Electronic Supplementary Material (ESI) for RSC Advances


Supplementary Materials

**Photophysical, G-quadruplex DNA binding and cytotoxic properties of terpyridine complexes with naphthalimide ligand**

Zhize Ou,[*a] Yimeng Qian,[a] Yunyan Gao,[a] Yunqing Wang,[a] Guoqiang Yang,[b] Yi Li,[c] Kaiyue Jiang[a] and Xin Wang[a]

[a]The Key Laboratory of Space Applied Physics and Chemistry, Ministry of Education, Department of Applied Chemistry, School of Science, Northwestern Polytechnical University, Xi'an, 710072, People's Republic of China. E-mail: ouzhize@nwpu.edu.cn, gaoyunyan@nwpu.edu.cn; Fax: +86 29 88431677; Tel: +86 29 88431677

[b] Key Laboratory of Photochemical Convesion and Optoelectronic Material, Technical Institute of Physics and Chemistry, Chinese Academy of Sciences, Beijing, 100190, People's Republic of China

[c]CAS Key Laboratory of Photochemistry, Institute of Chemistry, Chinese Academy of

Sciences, Beijing 100190, People's Republic of China

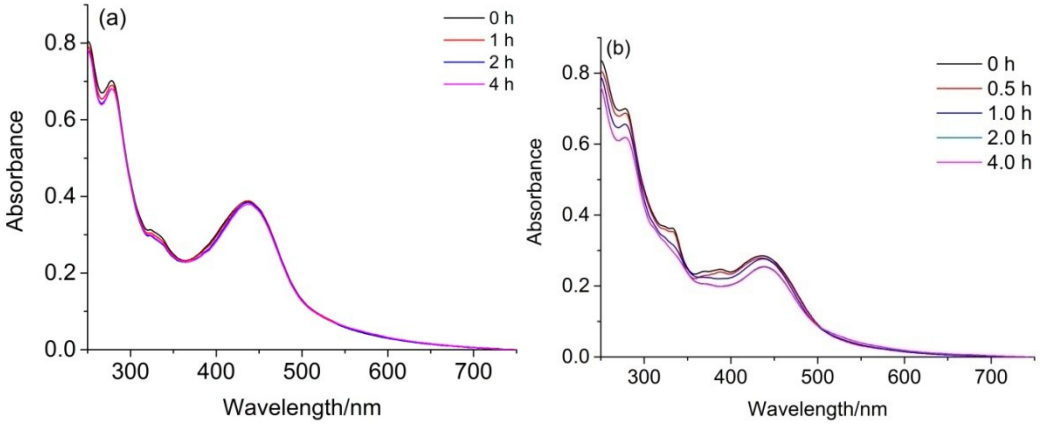


**Fig. S1** UV-Vis absorption spectral changes of **3** (30μM) in HEPES buffer (10 mM, pH 7.4) incubated in the presence of (a) 0.15 M KCl and (b) 1 mM glutathione.

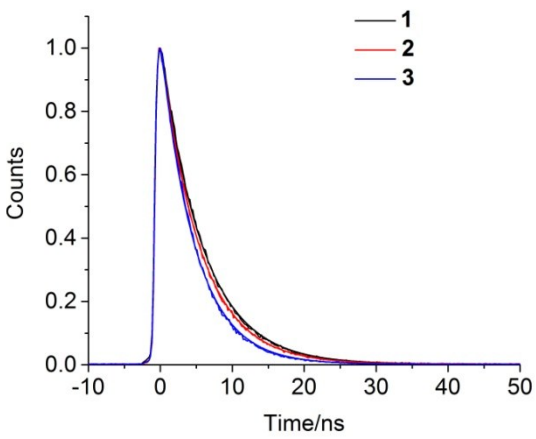


**Fig. S2** Fluorescence decay profiles of **1-3** (4 μM) in HEPES buffer solution (10 mM, pH 7.4) containing 0.1 M KCl ($\lambda_{ex}$= 435 nm).

