**Supporting information**

# A viscosity-sensitive iridium(III) probe for lysosomal microviscosity quantification and blood viscosity detection in diabetic mice†

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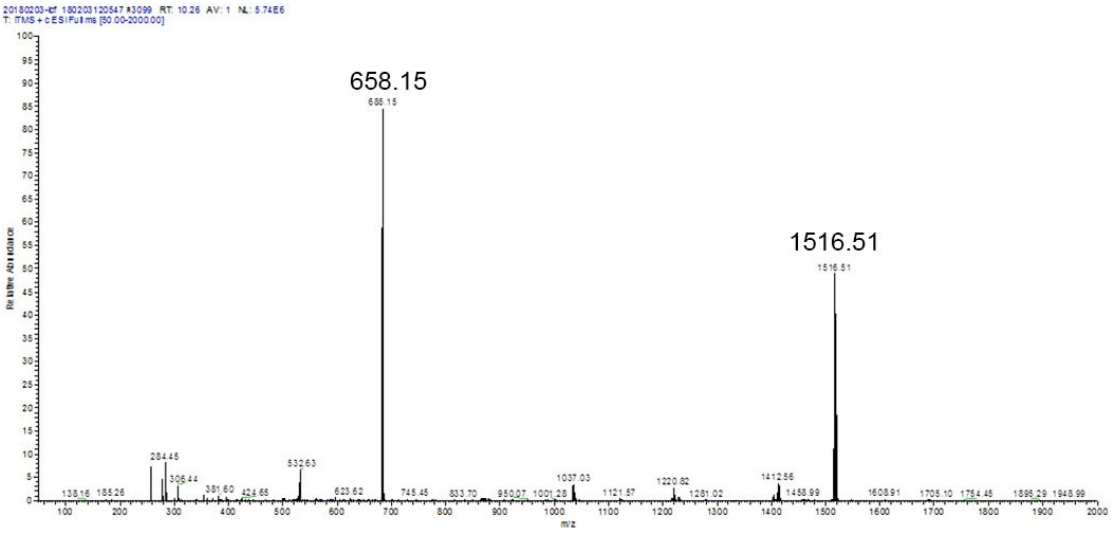


