Supporting Information

Unusual "OFF-ON" fluorescent sensor including a triazole unit for Al^{3+} detection via selective imine hydrolysis and its cell image study

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Figure S19. Emission intensity changes of **A1** (2.0 μM) and **A2** (2.0 μM) at various pH values in the presence or absence of Al^{3+} in a mixture of EtOH–H_2O (v/v = 6/4, 0.01 M, 0.01 M, potassium phosphate , pH = 6.90).
Figure S20. The HPLC chromatography of the probe **A1** (A, 40.0 μM), compound 4 (B, 40.0 μM) and the probe **A1** treated with Al^{3+} (80.0 μM) (C, after 10 min; D, after 20 min)
Figure S21. Alamar Blue assay to determine the IC_{50} value (that is the concentration of receptor **A1** which exhibited 50% cell viability for DLD-1 (red line) and CCD-18Co cells (blue line)). DLD-1 and CCD-18Co cells were exposed to the receptors for 48 h. The values are averages of three replicates. The results were normalized to 100% with viability of untreated cells.
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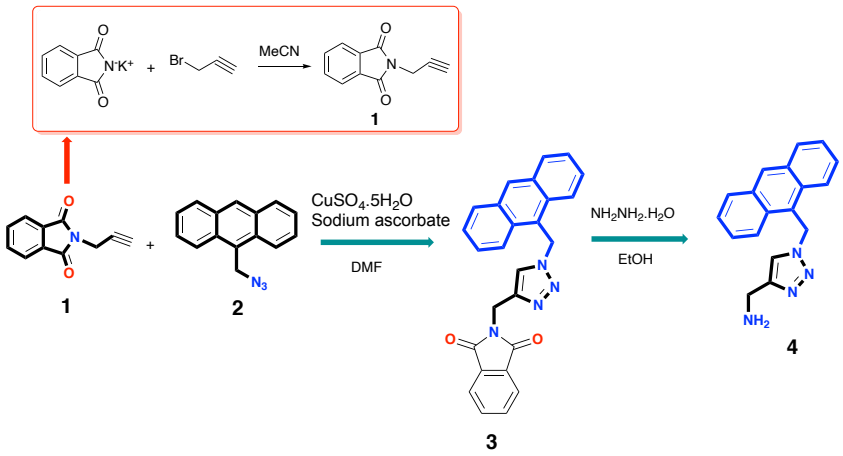
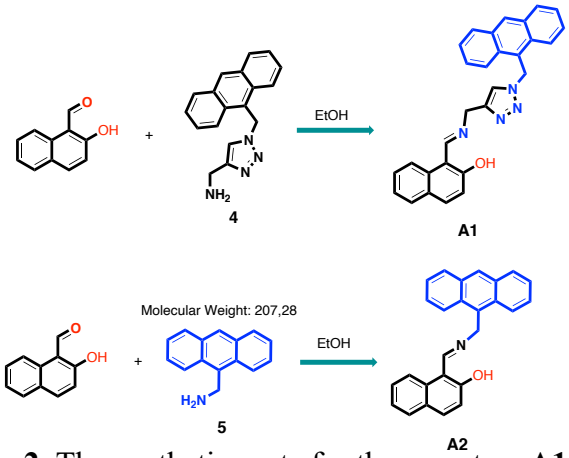


