Electronic Supplementary Material (ESI) for Analytical Methods.


# Supporting Information

# Novel pyrazine derivative as "turn on" fluorescent sensor for the highly selective and sensitive detection of $Al^{3+}$

**Chao-rui Li, Jing-can Qin, Guan-qun Wang, Bao-dui Wang and Zheng-yin Yang***

*College of Chemistry and Chemical Engineering, State Key Laboratory of Applied Organic Chemistry, Lanzhou University, Lanzhou 730000, P.R. China*

***Corresponding author. Tel.: +86 931 8913515; Fax: +86 931 8912582; e-mail: yangzy@lzu.edu.cn (Z.Y. Yang)*

**Fig. S1** $^{1}H$ NMR spectra of **1** in DMSO-$d_6$.

**Fig. S2** ESI-MS spectra of **1** in ethanol.

**Fig. S3** The relationship between the fluorescence emission intensity at 517 nm and the concentration of $Al^{3+}$.

**Fig. S4** Benesi-Hildebrand plot for determination of the binding constant between **1** and $Al^{3+}$.

**Fig. S5** Change in fluorescence spectra of **1** (50 μM) measured in ethanol upon addition of various concentration of $Al^{3+}$ (0.2, 0.4, 0.6, 0.8, 1.0 μM, respectively) with an excitation at 382 nm.