**Fig. S1.** The ESI-MS spectrum of **1**.

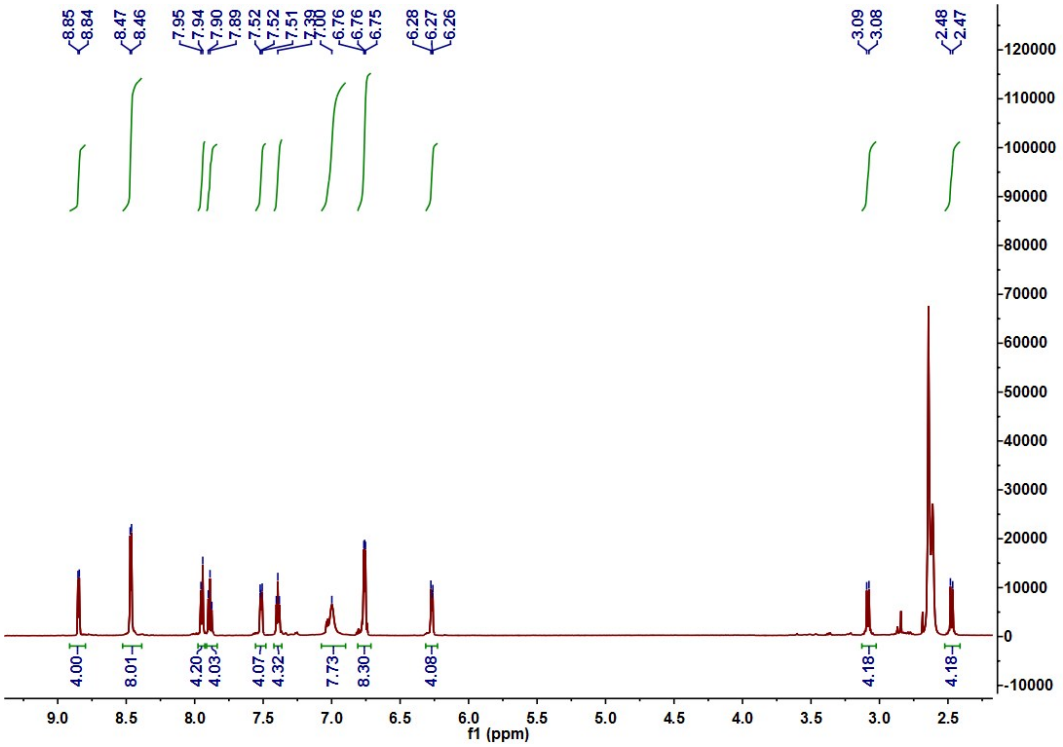


**Fig. S2.** The 600 MHz $^{1}$H NMR spectrum of **1** in the $CD_3CN$ solution.

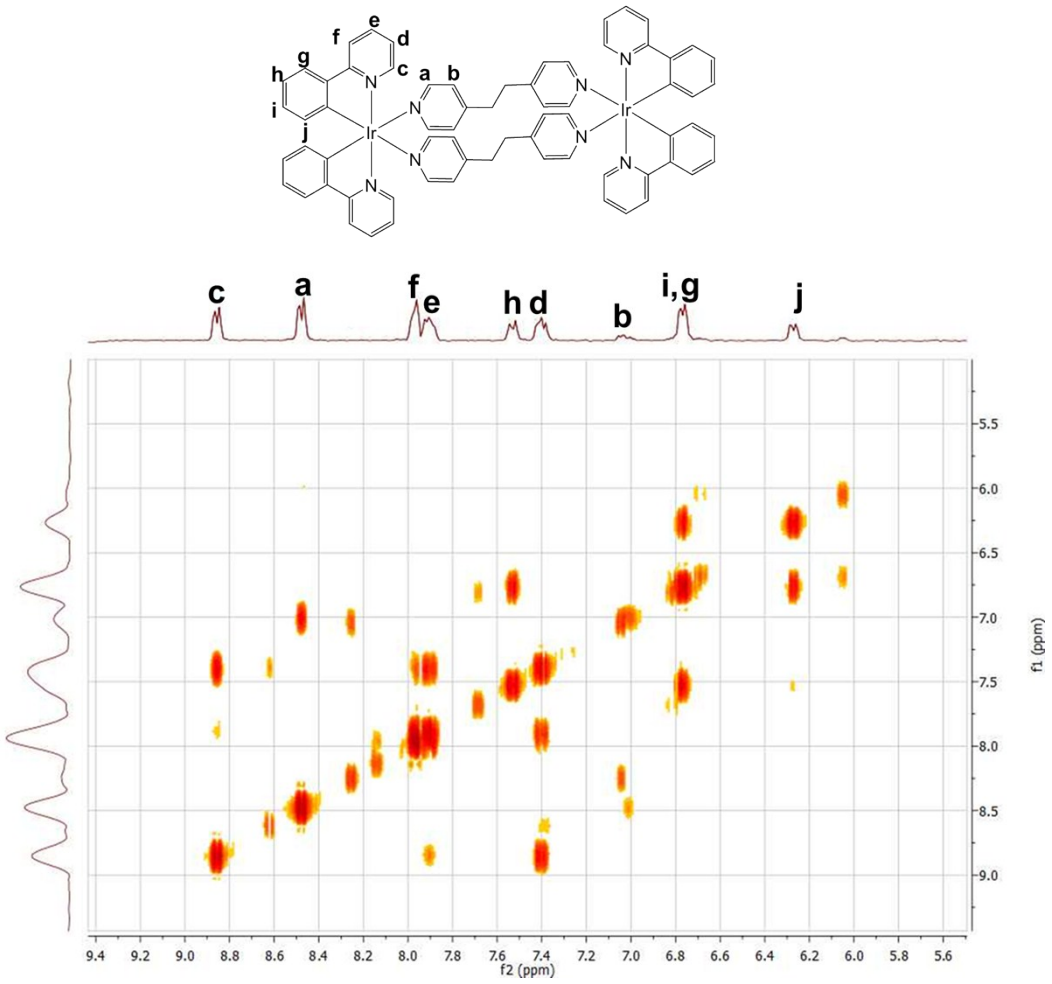


**Fig. S3.** The 600 MHz cosy NMR spectrum of **1** in the $CD_3CN$ solution.

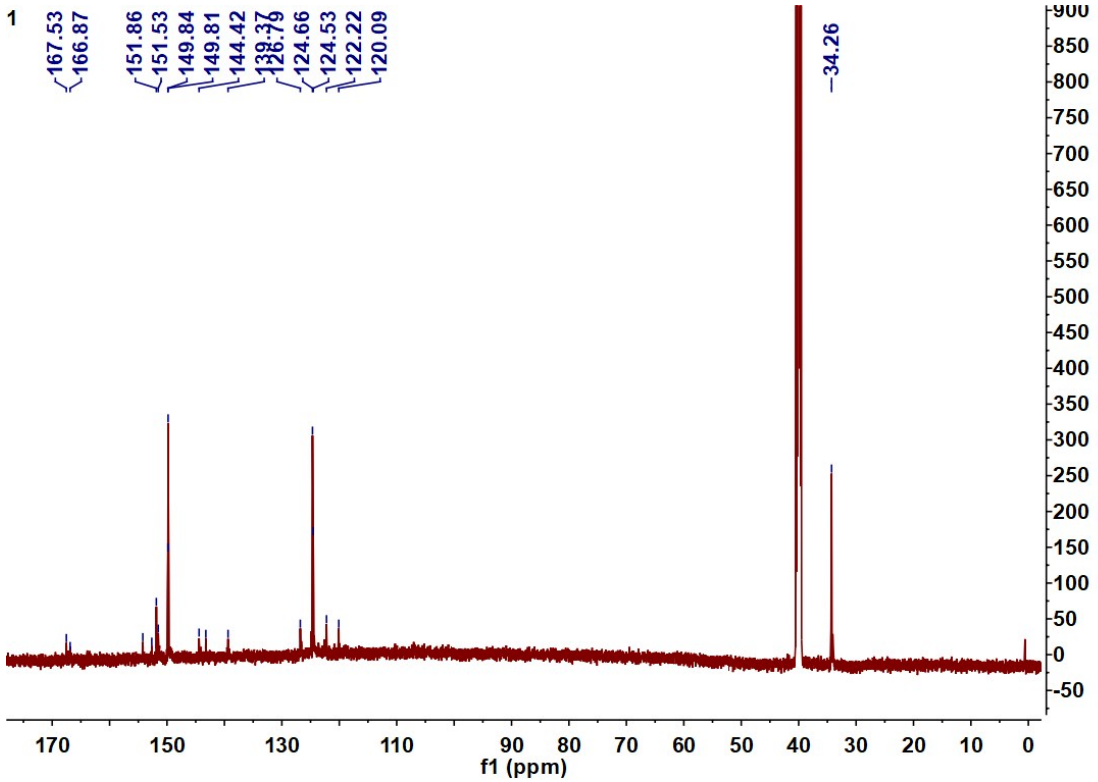


**Fig. S4.** The 151 MHz $^{13}C$ NMR spectrum of **1** in the DMSO-$d^6$ solution.

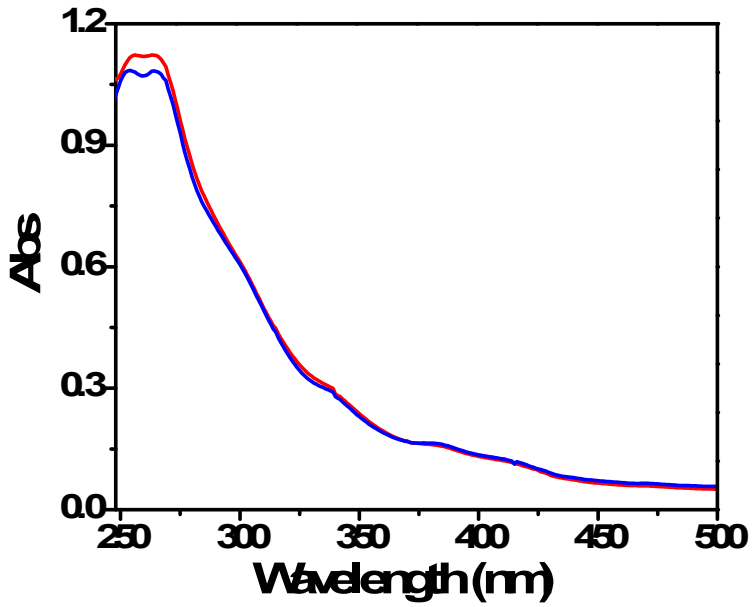