Scheme 1. The synthetic pathway of compound **3** and **4**



Scheme 2. The synthetic route for the receptors **A1** and **A2**

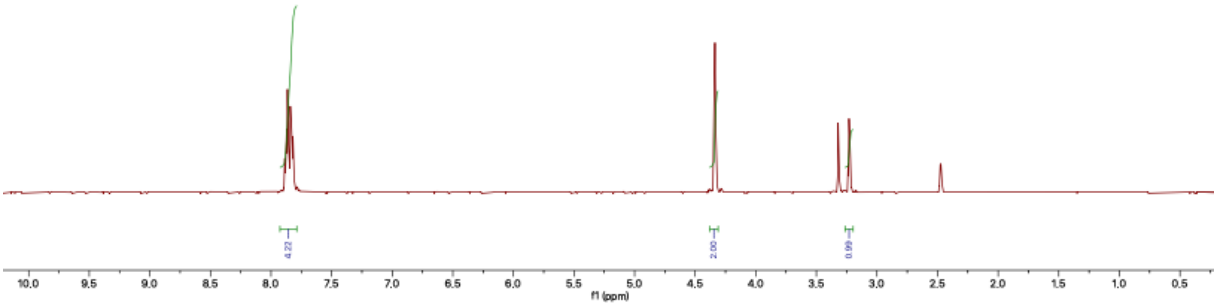


Figure S1. ^{1}H NMR (400 MHz, DMSO-d_6) spectra of **1**

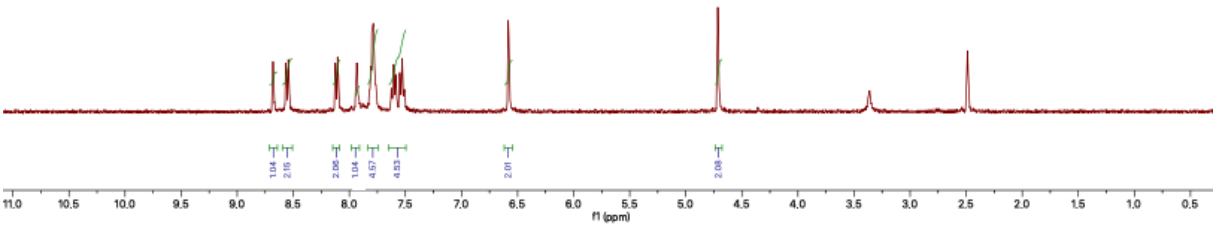


Figure S2. ^{1}H NMR (400 MHz, DMSO-d_6) spectra of **3**

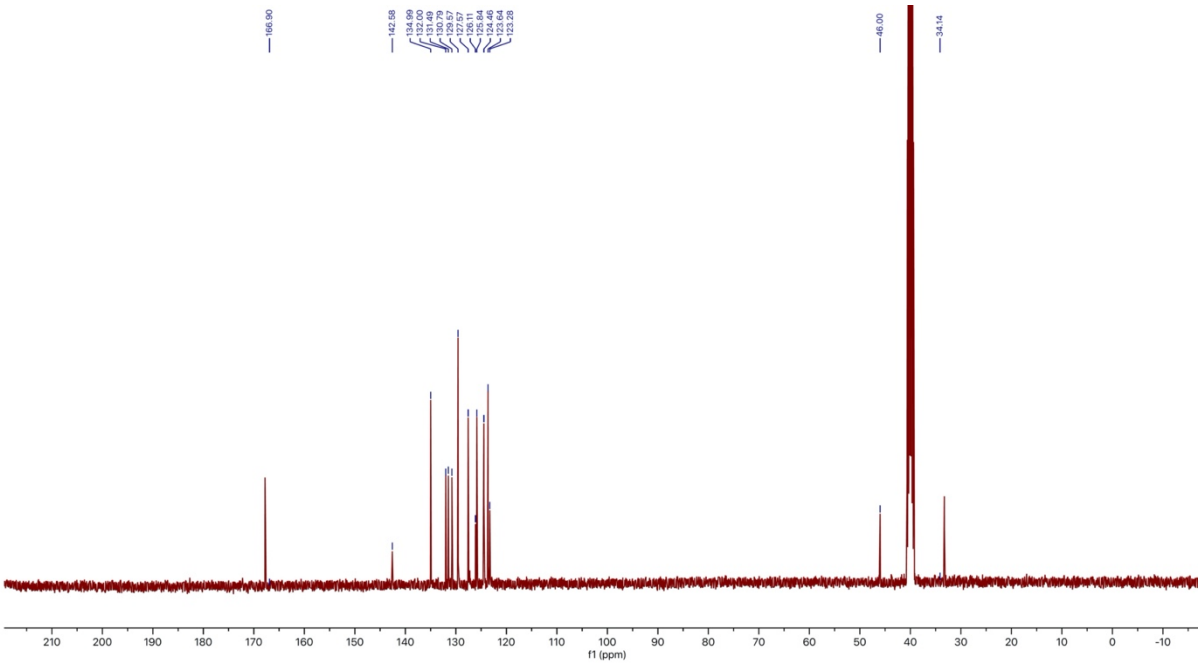


Figure S3. ^{13}C NMR (100 MHz, DMSO-d_6) spectra of **3**

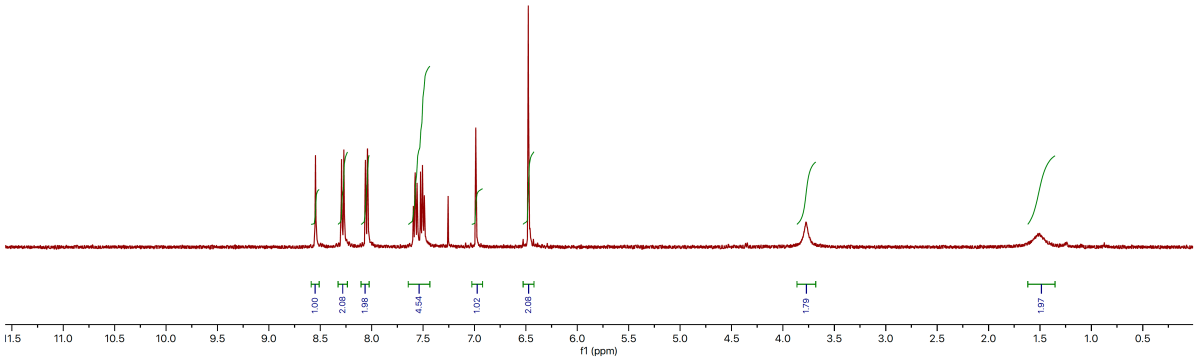


