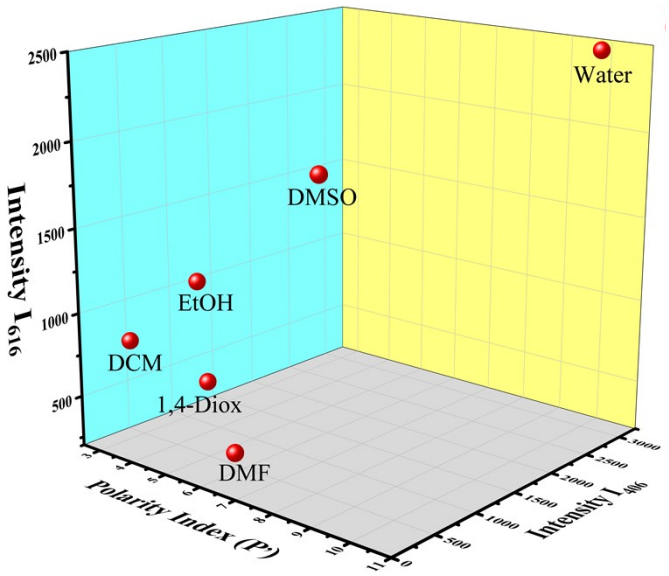

Figure S6. Relationship between the polarity index of different solvents and the fluorescence intensity of the two emission centers.

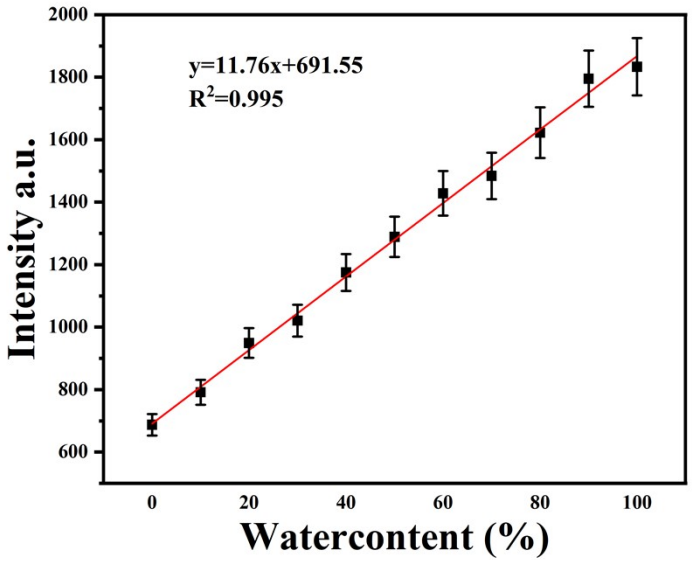

Figure S7. The relationship between different water content and the emission intensity of Eu-AIP/BDC at 616 nm. (λex=280 nm).

Table S1. The calculation of LOD. σ is approximately equal to the slope of the calibration curve; s is the standard deviation for N parallel blank solutions

Formula		Blank signal			σ	s	D/μM
		I_{406}	I_{616}	I_{406}/I_{616}			
	1	1693	2582	0.655			
D = 3σ/s	2	1683	2551	0.659	**0.0016**	**0.015**	**0.326**
	3	1673	2543	0.657			