**Fig. S5.** The stability of **1** in the cell culture medium (RPMI-1640) (with 2% DMSO) for 72 h via UV-vis spectrophotometer.

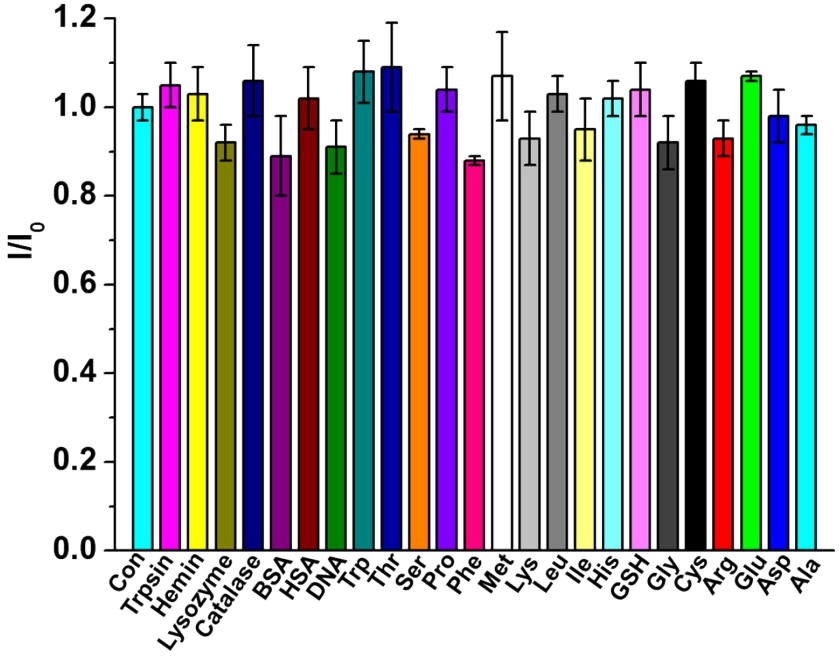


**Fig. S6.** The emission intensity at 479 nm of 10 μM **1** in the absence of ($I_0$) and in the presence of kinds of biological molecules (I). The wavelength of excitation was at 405 nm.

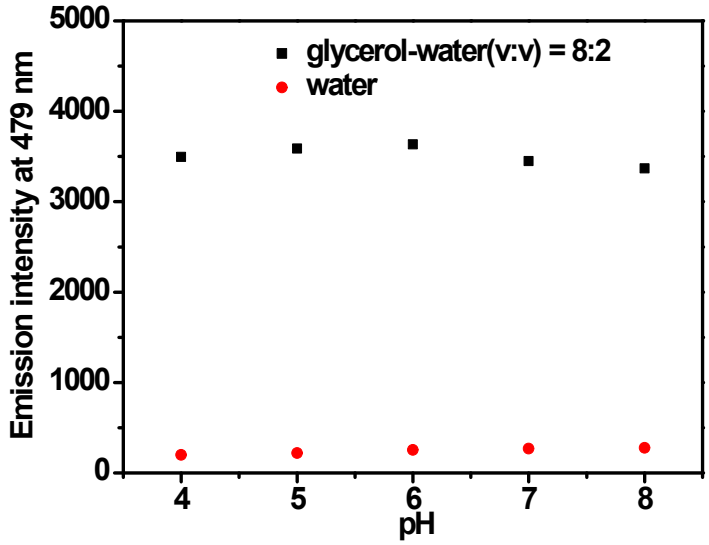


**Fig. S7.** The emission intensity at 479 nm of **1** in the pure water or in the 80% glycerol-water system with different pH values. The wavelength of excitation was at 405 nm.