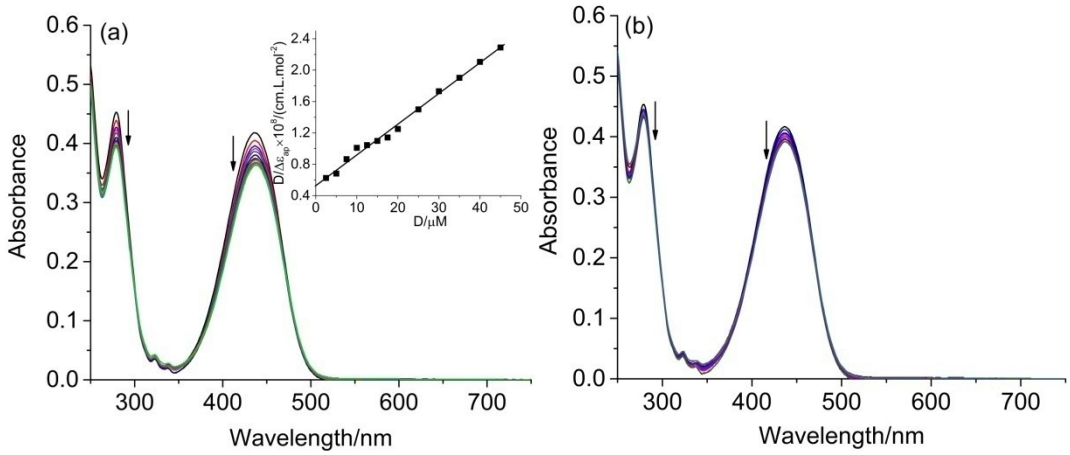


**Fig. S3** UV-Vis titration of **1** (30 μM) with (a) CT DNA and (b) Htelo in HEPES (10 mM, pH 7.4) containing 0.1 M NaCl. The arrow indicates the changes upon addition of DNA. Inset: Plot of $D/\Delta\varepsilon_{ap}$ versus D.

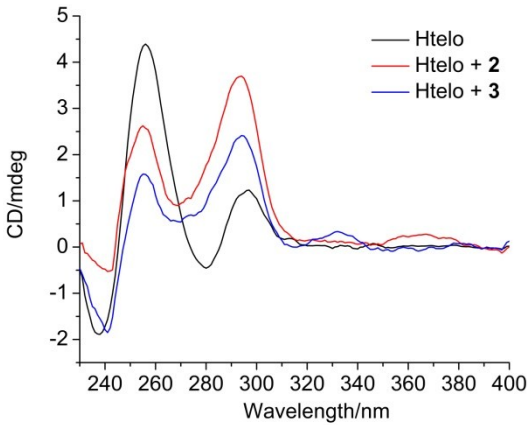


**Fig. S4** CD spectra of Htelo (10 μM) in 10 mM Tris-HCl (pH 7.4) in the absence of monovalent cation upon addition of the complexes **2-3** (20 μM).

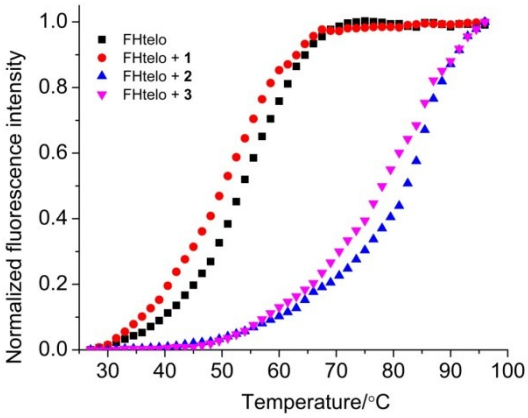


**Fig. S5** FRET melting assay of the labeled FHtelo (0.2 μM) in lithium cacodylate buffer (10 mM, pH 7.2), containing KCl (10 mM) and LiCl (90 mM), in the presence of **1-3** (1.0 μM).