Figure S4. ^{1}H NMR (400 MHz, $CDCl_3$) spectra of **4**

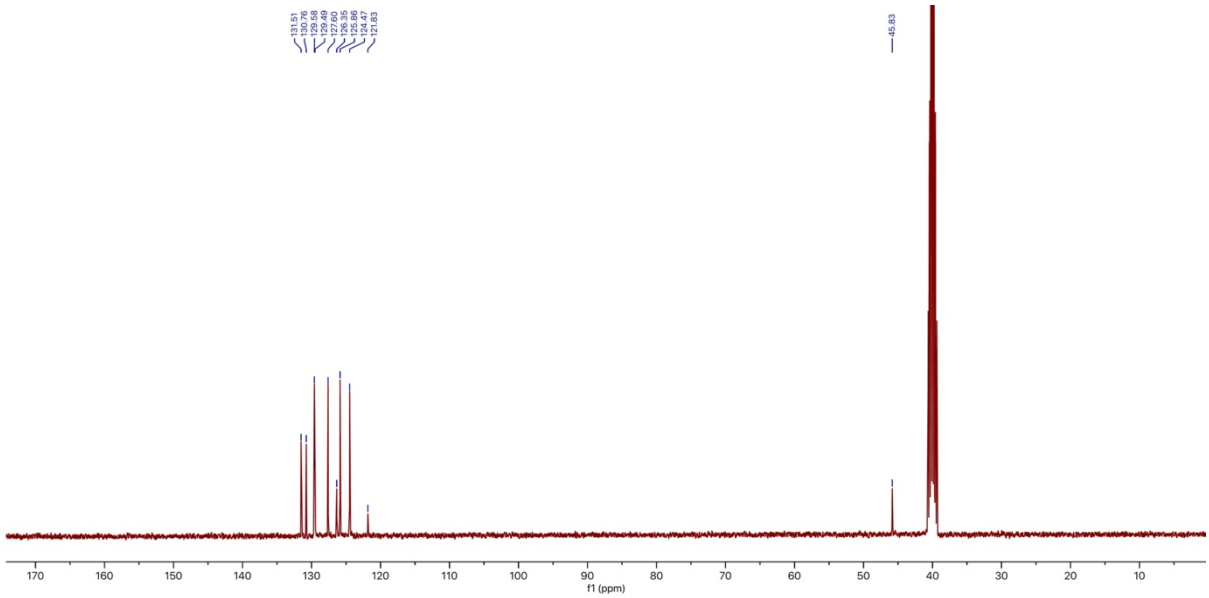


Figure S5. ^{13}C NMR (100 MHz, DMSO-d_6) spectra of **4**

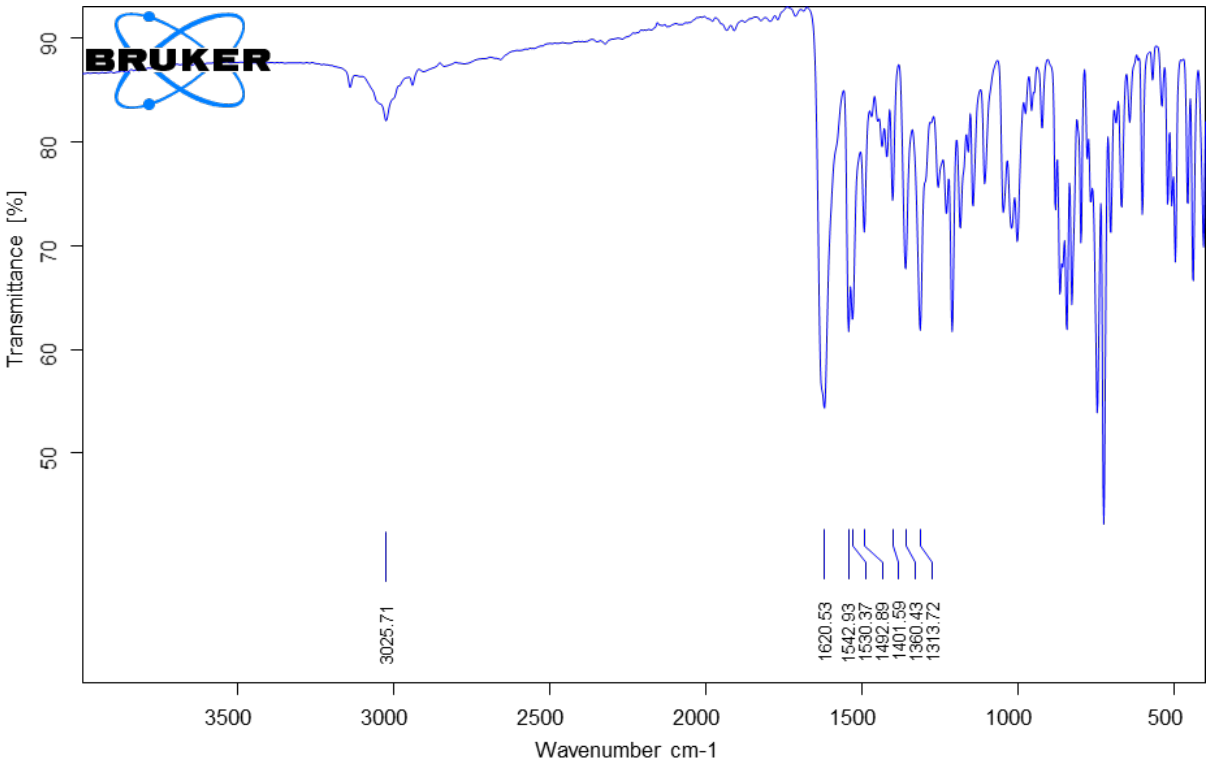


Figure S6. FTIR spectra of **A1**

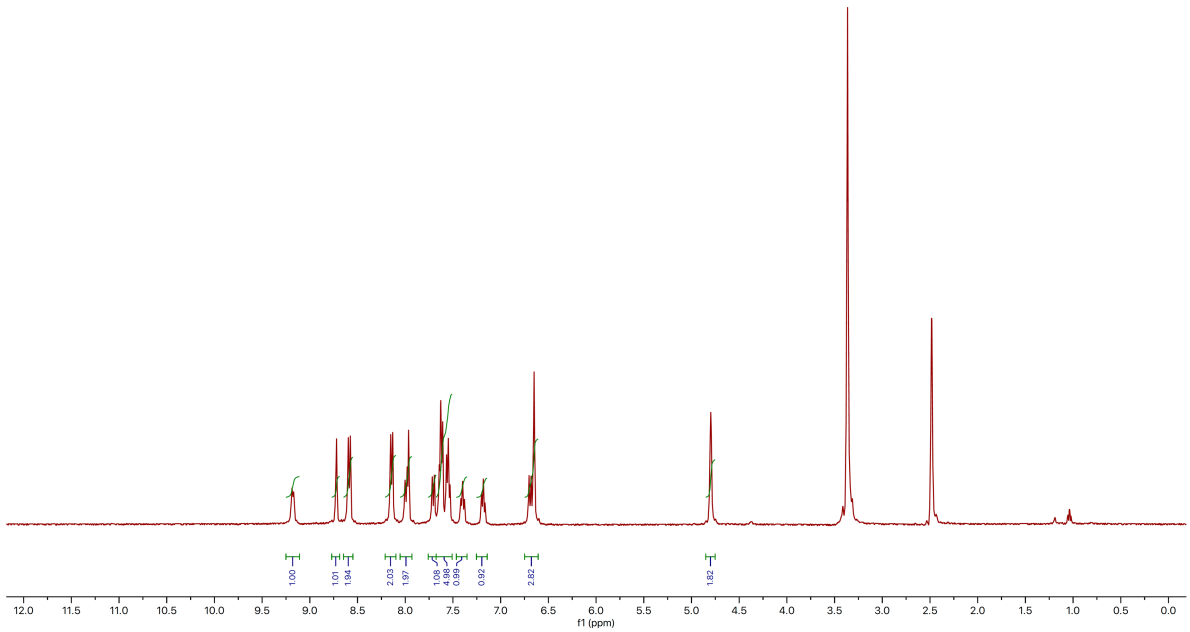


Figure S7. ^{1}H NMR (400 MHz, DMSO-d_6) spectra of **A1**

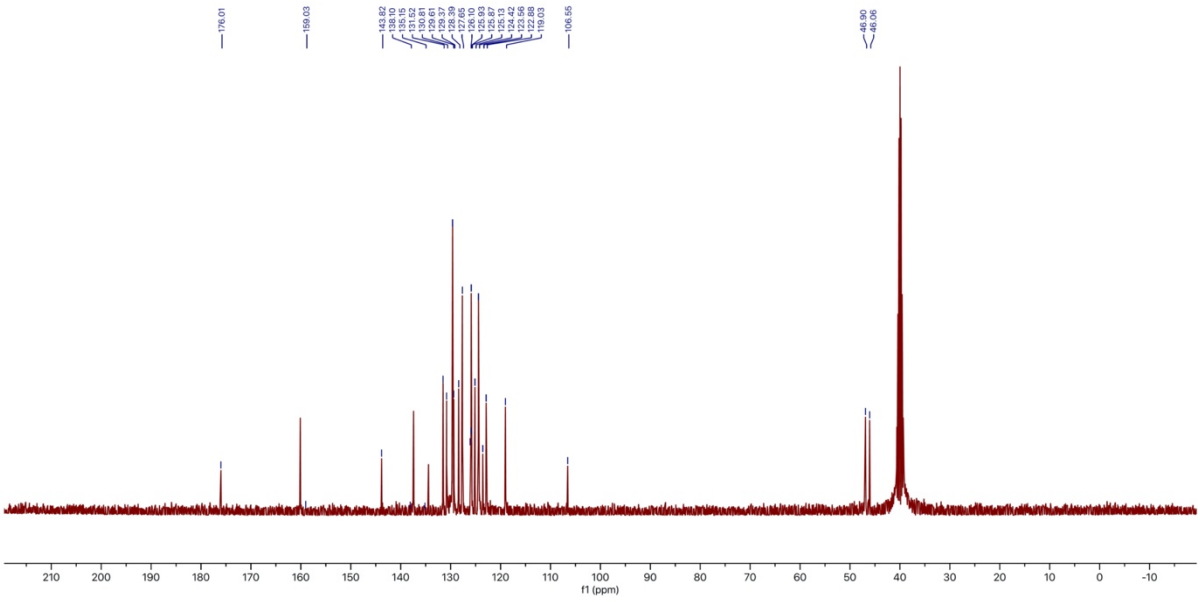


Figure S8. ^{13}C NMR (100 MHz, DMSO-d_6) spectra of **A1**

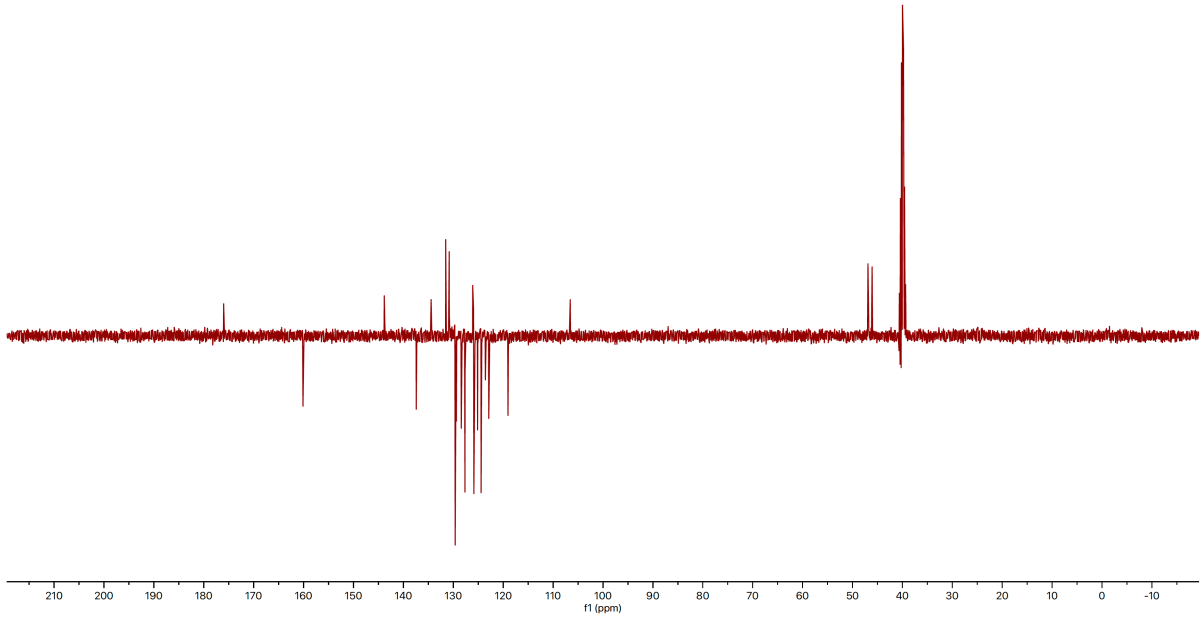


