Electronic Supplementary Material (ESI) for New Journal of Chemistry.

Supporting Information

An efficient water-soluble fluorescent chemosensor based on furan Schiff base functionalized PEG for sensitive detection of Al^{3+} in pure aqueous solution

Liping Bai, Yuhang Xu, Leixuan Li, Farong Tao, Shuangshuang Wang, Liping Wang* and Guang Li*

School of Materials Science and Engineering, Liaocheng University, Liaocheng 252059, China

* Corresponding authors, E-mail: wangliping5@163.com, lglzsd@126.com

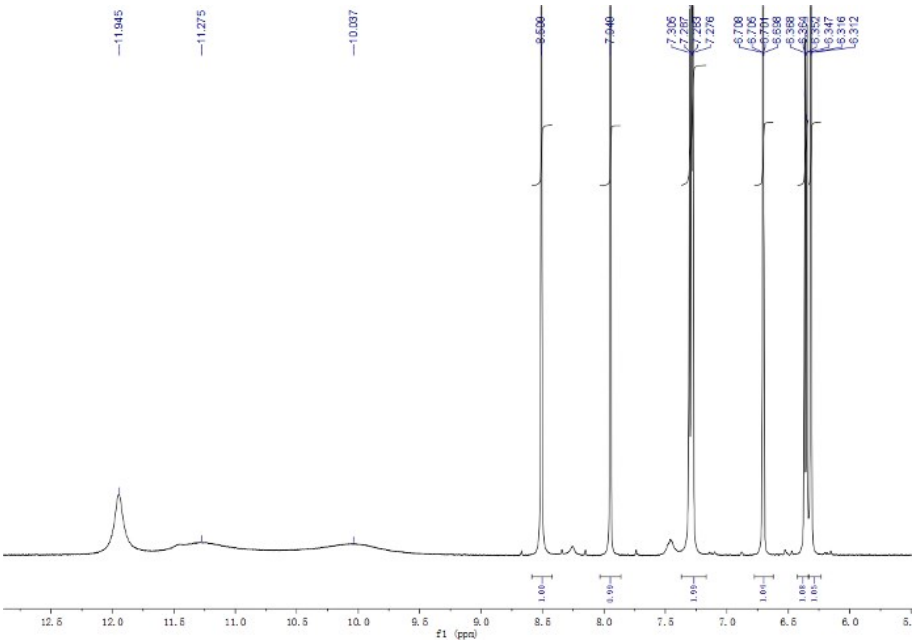


Fig. S1 ^{1}H NMR spectrum of FB in DMSO-d_6.

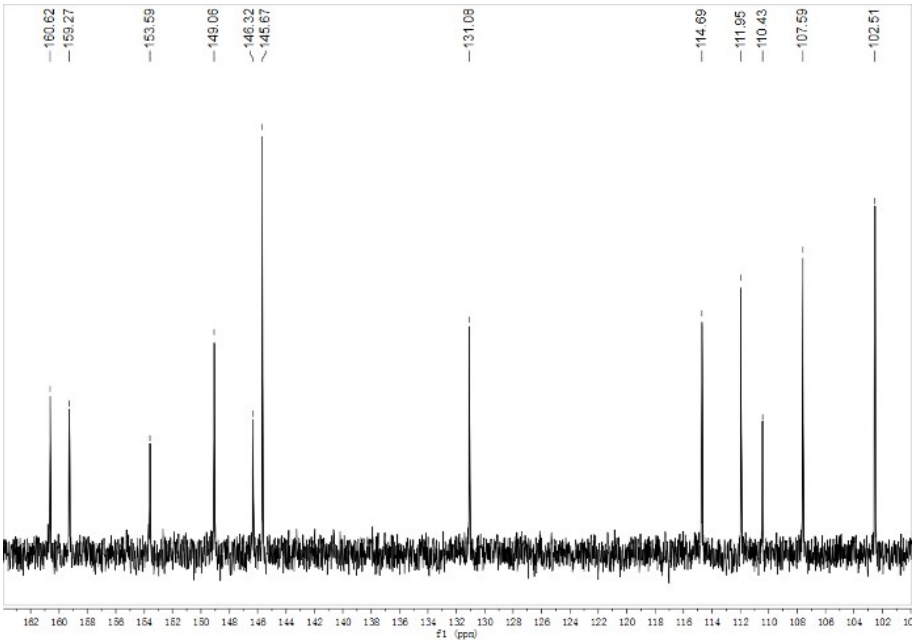


Fig. S2 ^{13}C NMR spectrum of FB in DMSO-d_6.