**Fig. S6** ESI-MS spectra of **1** and $Al^{3+}$ in ethanol.

**Fig. S7** $^{1}H$ NMR spectra of **1** upon addition of $Al^{3+}$ (1.0 *equiv.*) in DMSO-$d_6$.

**Fig. S8** $^{1}H$ NMR spectra of **1** upon addition of $Al^{3+}$ (2.0 *equiv.*) in DMSO-$d_6$.

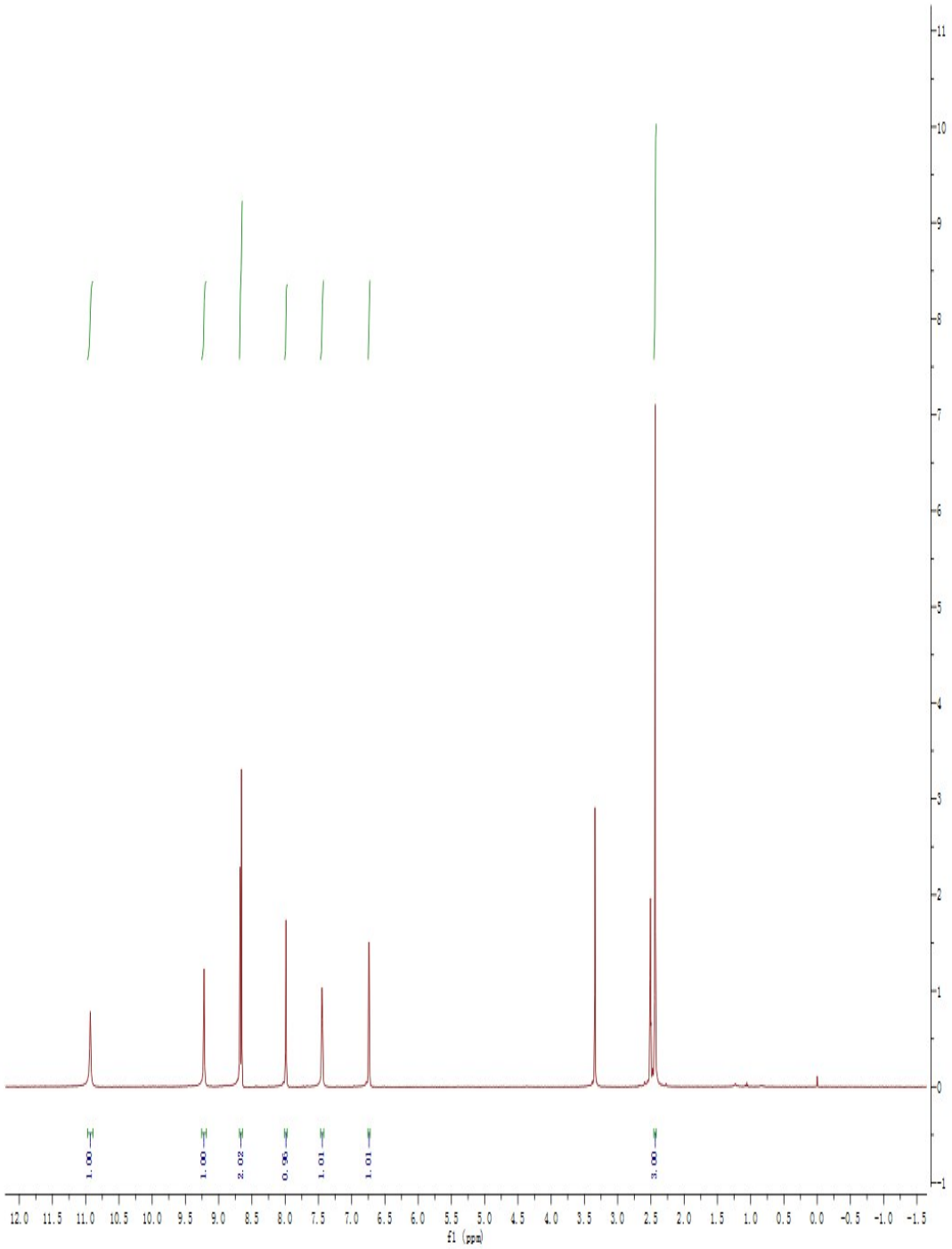


**Fig. S1** $^{1}$H NMR spectra of **1** in DMSO-$d_6$.

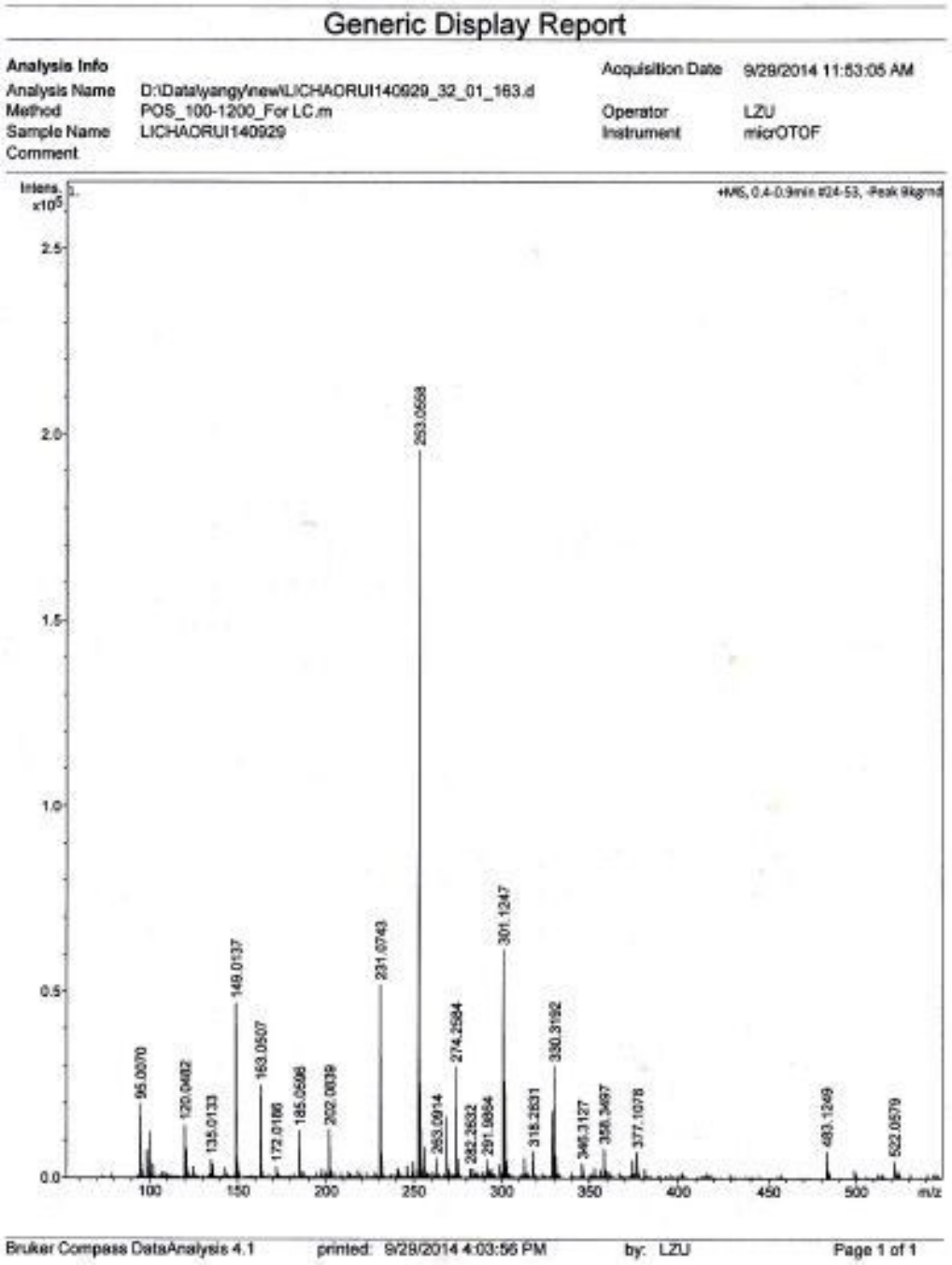


**Fig. S2** ESI-MS spectra of **1** in ethanol.

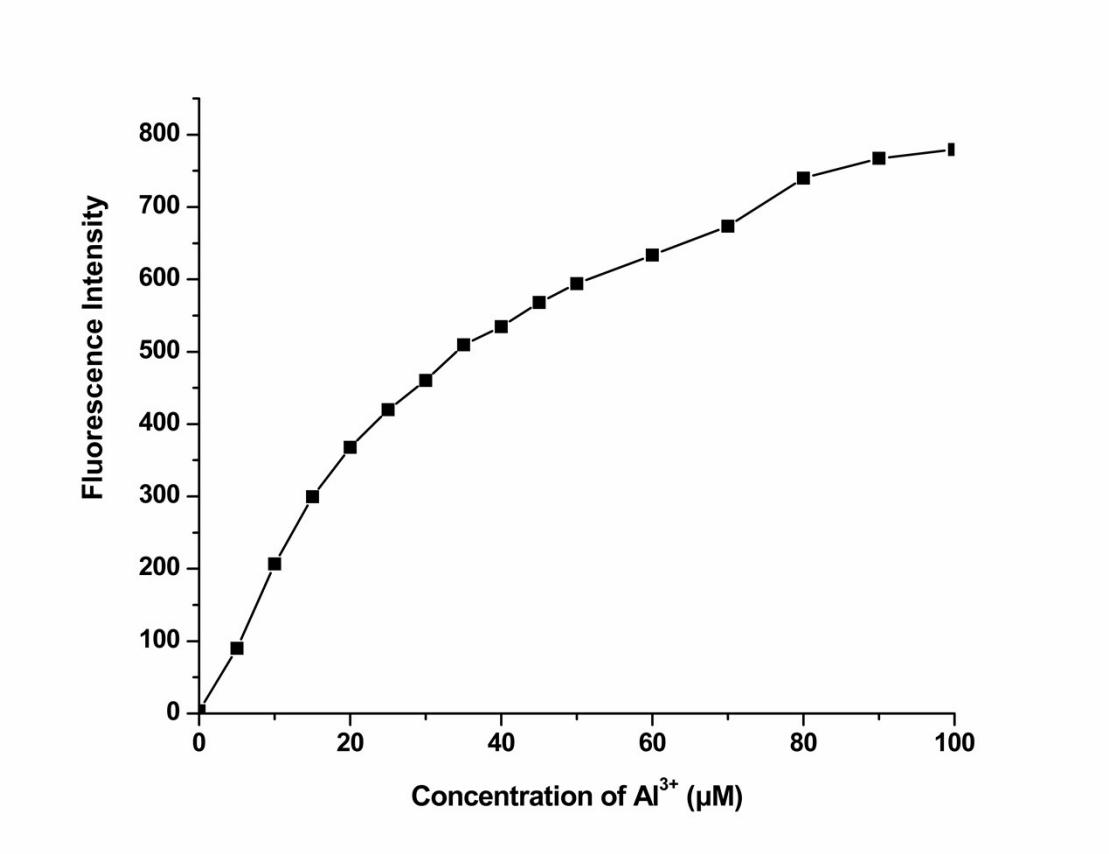


