**Fig. S1.** $^1$H NMR spectra (400 MHz) of 1O measured in DMSO-$d_6$.

**Fig. S2.** $^{13}$C NMR spectra (100 MHz) of 1O measured in DMSO-$d_6$.

**Fig. S3.** (A) Job's plot showing the 1:1 complex between Al$^{3+}$ and 1O; (B) Job's plot showing the 1:1 complex between Zn$^{2+}$ and 1O.

**Fig. S4.** The limit of detection (LOD) and Hildebrand-Benesi plot for 1O in methanol ($2.0 \times 10^{-5}$ mol L$^{-1}$): (A) Hildebrand-Benesi plot based on the 1:1 for 1O, the association constant of 1O with Al$^{3+}$ was calculated to be $2.7 \times 10^4$ L·mol$^{-1}$; (B) Hildebrand-Benesi plot based on the 1:1 for 1O, the association constant of 1O with Zn$^{2+}$ was calculated to be $1.98 \times 10^5$ L·mol$^{-1}$; (C) LOD for Al$^{3+}$ was $6.7 \times 10^{-9}$ mol L$^{-1}$. (D) LOD for Zn$^{2+}$ was $3.7 \times 10^{-8}$ mol L$^{-1}$.

**Fig. S5** (A) Mass spectra showing the 1:1 complex of 1O and Al$^{3+}$/Zn$^{2+}$; the mass spectra of 1O$'$ and 1O$''$. 
Fig. S3
Fig. S4
Fig. S5