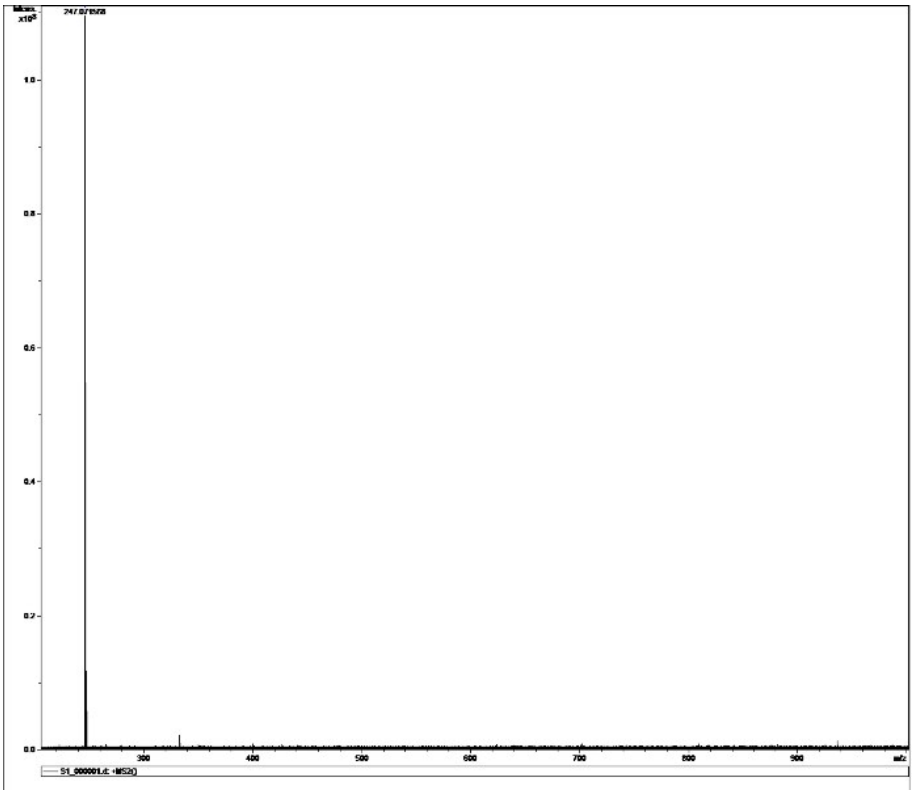


Fig. S3 ESI-MS spectrum of FB.