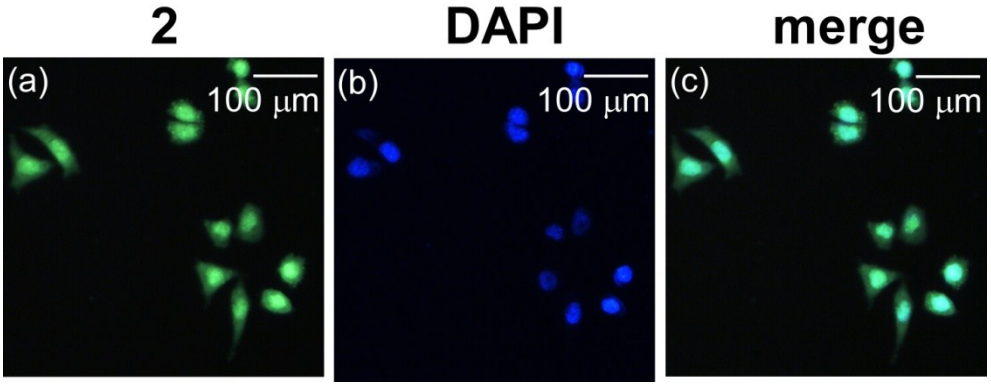


**Fig. S6** Double staining of A549 cells with **2** (5 μM) and DAPI (5 μM) at 37 °C for 0.5 h (a-c). Images from left to right: fluorescence image of **2** (laser 488 nm); laser images of DAPI (laser 405 nm); merged image.

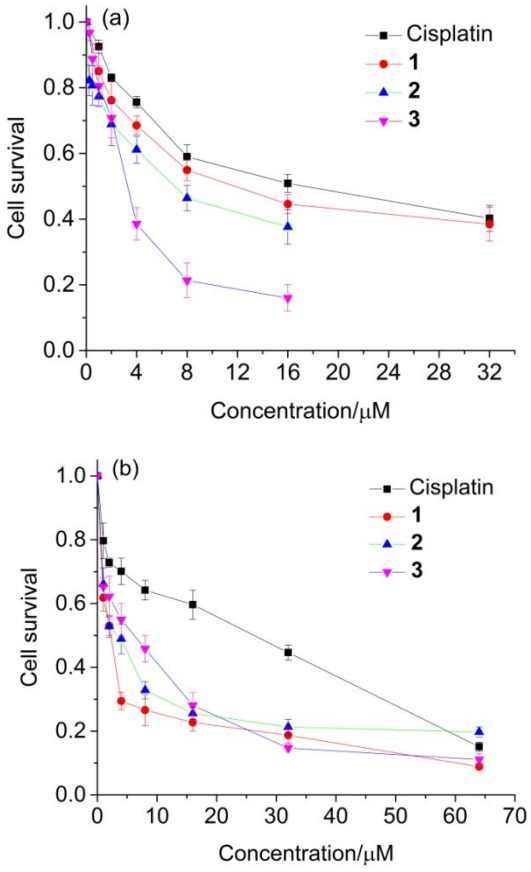


**Fig. S7** The cytotoxic activities of **1**, **2**, **3** and cisplatin against (a) A549 and (b) NIH3T3 cells. The drug treatment period is 48 h.