Figure S9. APT NMR spectra of **A1**

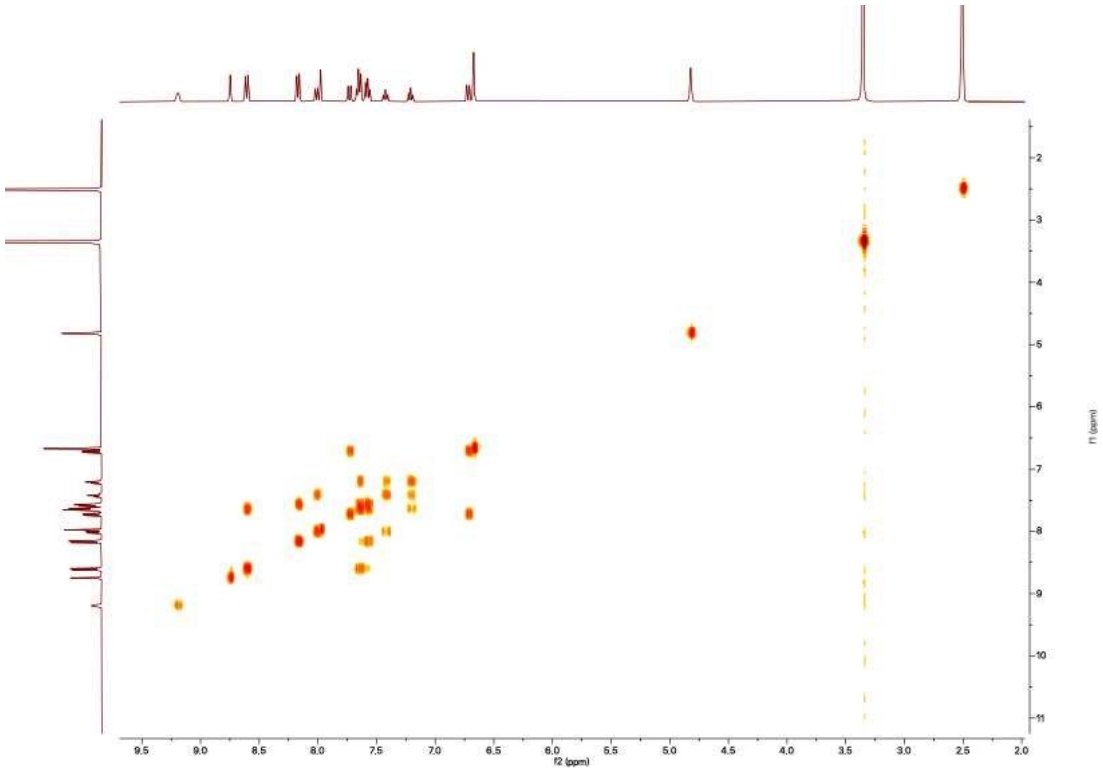


Figure S10. COSY NMR spectra of **A1**

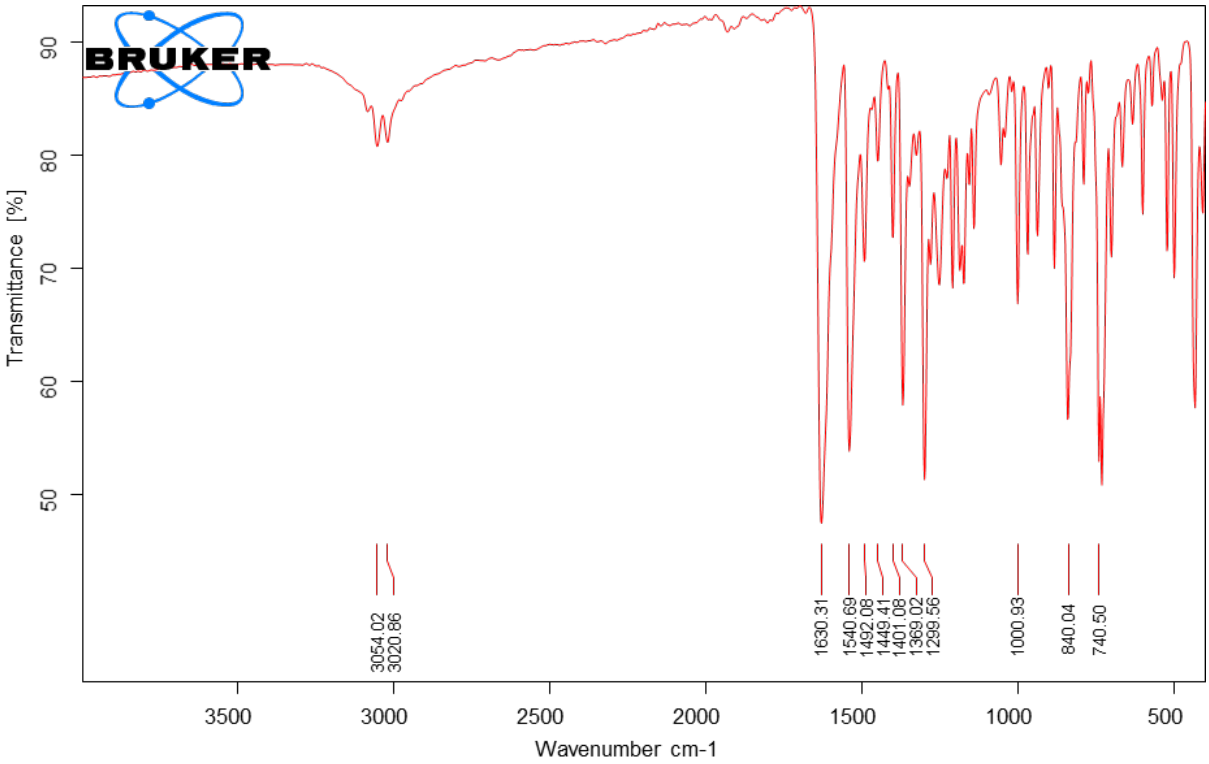


Figure S11. FTIR spectra of **A2**

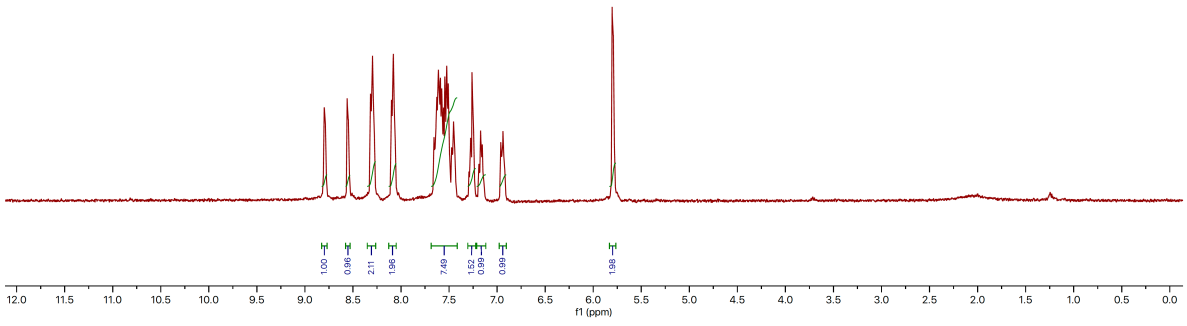


Figure S12. ^{1}H NMR (400 MHz, $CDCl_3$) spectra of **A2**

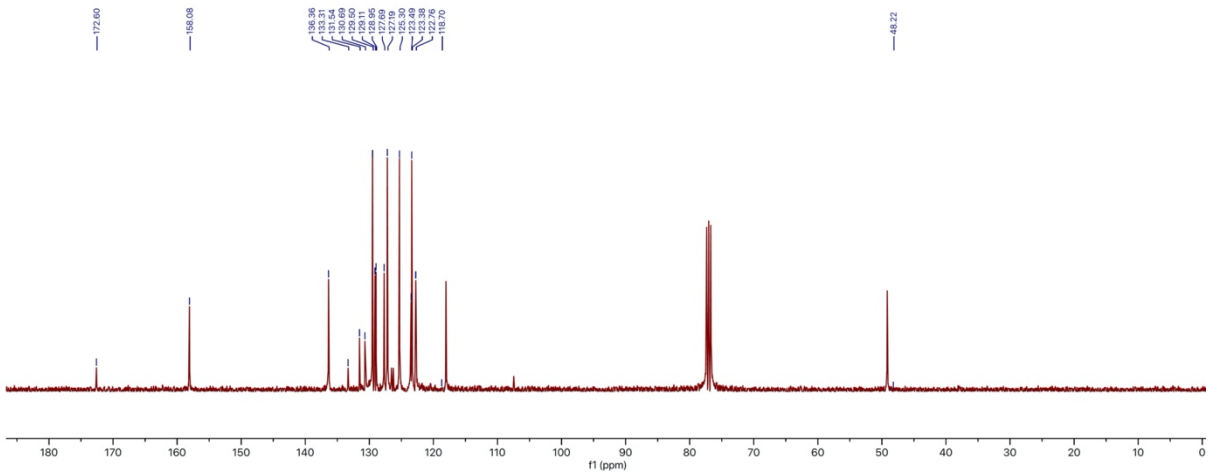


Figure S13. ^{13}C NMR (100 MHz, $CDCl_3$) spectra of **A2**

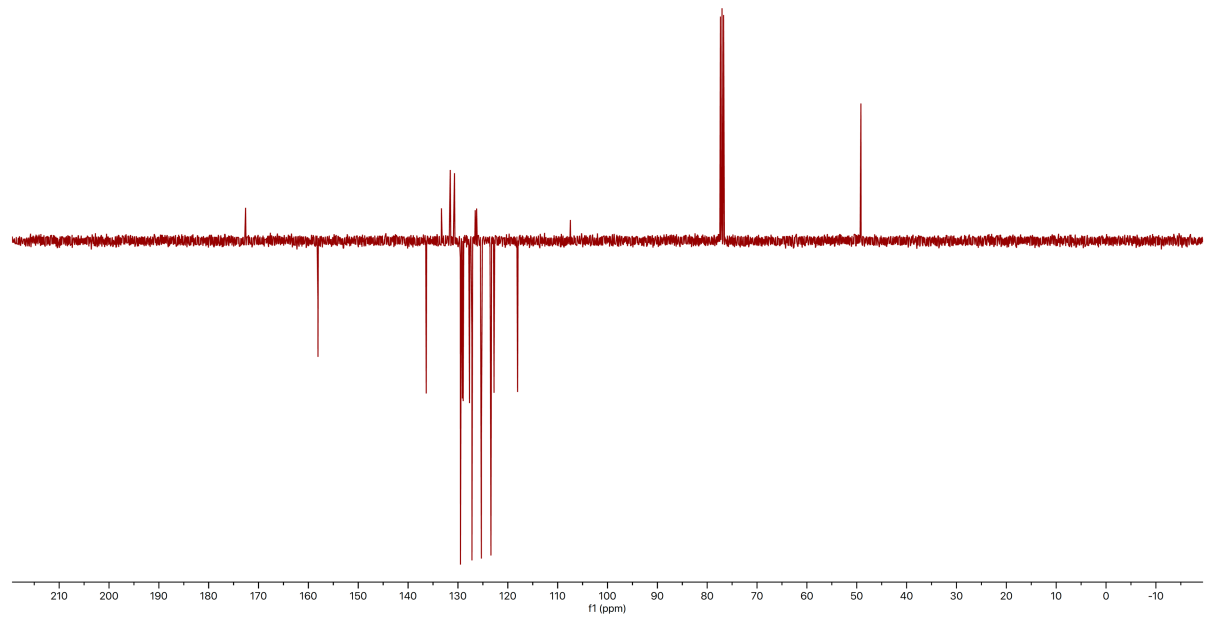


Figure S14. APT NMR spectra of **A2**