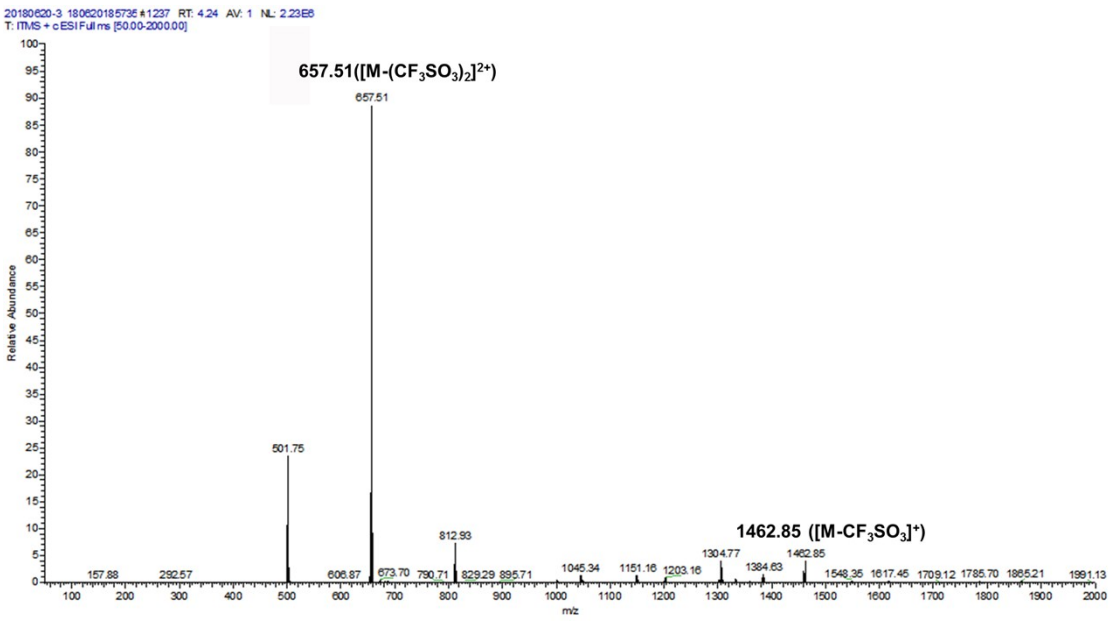


**Fig. S8.** The ESI-MS spectrum of **2**.

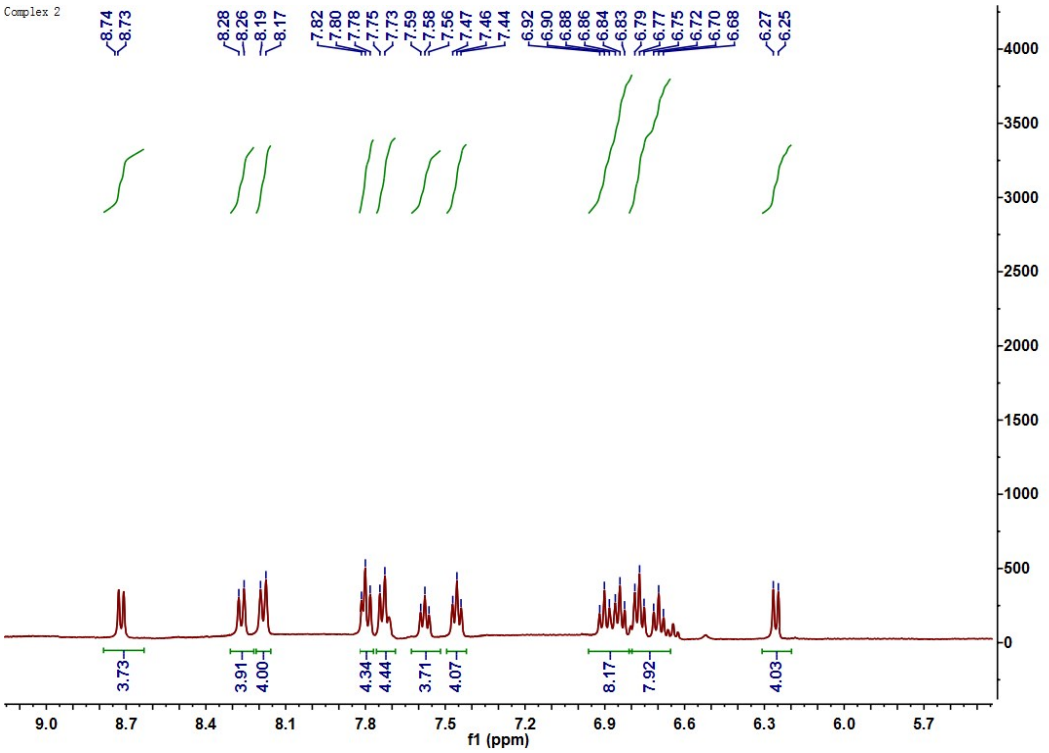


**Fig. S9.** The 400 MHz $^{1}$H NMR spectrum of **2** in the DMSO-d$^{6}$ solution.

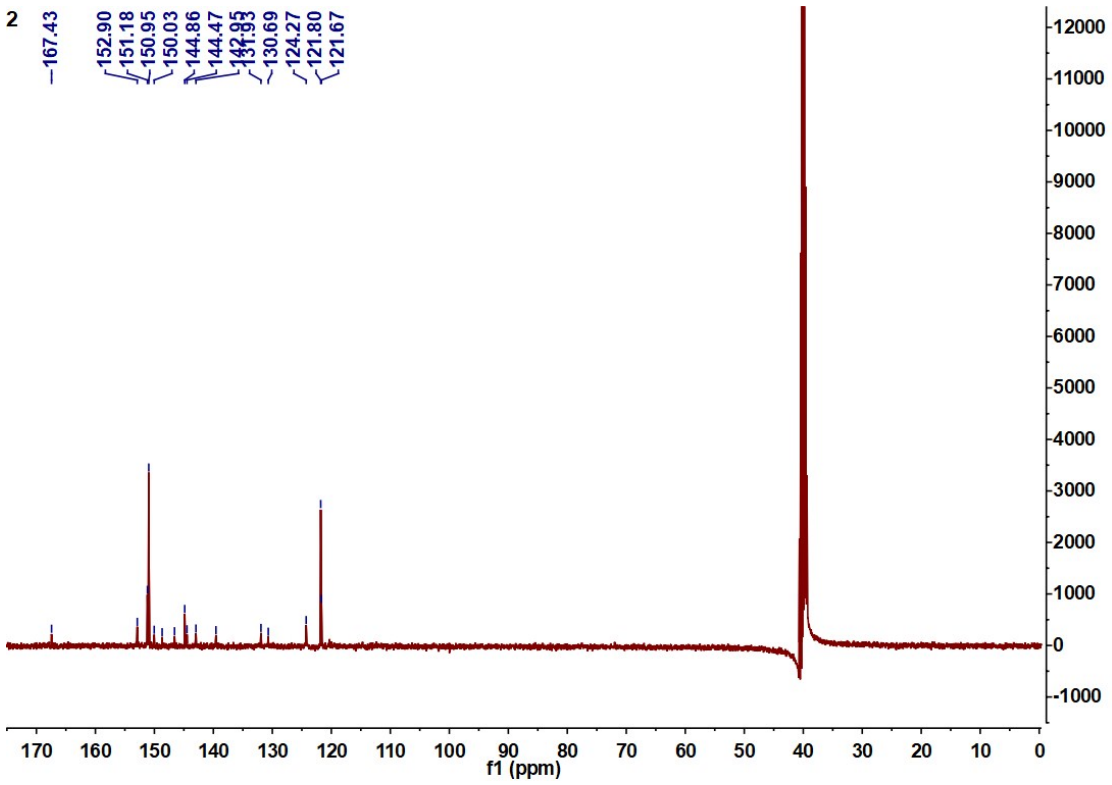


**Fig. S10.** The 101 MHz $^{13}$C NMR spectrum of **2** in the DMSO-d$^{6}$ solution.

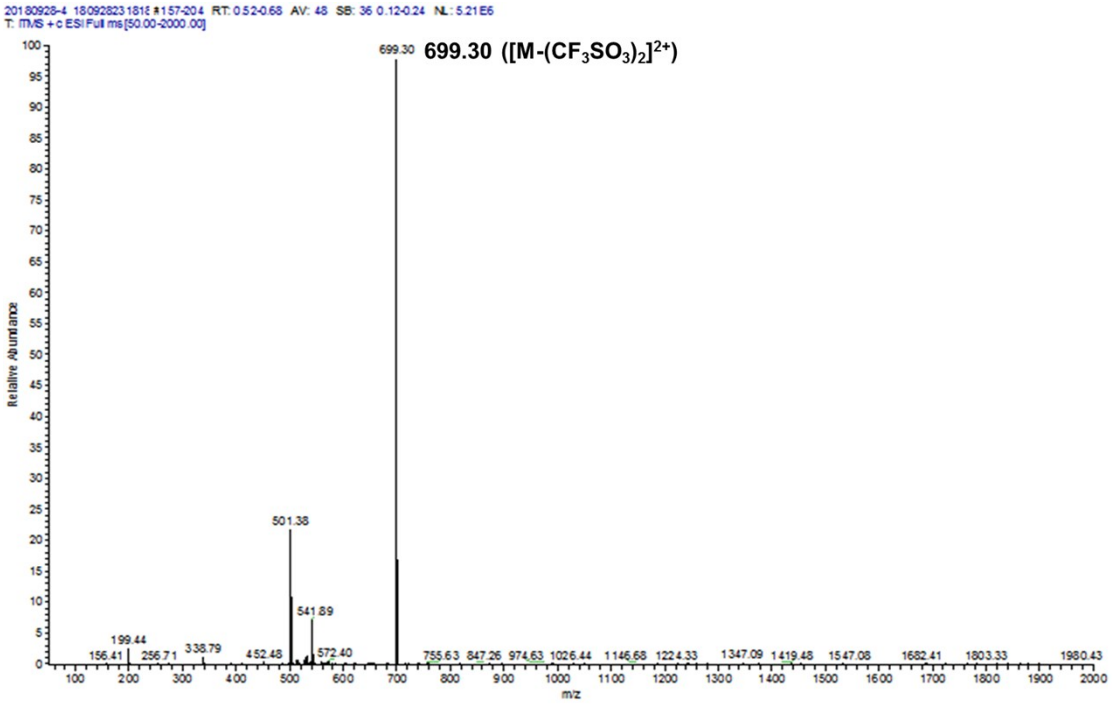