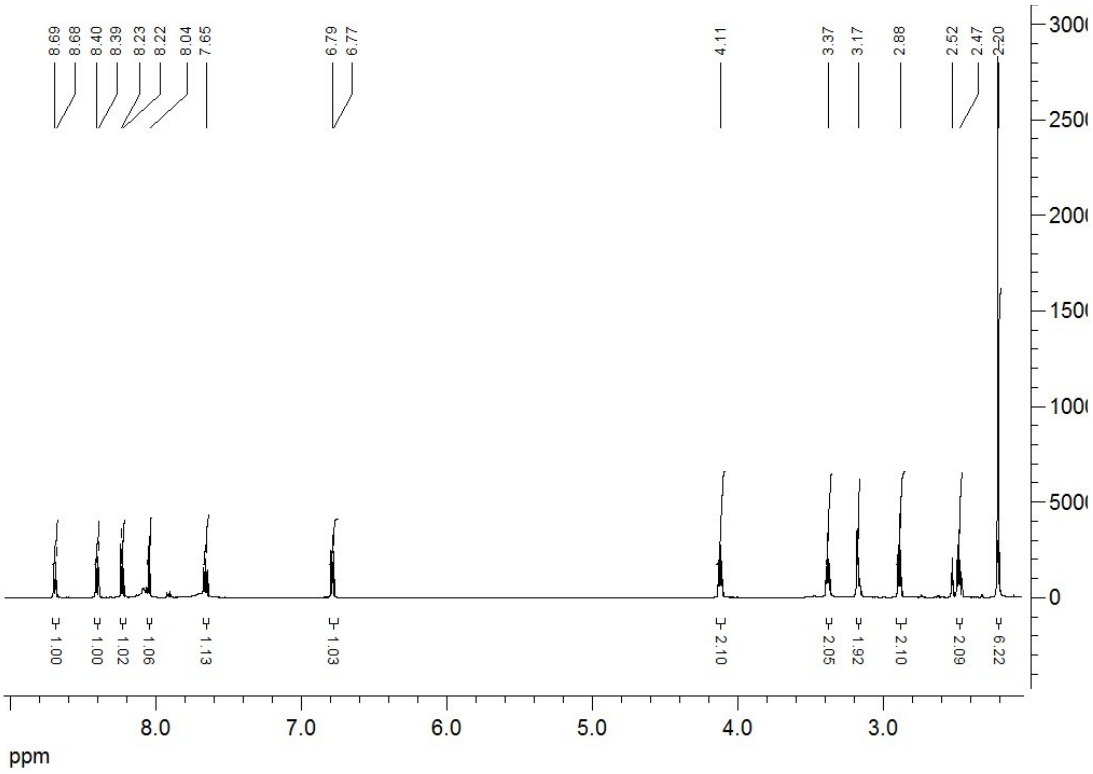


**Fig. S8** $^{1}$H NMR of compound **1** in DMSO-$d_6$.

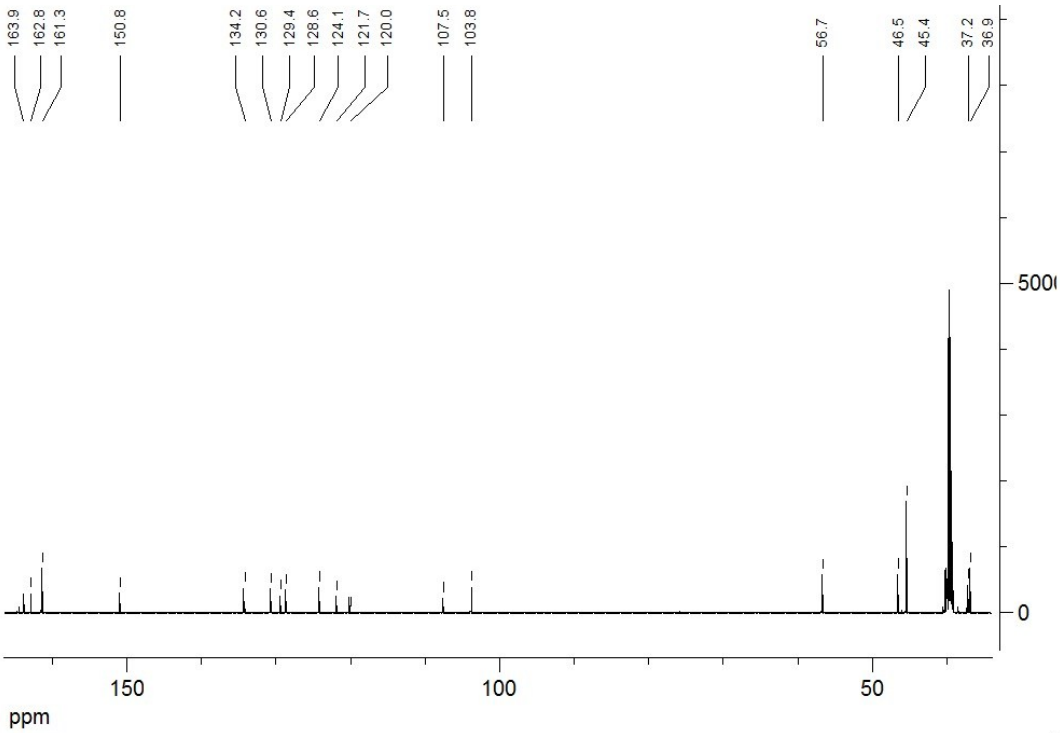