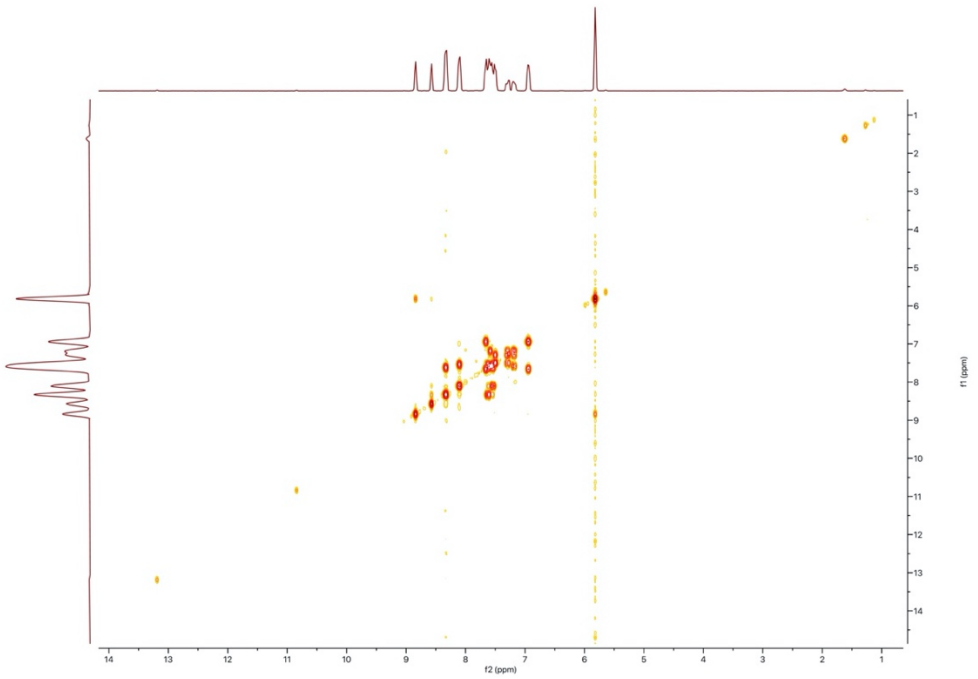


Figure S15. COSY NMR spectra of **A2**

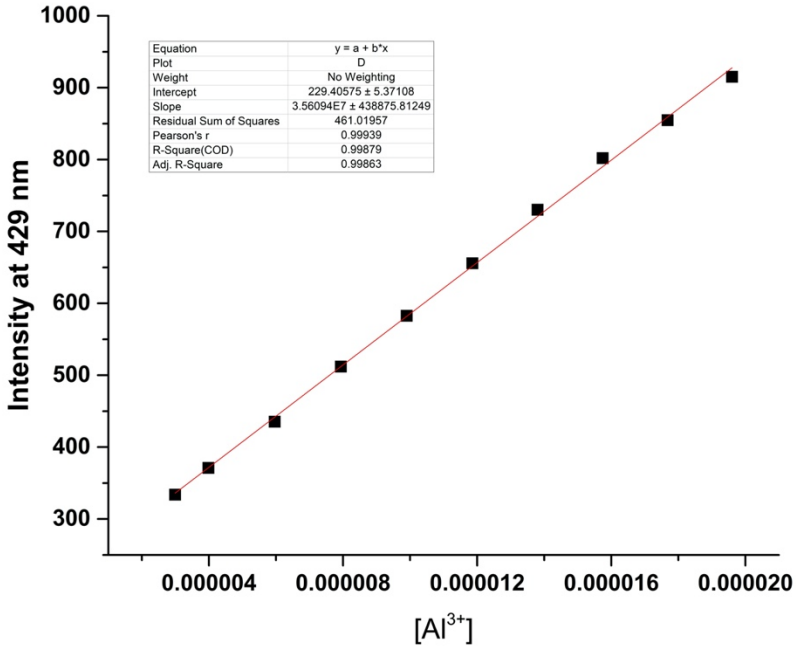


Figure S16. The plot of normalized fluorescence intensities of **A1** at 429 nm versus Al^{3+} concentration

Table S1. Comparison of the related probes reported for Al^{3+} detection by fluorescence.

Reference	Detection limit	Bioimaging	Response time
[27]	1 μM	None	None
[37]	2.05 μM	HeLa	None
[38]	2.67 μM	None	None
[39]	6.98 μM	None	None