**Fig. S11.** The ESI-MS spectrum of **3**.

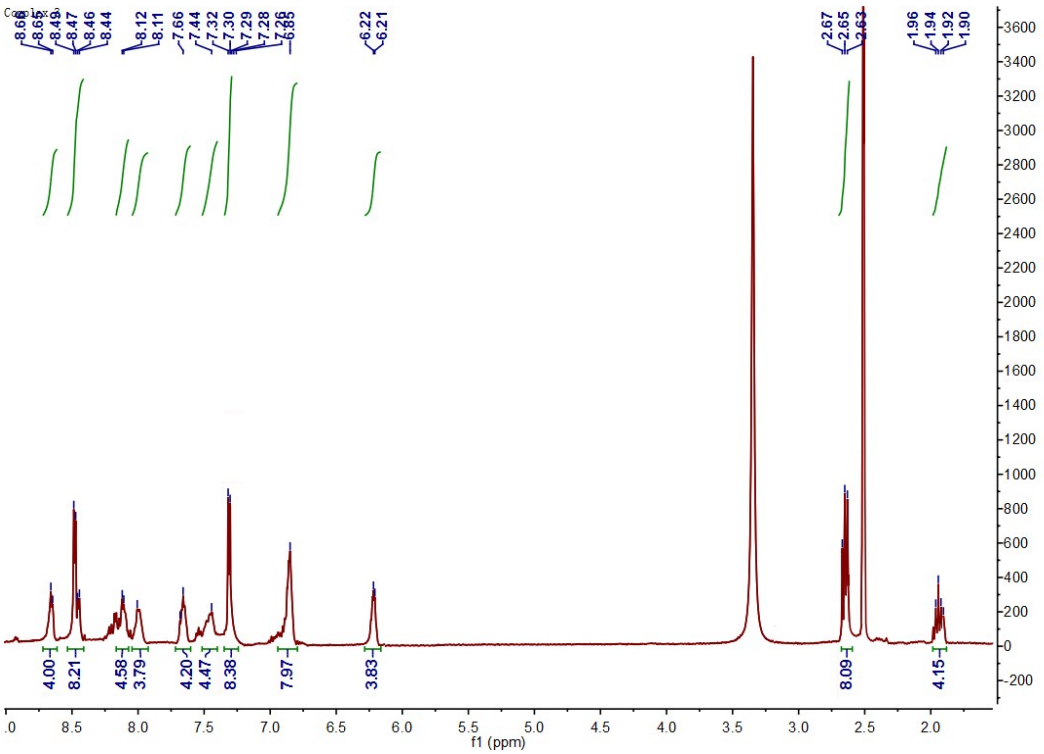


**Fig. S12.** The 400 MHz $^{1}$H NMR spectrum of **3** in the DMSO-d$^{6}$ solution.

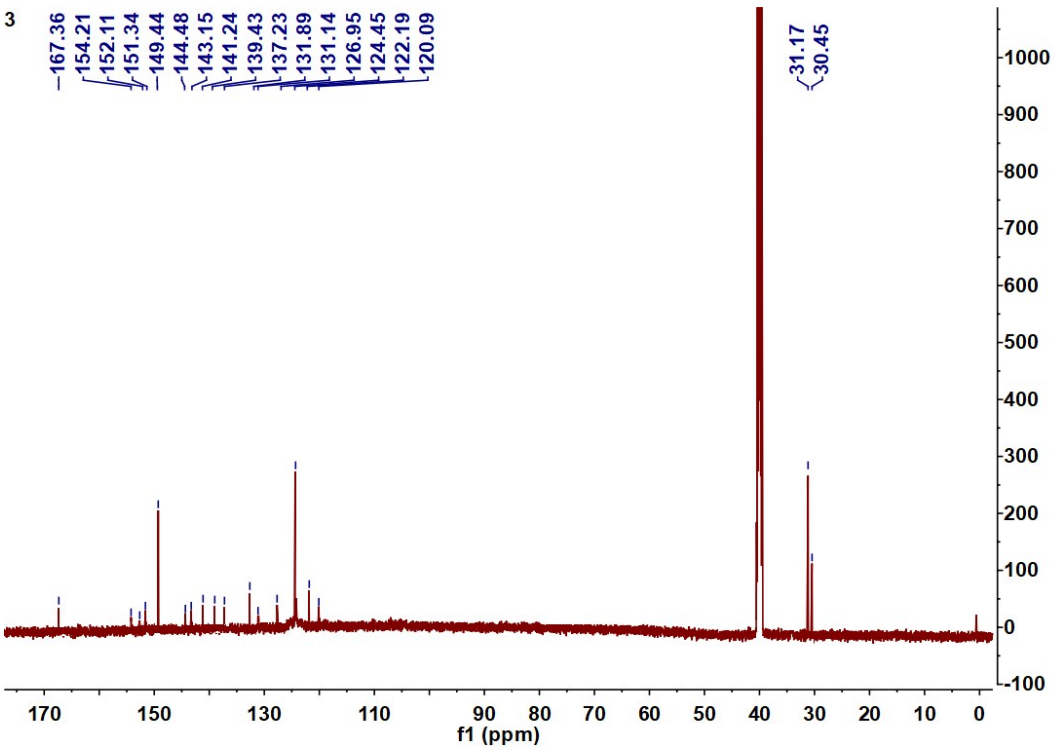


**Fig. S13.** The 151 MHz $^{13}C$ NMR spectrum of **3** in the DMSO-$d^6$ solution.

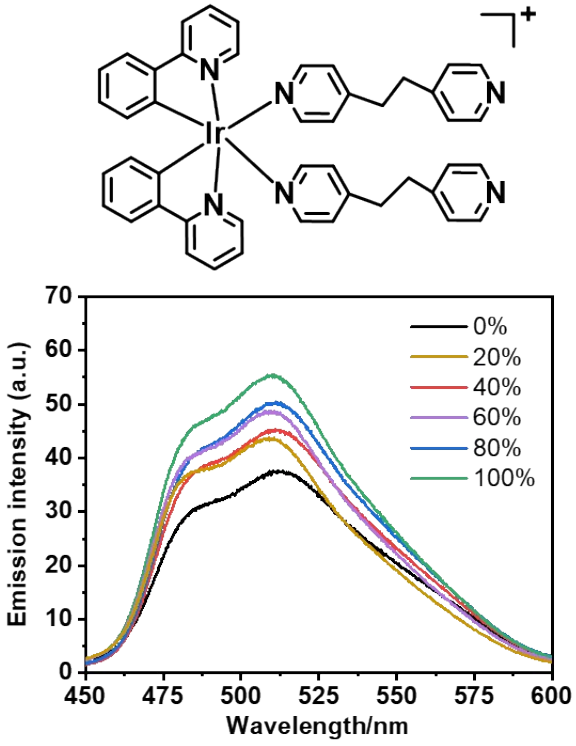