**Fig. S9** $^{13}$C NMR of compound **1** in DMSO-$d_6$.

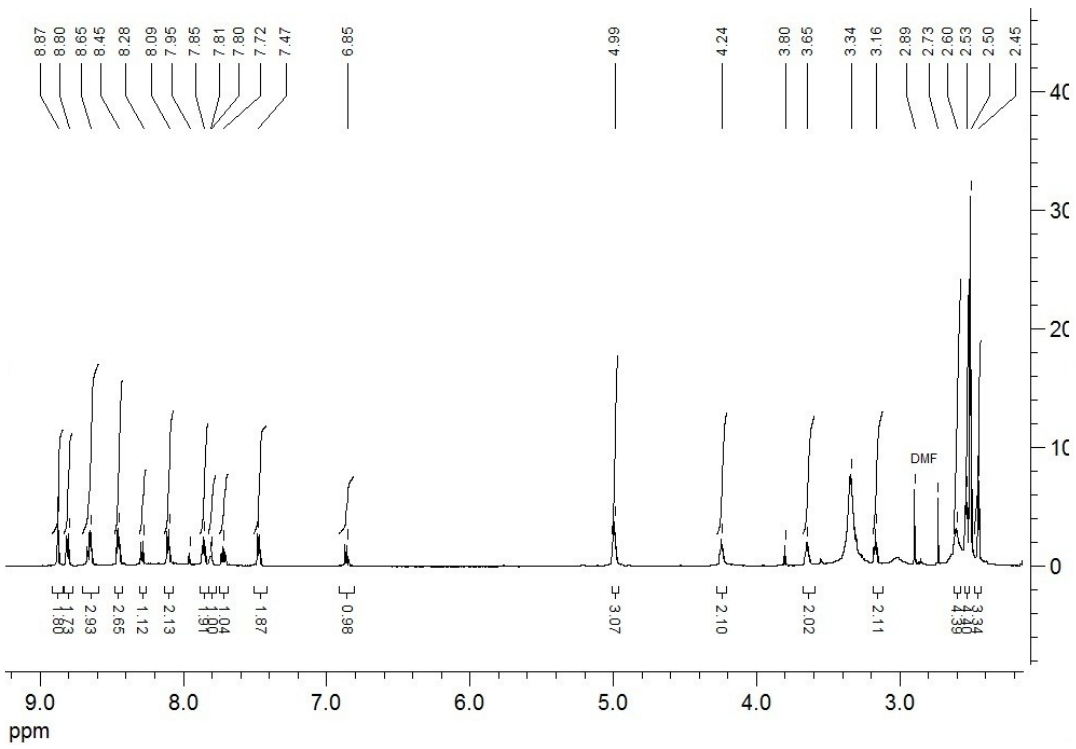


**Fig. S10** $^{1}$H NMR of complex **2** in DMSO-$d_6$.