**Fig. S3** The relationship between the fluorescence emission intensity at 517 nm and the concentration of $Al^{3+}$.

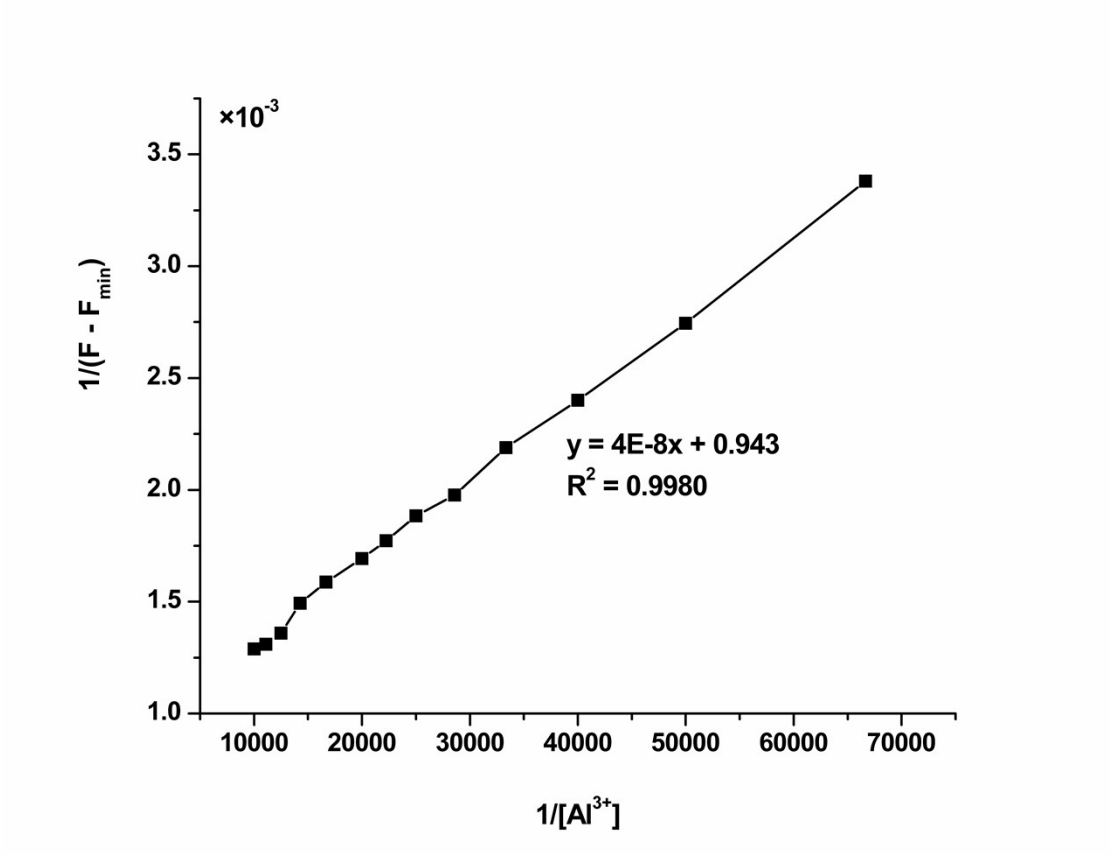


**Fig. S4** Benesi-Hildebrand plot for determination of the binding constant between **1** and $Al^{3+}$.