Present study	0.117 μM	DLD-1 and CCD-18Co	within 10 s

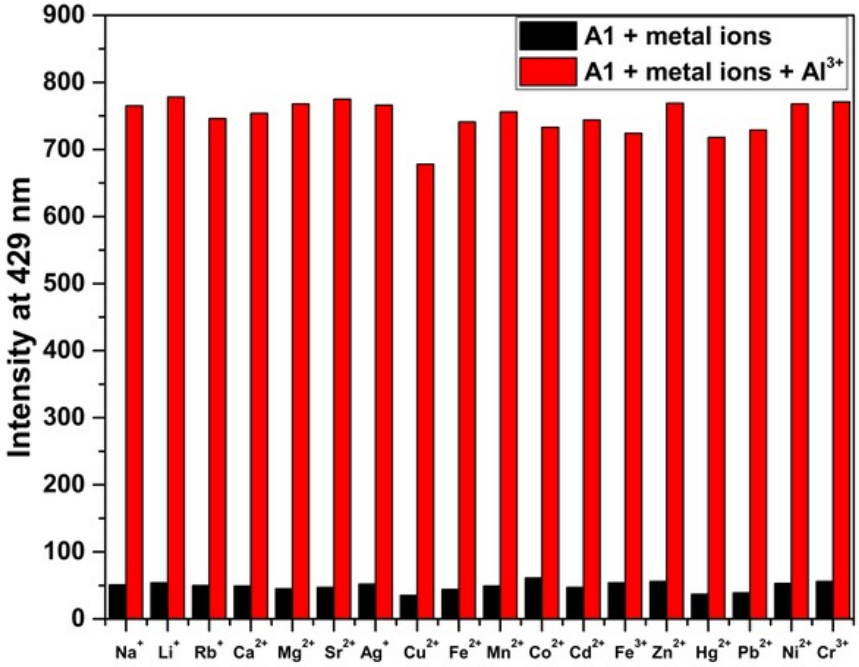


Figure S17. Emission intensity responses of **A1** with competitive metal ions in the absence (black bars) or presence (red bars) of Al^{3+}

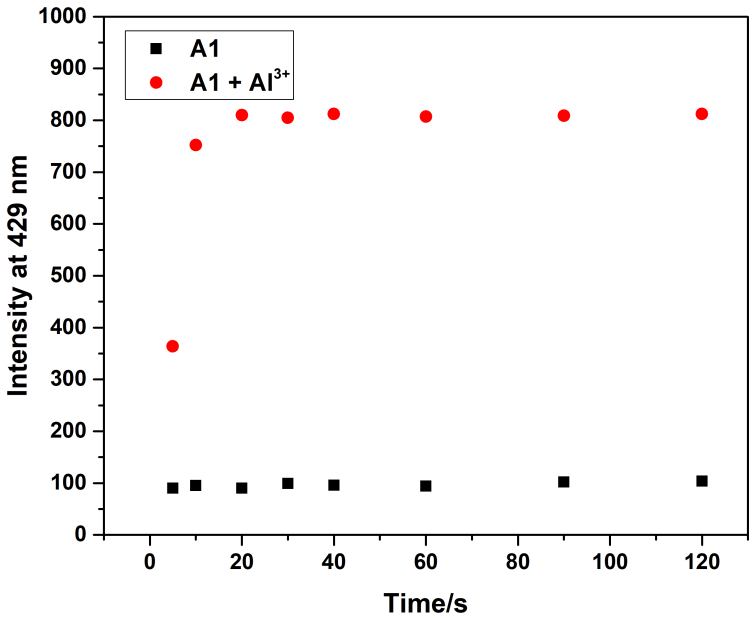


Figure S18. Time-dependent fluorescence changes of **A1** (2.0 μM) at 429 nm in presence or absence of Al^{3+} in a mixture of EtOH–H_2O (v/v = 6/4, 0.01 M, 0.01 M, potassium phosphate , pH = 6.90).

