The design of a simple fluorescent chemosensor for Al$^{3+}$/Zn$^{2+}$ via two different approaches

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Fig. S1 The $^1$H NMR of 7-amino-4-methyl coumarin

Fig. S2. The $^1$H NMR of HL

Fig. S3. The ESI-MS spectra of HL

Fig. S4 The IR spectra of HL.

Fig. S5. Changes in the absorption spectra of AMC (0-25 μM) in ethanol and water (95:5, v/v) at room temperature

Fig. S6. Changes in the absorption spectra of DHB (25 μM) in ethanol and water (95:5, v/v) at room temperature as a function of added Al$^{3+}$. 

Fig. S7. The detection limits for Al$^{3+}$ based on 3σ/K

Fig. S8. The color of HL (left) and HL+Zn$^{2+}$ (right) system under visible light.

Fig. S9. Fluorescence intensity of HL and its complexation with Zn$^{2+}$ in the presence of various metal ions. Red bar: HL (25 μM); HL with 1.0 equiv. of Na$^+$, Pb$^{2+}$, Ca$^{2+}$, K$^+$, Ba$^{2+}$, Hg$^{2+}$, Mg$^{2+}$, Mn$^{2+}$, Cd$^{2+}$, Co$^{2+}$, Cr$^{3+}$, Ni$^{2+}$, Fe$^{2+}$, Fe$^{3+}$, and Cu$^{2+}$, stated. Green
bar: 25 μM of HL with 1.0 equiv. of Zn\textsuperscript{2+}; 25μM of HL and 1.0 equiv. of Zn\textsuperscript{2+} with 1.0 equiv. of metal ions stated (λ\textsubscript{ex}=405nm, slit widths:3nm /3nm).

**Fig. S10.** Benesi-Hildebrand analysis of the emission changes for the complexation between HL and Zn\textsuperscript{2+}

**Fig. S11.** The detection limits for Zn\textsuperscript{2+} based on 3σ/K

**Fig. S12.** The ESI-MS spectra of HL and Al\textsuperscript{3+}

**Fig. S13.** \textsuperscript{1}H NMR titration, Al\textsuperscript{3+} was added to the DMSO-d\textsubscript{6} solution of HL

**Fig. S14.** The ESI-MS spectra of HL and Zn\textsuperscript{2+}
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