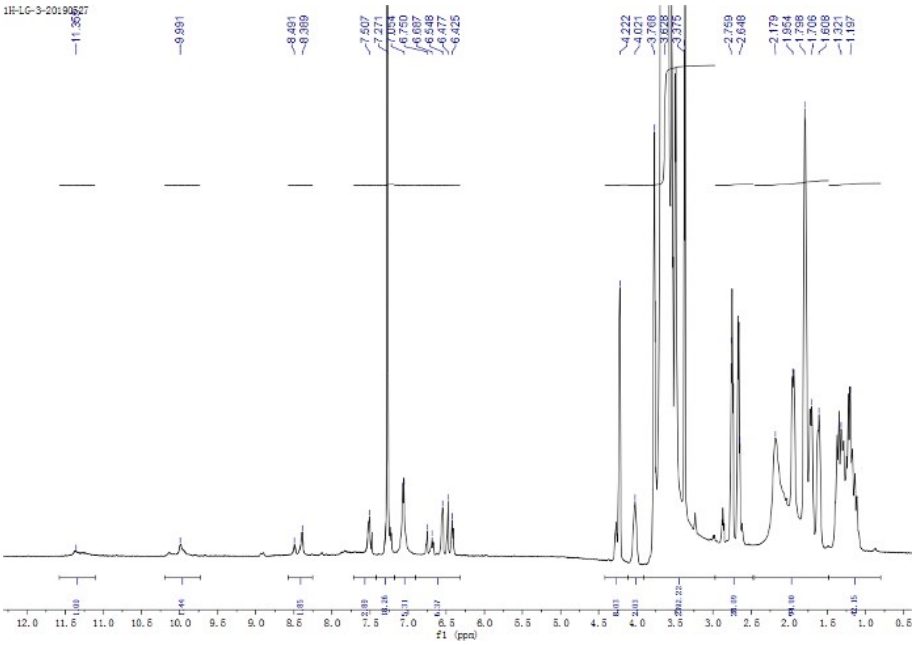


Fig. S4 ^{1}H NMR spectrum of PEGFB in $CDCl_3$.

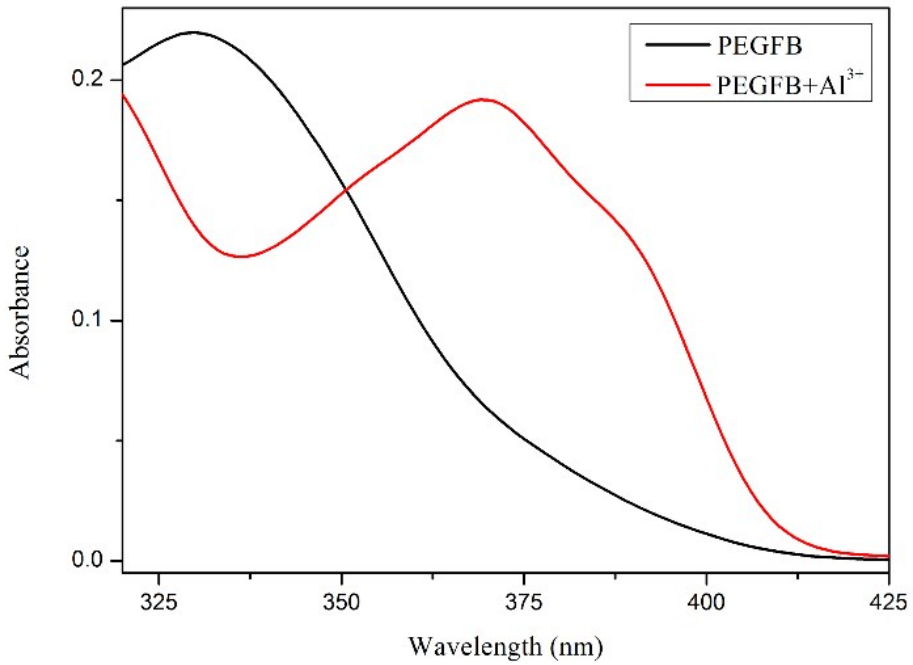


Fig. S5 UV-Vis absorption spectra of PEGFB (10 μM) in the absence and presence of 2 equiv. of Al^{3+} in aqueous solution.