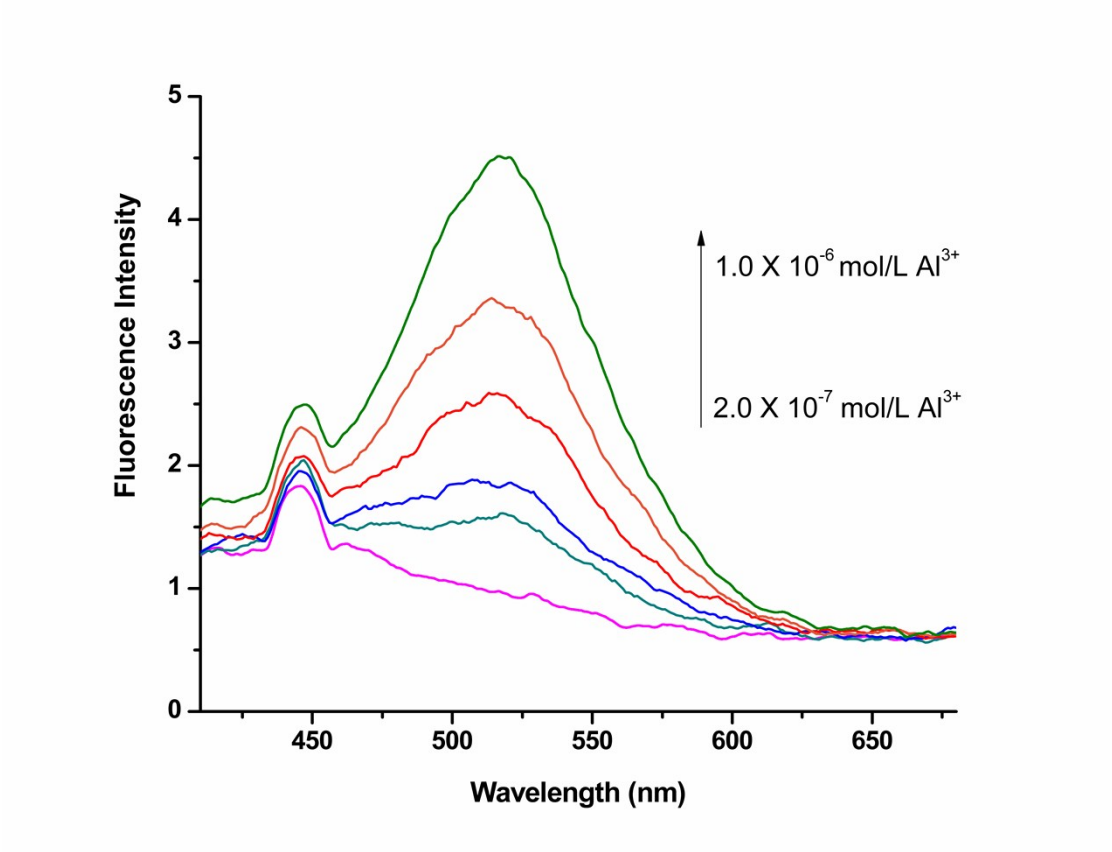


**Fig. S5** Change in fluorescence spectra of **1** (50 μM) measured in ethanol upon addition of various concentration of $Al^{3+}$ (0.2, 0.4, 0.6, 0.8, 1.0 μM, respectively) with an excitation at 382 nm.