**Fig. S14.** The phosphorescence spectra of 10 μM mononuclear iridium complex $[Ir(ppy)_2(pyMe)_2]^+$ in the glycerol-water systems; $\lambda_{ex}$ = 405 nm.

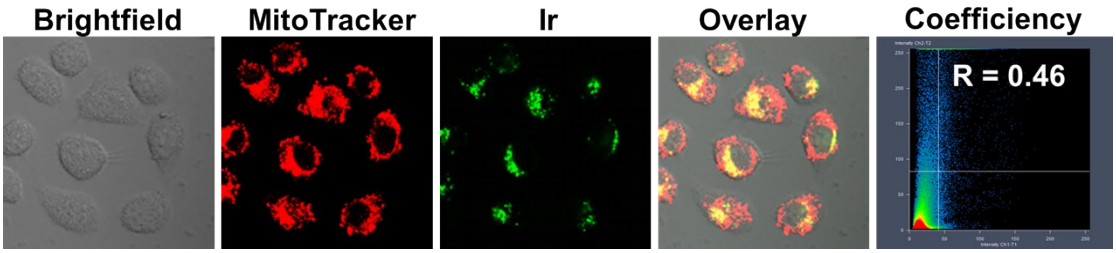


**Fig. S15.** Confocal microscopy images of A549 cells colabeled with **1** and MitoTracker®Red (MTR, 