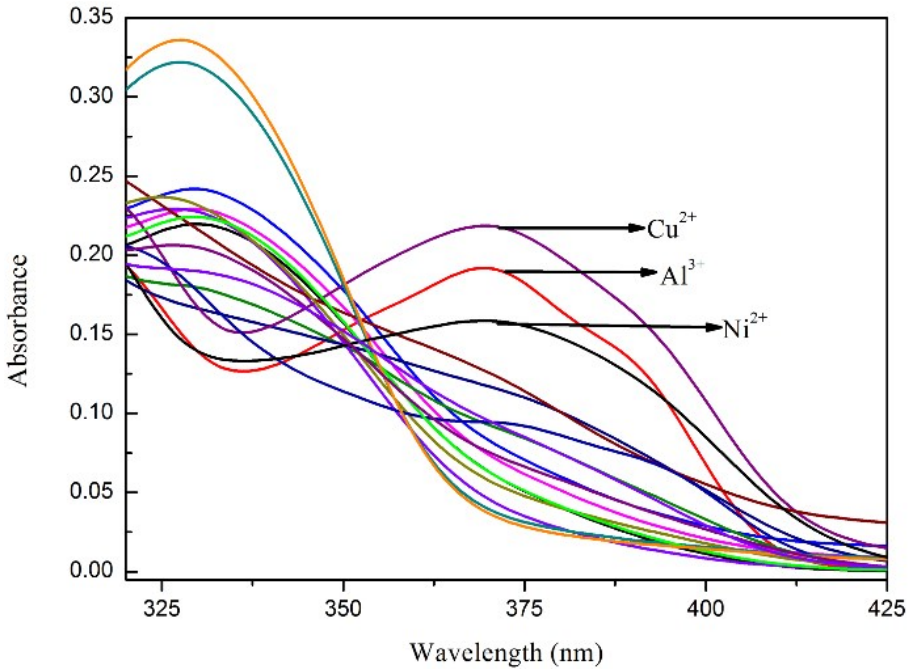


Fig. S6 UV-vis absorption spectra of PEGFB (10 μM) upon addition of 2.0 equiv. of different metal ions (Al^{3+}, Ba^{2+}, Ce^{3+}, Cd^{2+}, Co^{2+}, Cr^{3+}, Cu^{2+}, Fe^{3+}, Hg^{2+}, In^{3+}, K^{+}, Mn^{2+}, Na^{+}, Ni^{2+}, Pb^{2+} and Zn^{2+}) in 100% water.

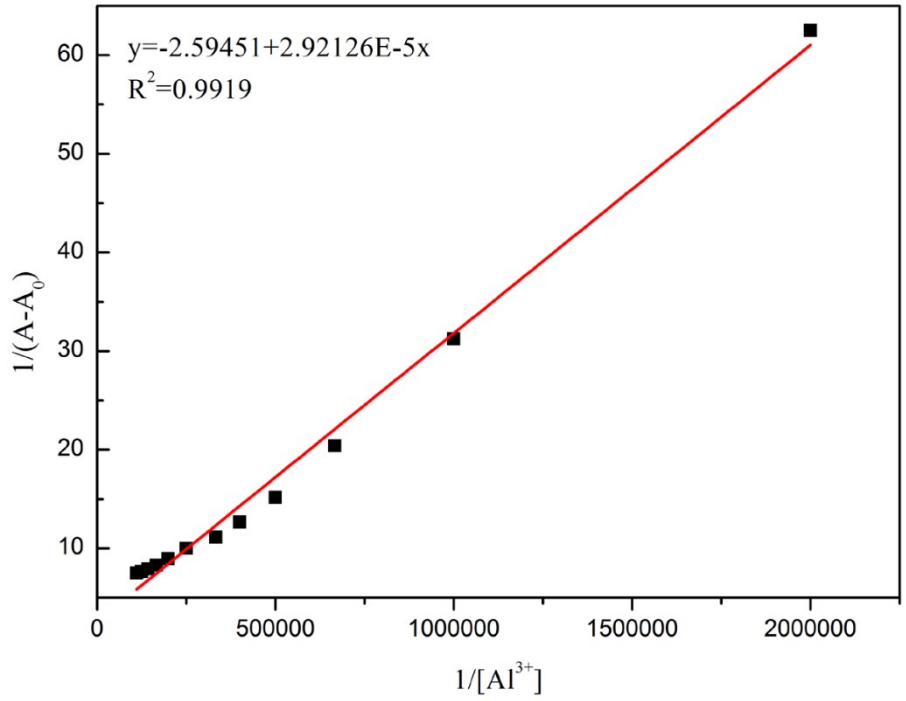


Fig. S7 The Benesi-Hildebrand plot of PEGFB with Al^{3+} ions from UV-Vis titration profile for determination of binding constant.