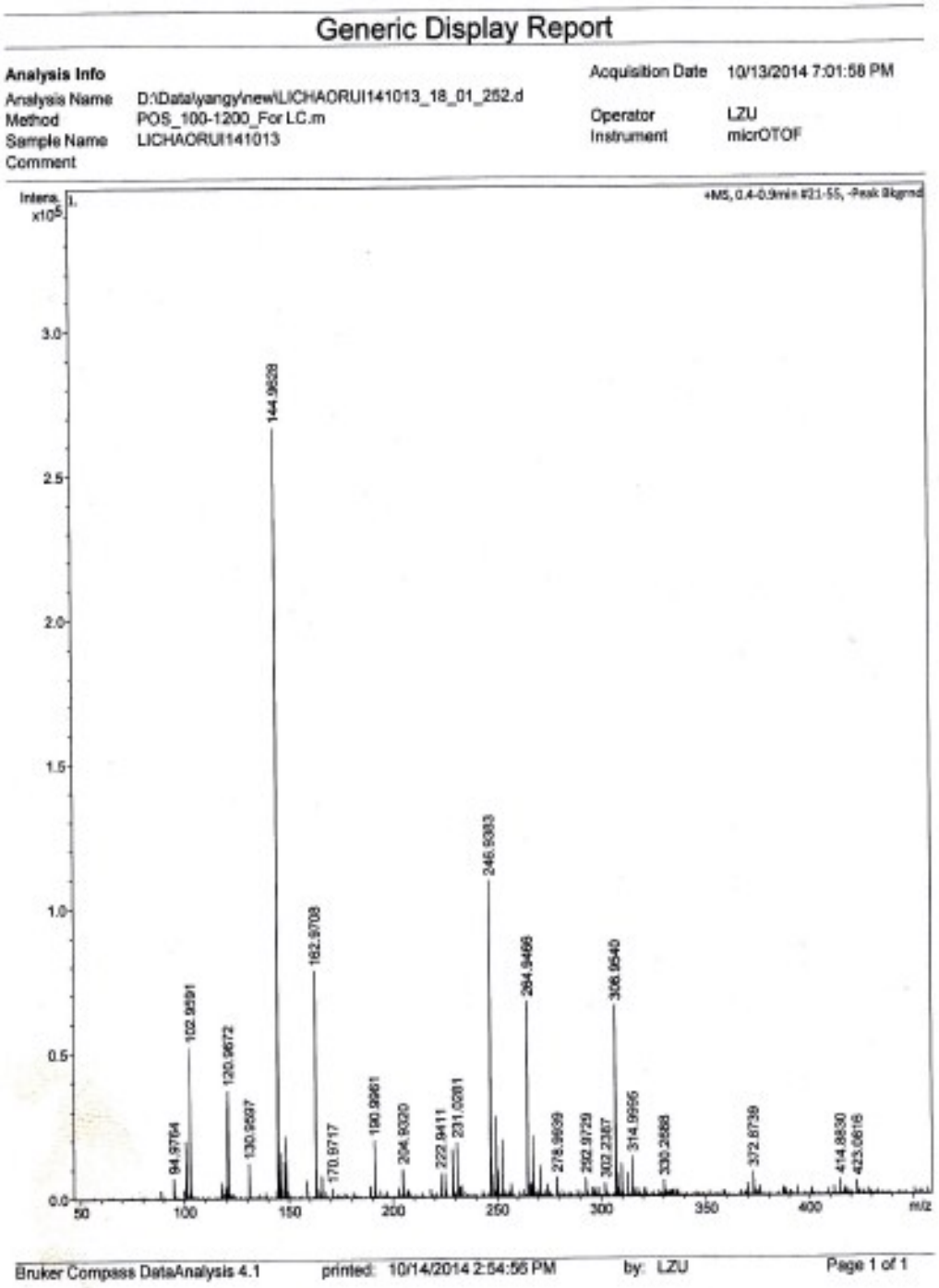


**Fig. S6** ESI-MS spectra of **1** and $Al^{3+}$ in ethanol.

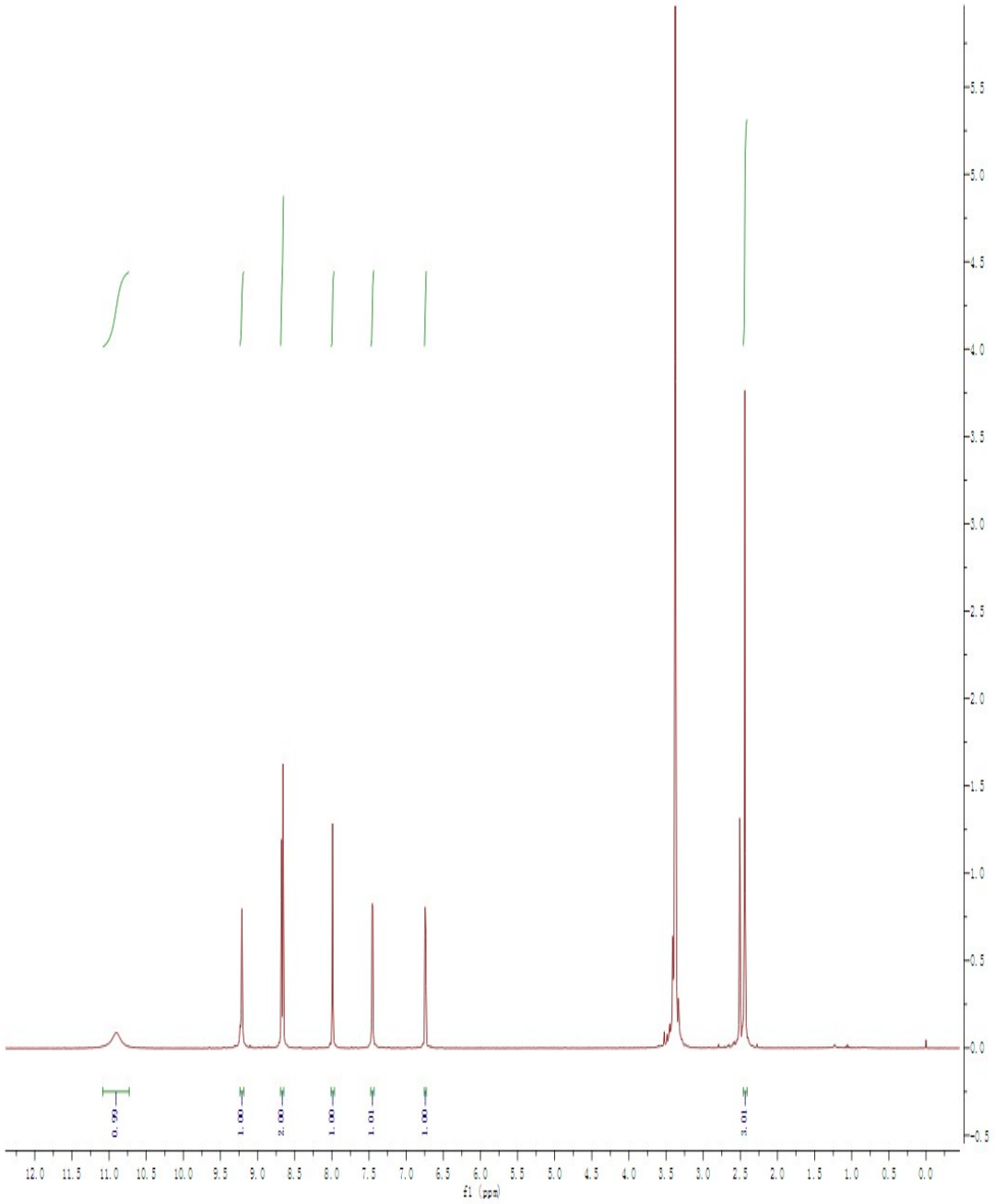