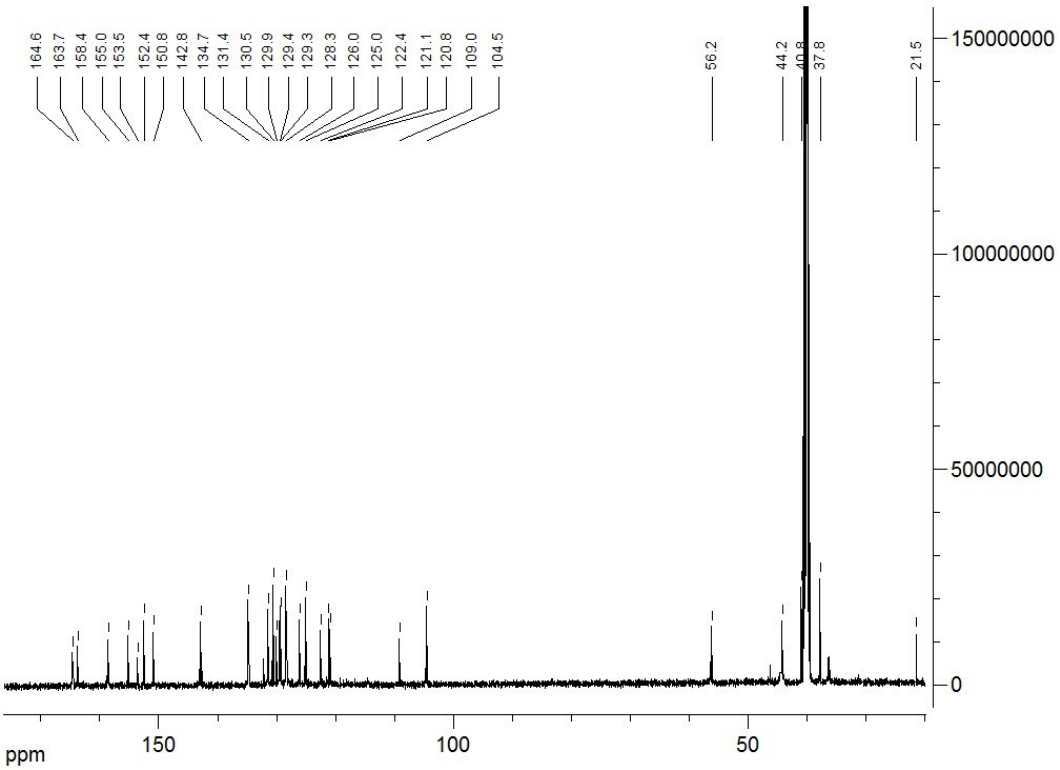


**Fig. S11** $^{13}$C NMR of complex **2** in DMSO-$d_6$.

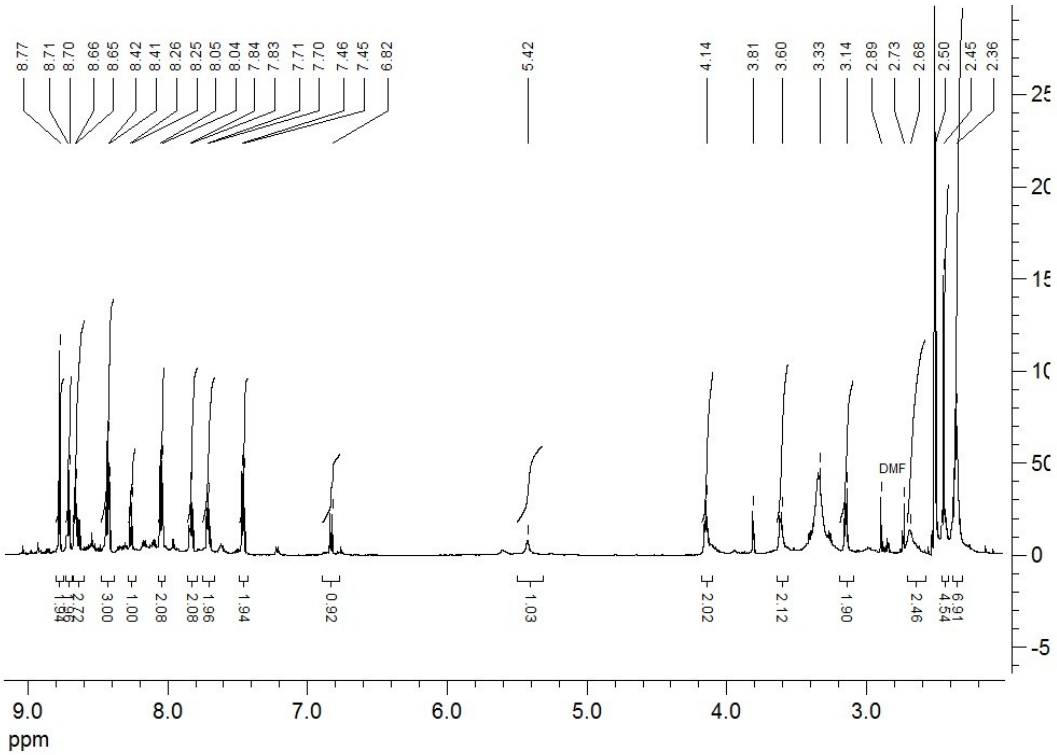