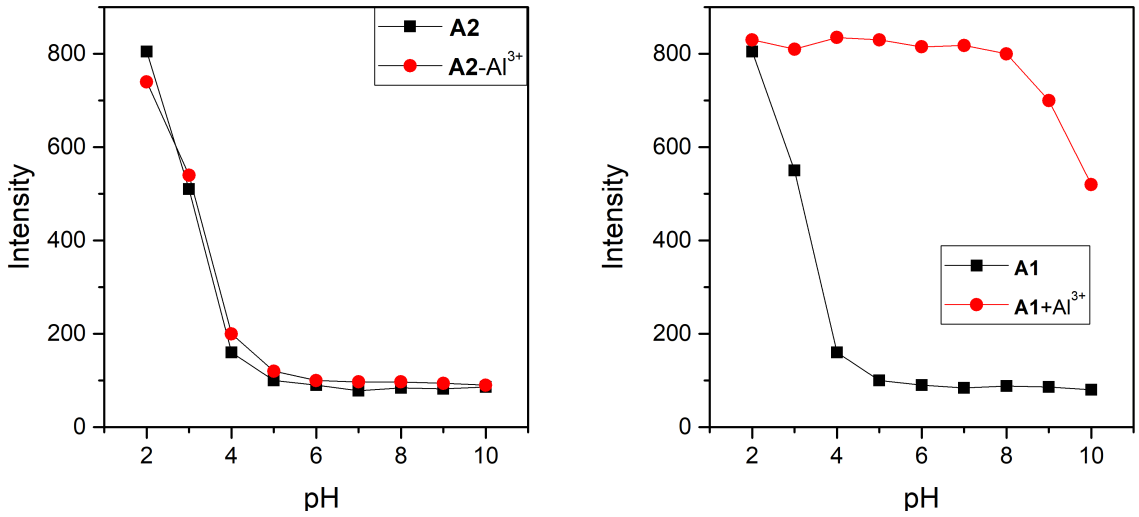


Figure S19. Emission intensity changes of **A1** (2.0 μM) and **A2** (2.0 μM) at various pH values in the presence or absence of Al^{3+} in a mixture of EtOH–H_2O (v/v = 6/4, 0.01 M, pH scale was constituted four different buffer solutions such as sodium borate; phosphate; citrate; glycine-HCl).

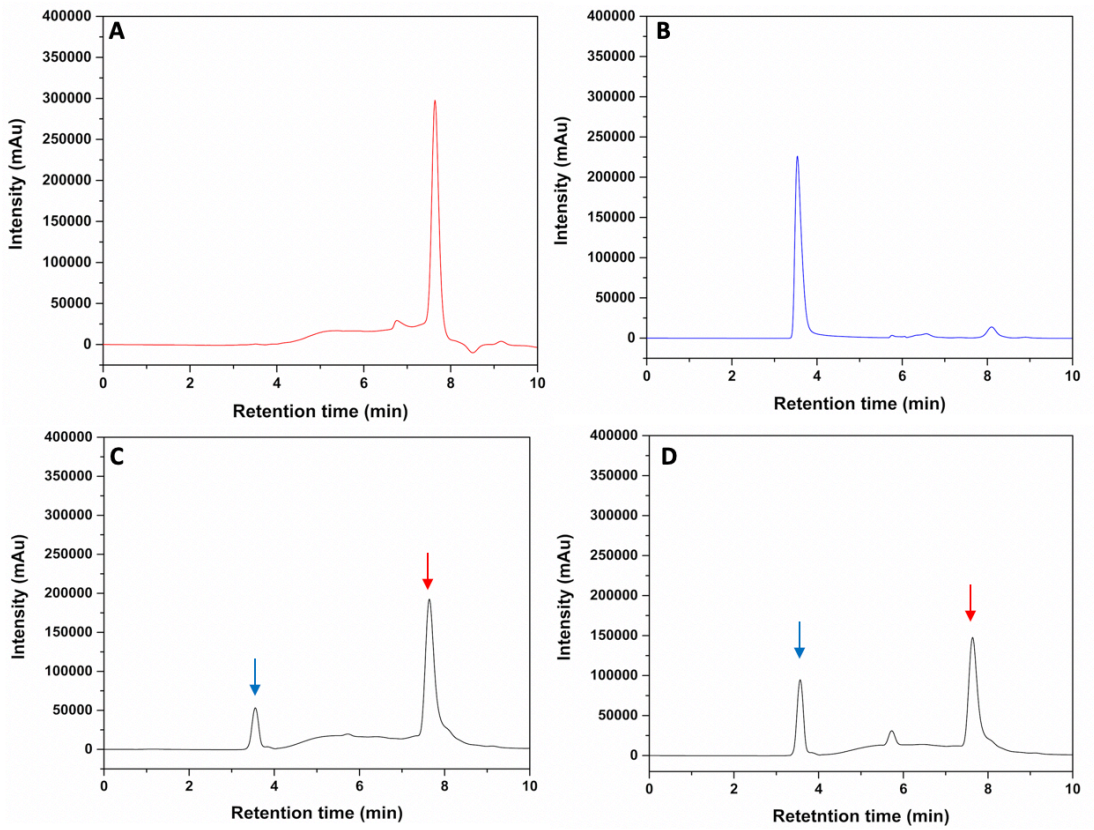
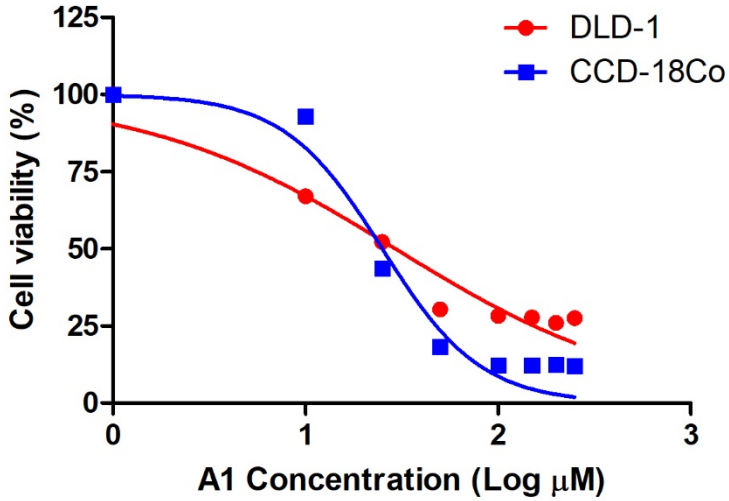