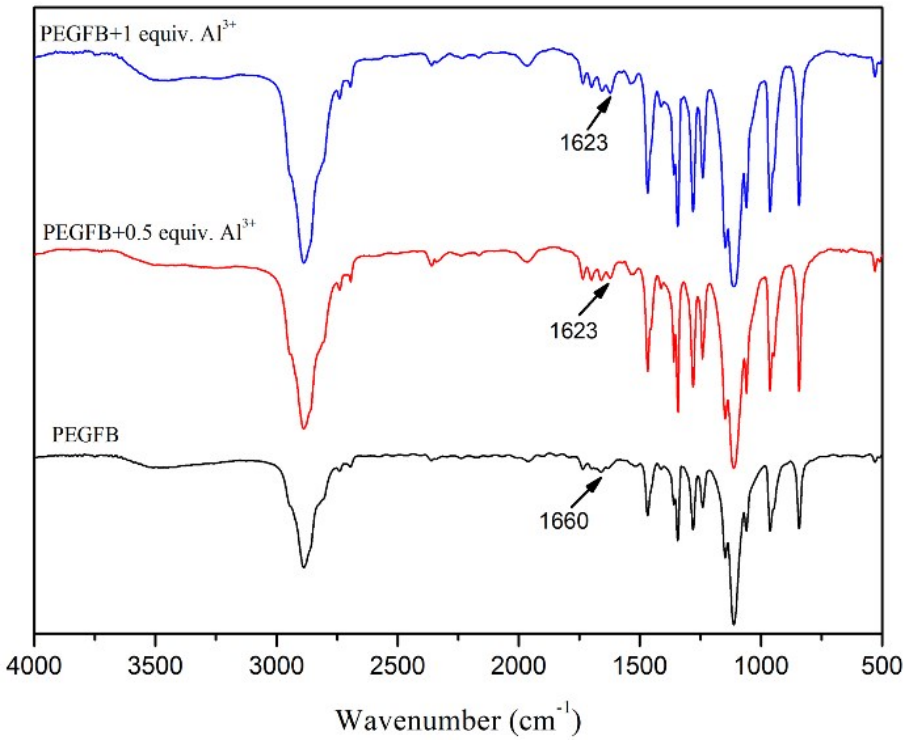


Fig. S8 FT-IR titration spectra of PEGFB with Al^{3+}.

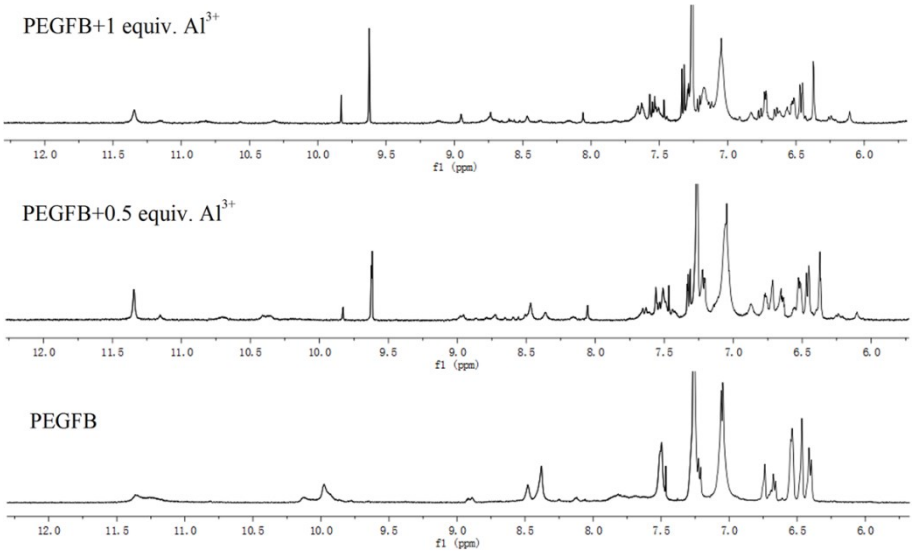


Fig. S9 ^{1}H NMR titration spectra of PEGFB with Al^{3+}.