**Fig. S12** $^{1}$H NMR of complex **3** in DMSO-$d_6$.

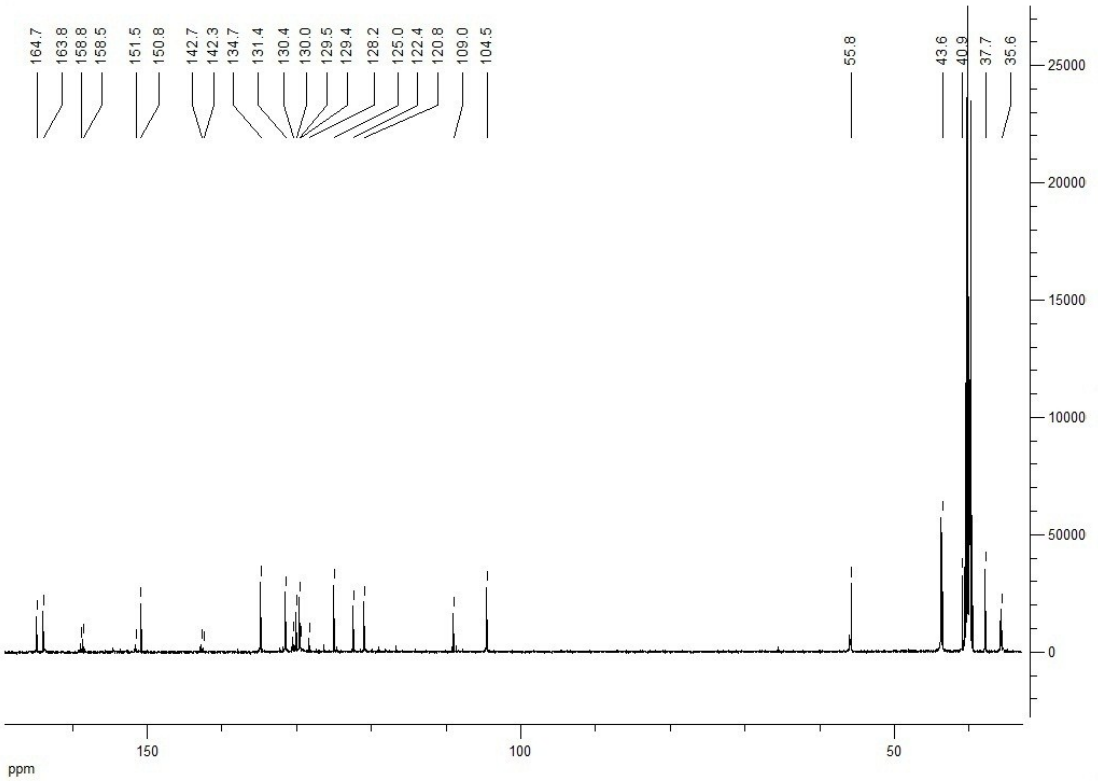


**Fig. S13** $^{13}$C NMR of complex **3** in DMSO-$d_6$.