500 nM, 30 min); **1**: $\lambda_{ex}$ = 405 nm, $\lambda_{em}$ = 500±30 nm; **MTR**: $\lambda_{ex}$ = 563 nm, $\lambda_{em}$ = 710±30 nm.

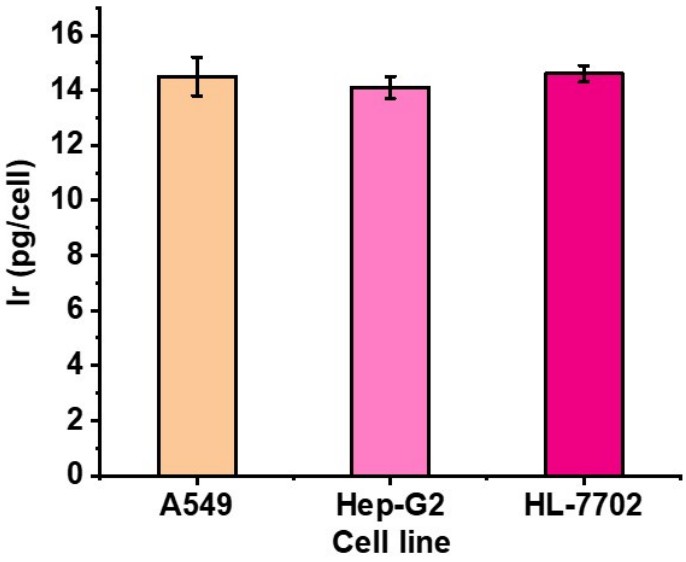


**Fig. S16.** Iridium concentrations determined in lysosome of the A549, Hep-G2 and HL-7702 cells with exposure to the iridium complex (10 μM) for 1 h by ICP-MS.