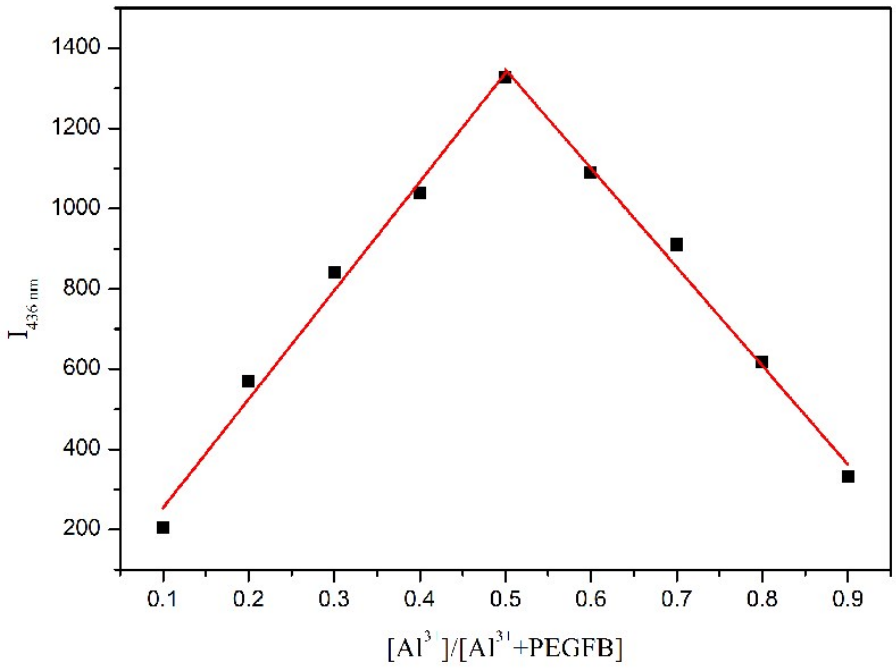


Fig. S10 Job's plot for determining the stoichiometry of PEGFB with Al^{3+}.

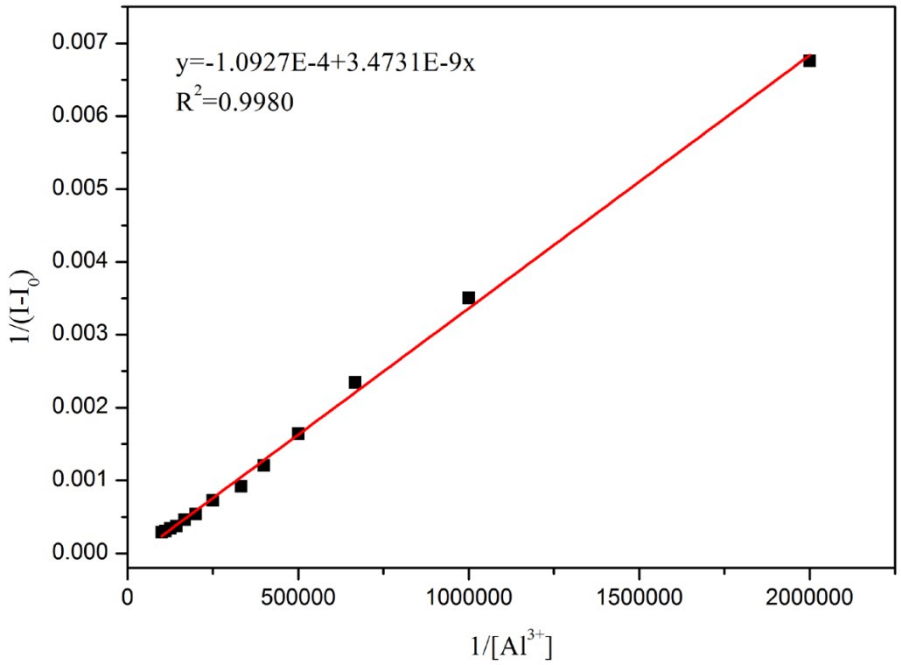


Fig. S11 The Benesi-Hildebrand plot of PEGFB with Al^{3+} ions from fluorescence titration profile for determination of binding constant.