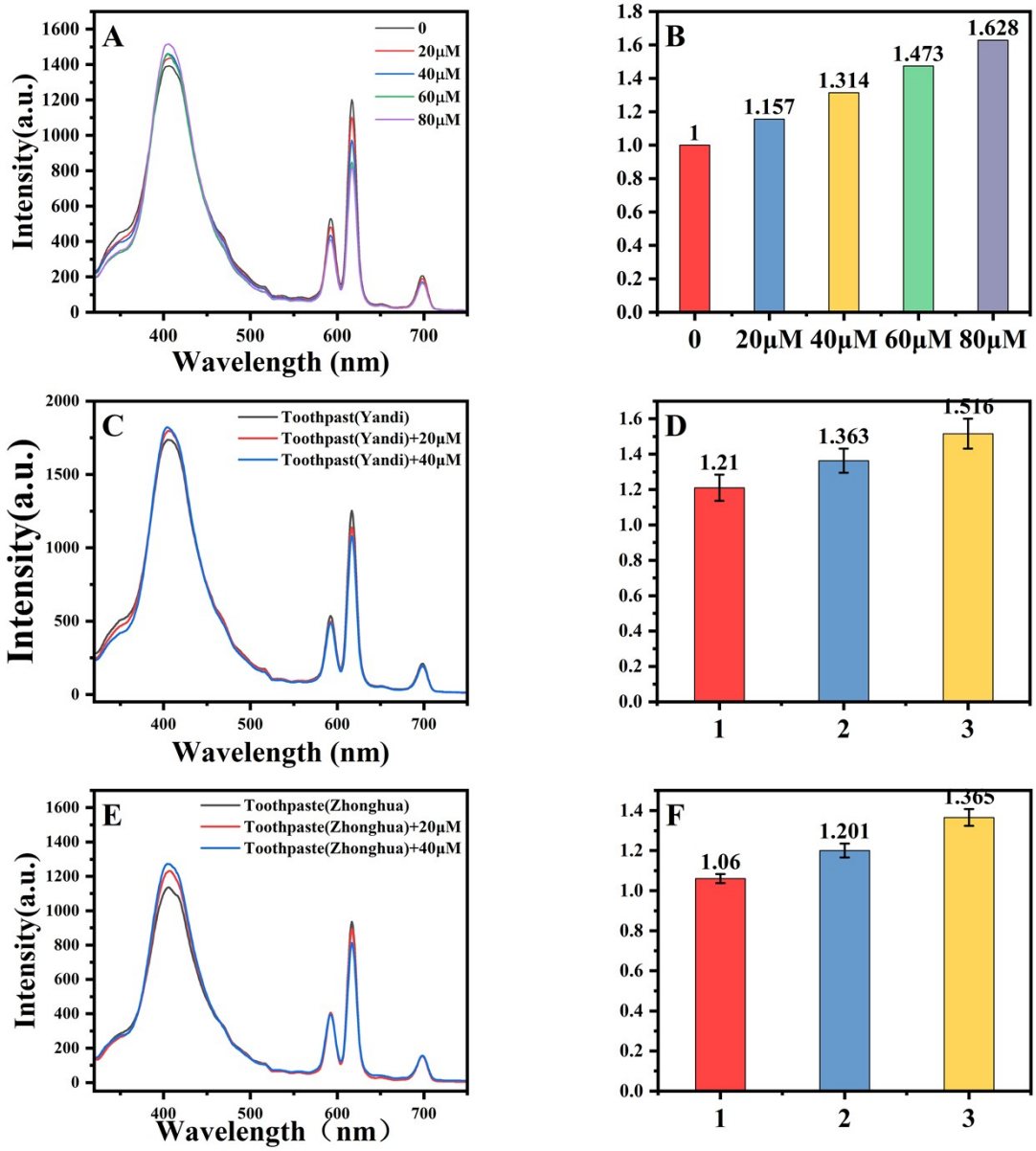

Figure S8. Fluorescent experiments of Eu-AIP/BDC in samples: emission spectra (A) and ratio column (B) of reference with different concentration F^-; emission spectra (C) (E) and ratio column (D) (F) of the toothpast with and without F^-.