**Fig. S7** $^{1}$H NMR spectra of **1** upon addition of $Al^{3+}$ (1.0 *equiv.*) in DMSO-$d_6$.

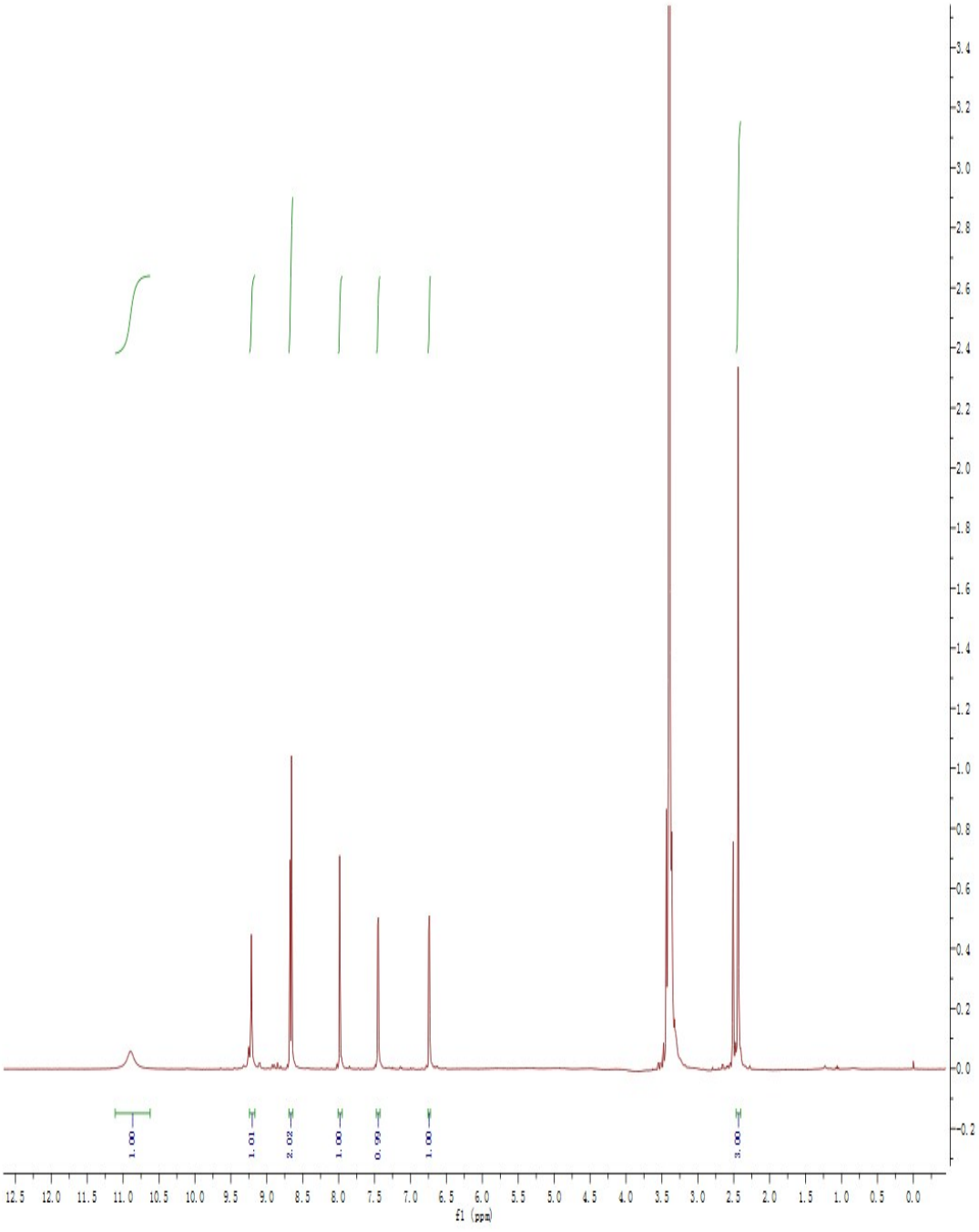


**Fig. S8** $^{1}$H NMR spectra of **1** upon addition of $Al^{3+}$ (2.0 *equiv.*) in DMSO-$d_6$.