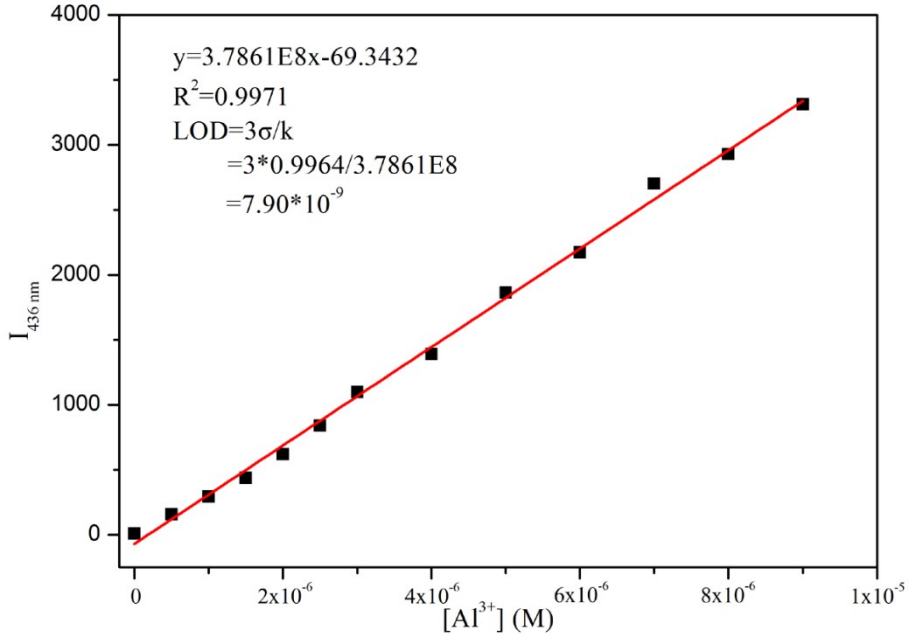


Fig. S12 The linear of fluorescence intensity and concentration of Al^{3+} for the determination of the detection limit.

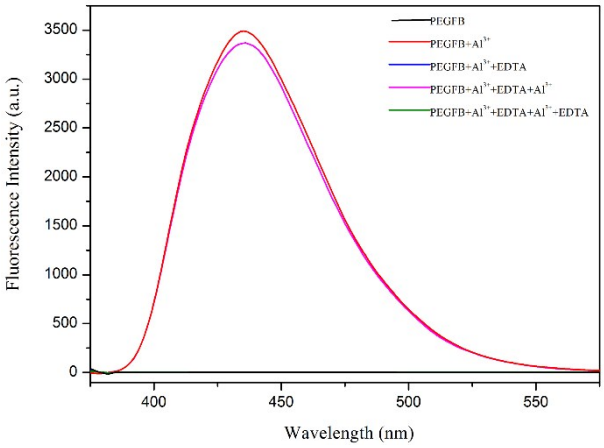
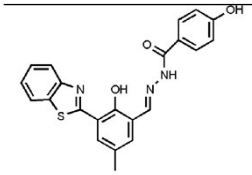
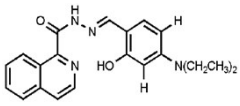
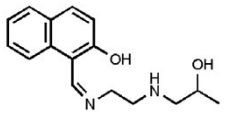
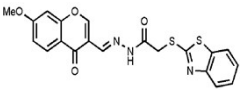
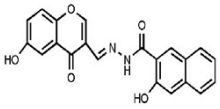
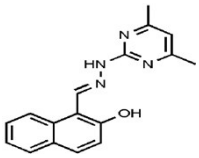
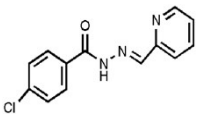
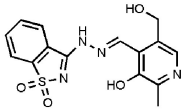
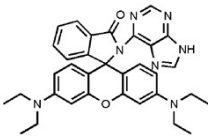
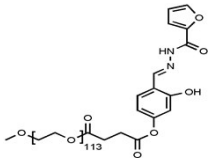


Fig. S13 Fluorescence spectral change of the PEGFB solution upon the sequential addition of Al^{3+} (1 equiv.) and EDTA (1 equiv.).

Table S1 Comparison of PEGFB with some reported fluorescent chemosensors for Al^{3+}.

Structure	Detection limit (M)	Binding constant (M^{-1})	Solvent	Ref
	4.08×10^{-8}	2.139×10^{5}	DMF/H_2O (1/9, v/v,)	1
	8.08×10^{-8}	1.57×10^{5}	methanol	2
	1.37×10^{-7}	3.01×10^{4}	methanol	3
	3.19×10^{-8}	1.21×10^{4}	DMF/methanol (1/1, v/v)	4
	3.48×10^{-8}	1.30×10^{4}	ethanol/H_2O (3/1, v/v)	5
	2.78×10^{-6}	1.9×10^{4}	ethanol	6
	2×10^{-7}	3.68×10^{4}	ethanol	7
	6×10^{-7}	1×10^{5}	DMSO/H_2O (9/1, v/v)	8

	1.9×10^{-7}	4.786×10^{4}	DMSO/H_2O (1/4, v/v)	9
	7.90×10^{-9}	2.99×10^{4}	water	This work

References

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