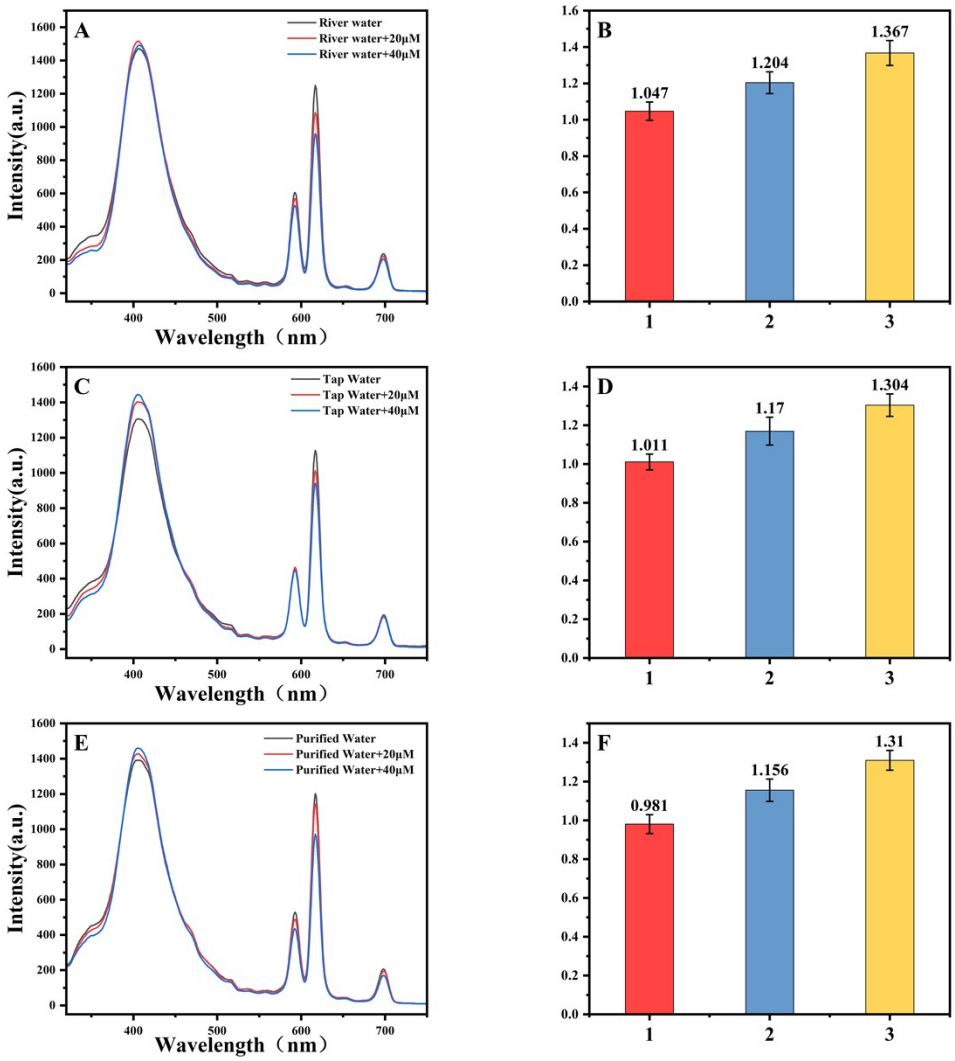

Figure S9. Fluorescent experiments of Eu-AIP/BDC in samples: emission spectra (A) and ratio column (B) of River water with and without F^-; emission spectra (C) and ratio column (D) of the Tap water with and without F^-; emission spectra (E) and ratio column (F) of the Purified water with and without F^-

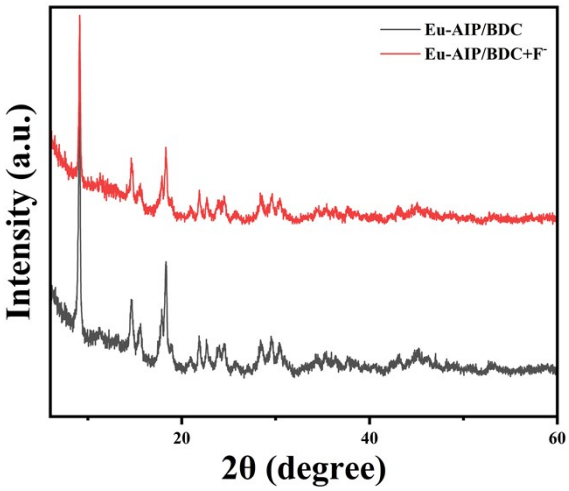

Figure S10. The PRXD of Eu-AIP/BDC treated with F^- ions before and after.

Table S2. Comparing the performance of various systems of fluorescent probes for F^- in terms of response time and detection limit.

MOF	Linear	LOD	Time	Visual detection	Ref
Eu-AIP/BDC	0–100 μM	0.32 μM	30s	yes	This work
Eu^{3+}@UiO-66-IPA	50–250 μM	0.22 μM	-	yes	1
Zr-Mof	1–50 μM	17.8 μM	-	No	2
Tb^{3+}@UIO66	0.1–0.6mM	4.02 μM	>30s	yes	3
UiO-66 (NH_2)-FITC	2–150 μM	3.45 μM	-	No	4
EuTPTC-NH2	0-5.12 mM	11.26 μM	60s	No	5
UiO-66-NH_2@RhB	0-200 μM	1.55 μM	-	No	6
Eu-MOF	0−515 μM	1.14 μM	-	No	7
Tb/Eu(TATB)	0−45 μM	2.30 μM	30min	Yes	8
FS@UiO-66	0−0.4 mM	4.40μM	15min	No	9
Y-TCCP MOFs	1−200μM	0.25μM	3min	No	10

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