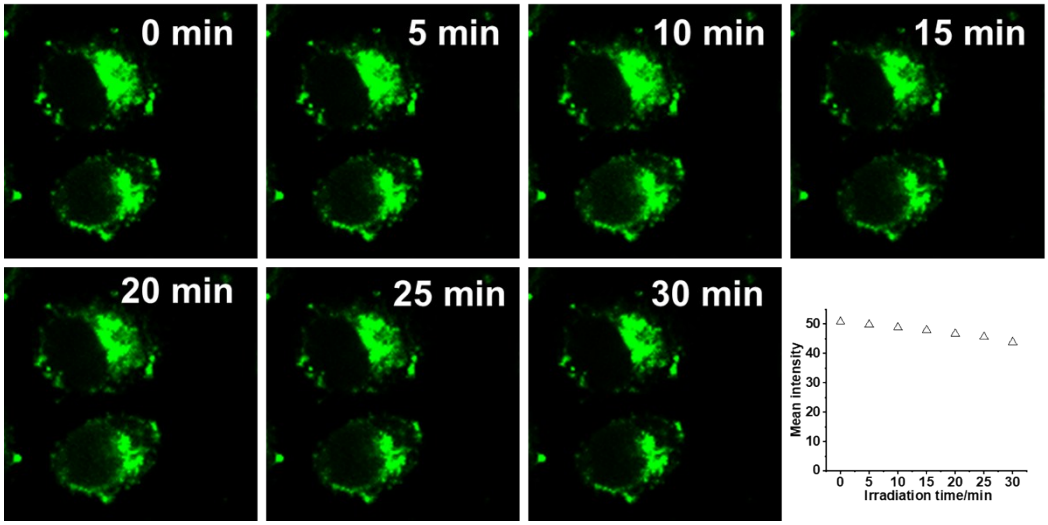


**Fig. S17.** Photostability experiments of **1** in the living cells. The images were taken under successive irradiation (0-30 min; 405 nm) and the mean intensities of the images under successive irradiation.

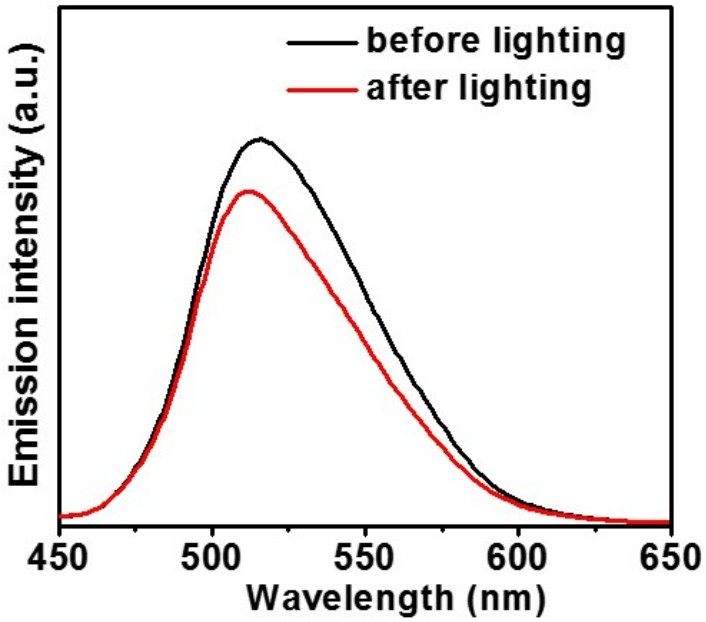


**Fig. S18.** Photostability of **1** before or after 405 nm irradiation for 30 min in PBS solution.

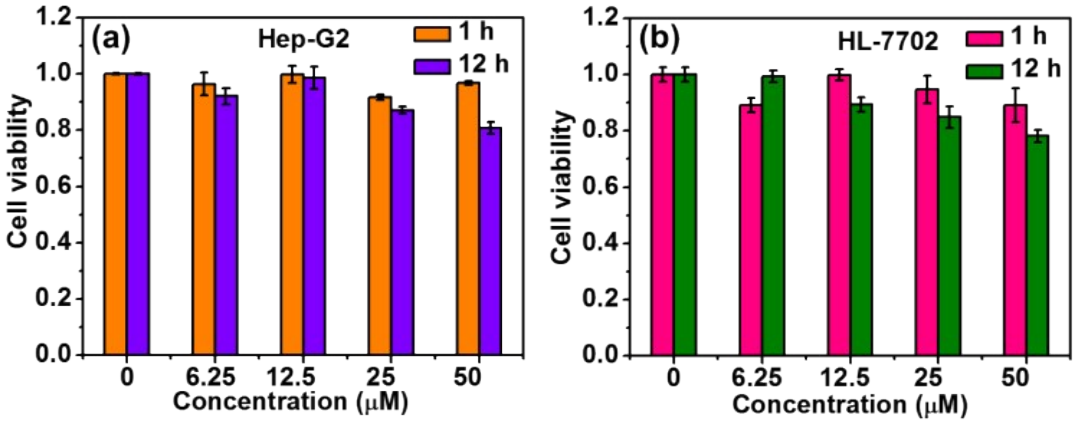


**Fig. S19.** The cell viabilities of (a) Hep-G2 and (b) HL-7702 cells treated with **1** for 1 h and 12 h, respectively.