Figure S20. The HPLC chromatography of the probe **A1** (A, 40.0 μM), compound 4 (B, 40.0 μM) and the probe **A1** treated with Al^{3+} (80.0 μM) (C, after 10 min; D, after 20 min)



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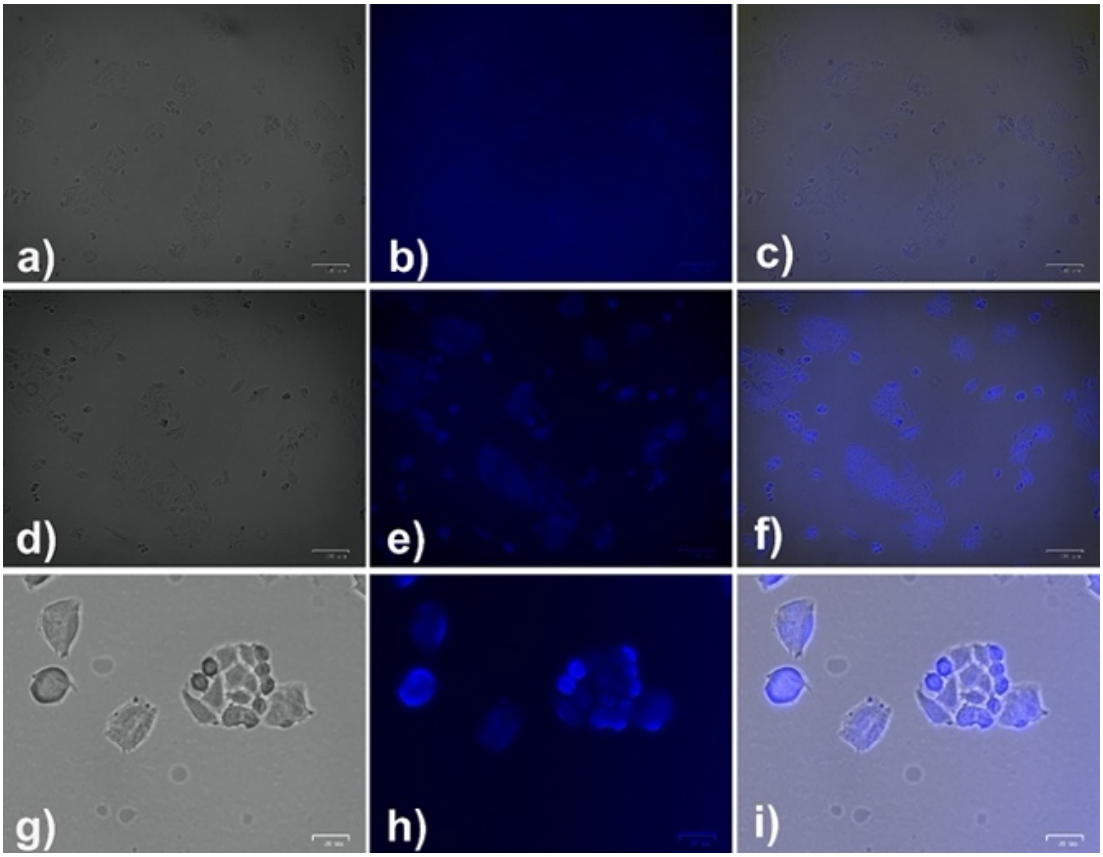

Fig. S22 Bioimaging performance of receptor **A1**. Fluorescence microscopy images of live DLD-1 cells prestained with 5 μM of Al^{3+} for 45 min then stained with 5 μM of receptor **A1**. Left panels (a, d and g a) represent the bright field images, middle panels (b, e and h) represent the fluorescence images and right panels (c, f and i) represent the merge of the images. Scale bar a-f: 100 mm and g-i: 20 mm

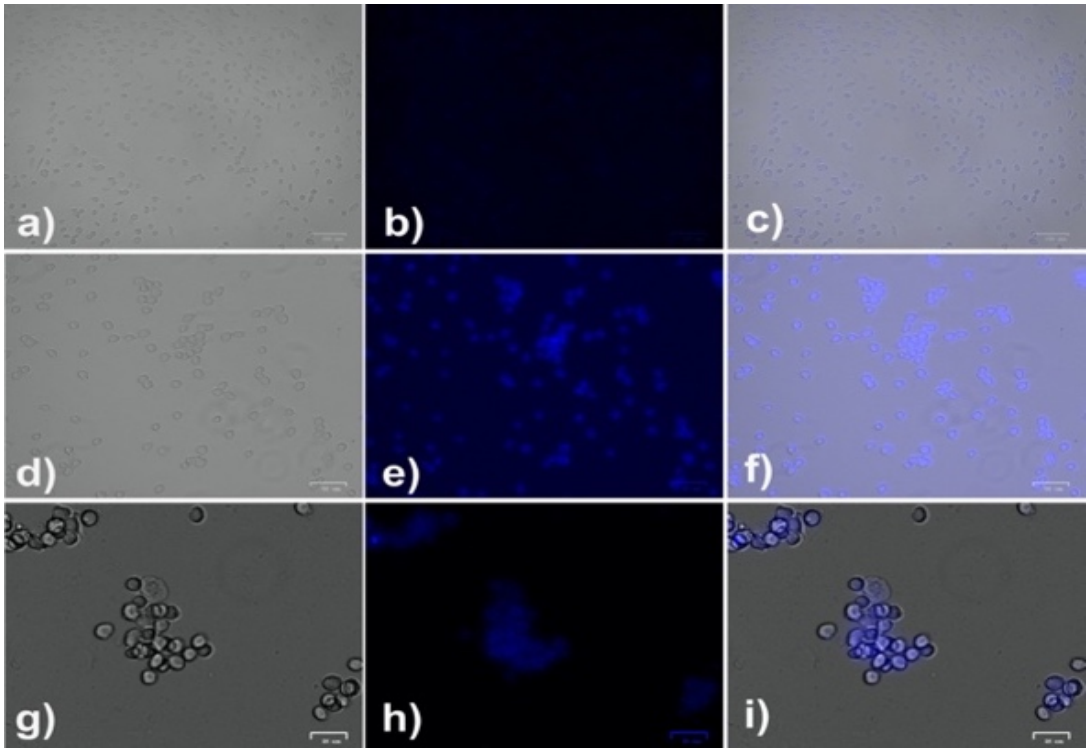

Fig. S23 Bioimaging performance of receptor **A1**. Fluorescence microscopy images of live CCD-18Co cells prestained with 5 μM of Al3+ for 45 min then stained with 5 μM of receptor **A1**. Left panels (a, d and g a) represent the bright field images, middle panels (b, e and h) represent the fluorescence images and right panels (c, f and i) represent the merge of the images. Scale bar a-f: 100 mm and g-i: 20 mm