Electronic Supplementary Information

A redox reversible endoplasmic reticulum targeted fluorescent probe for revealing the redox status of living cells

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1. The preparation of ROS

2,2'-azobis(2-2-ylpropane) dihydrochloride was dissolve in deionized water to prepare ROO•, sodium nitrite was dissolved in deionized water to prepare NO_2^-, NOC-13 was dissolved in deionized water to obtain NO and potassium peroxide was dissolved in DMSO to obtain $O_2^{\bullet -}$. Hydroxyl radicals (•OH) were produced by ferrous ammonium sulfate and hydrogen peroxide (Fenton reaction). Peroxynitrite ($ONOO^-$) was synthesized from sodium nitrite and H_2O_2. $^1O_2$ was generated by the reaction of H_2O_2 and Na_2MoO_4. ClO^- and H_2O_2 were prepared by diluting the purchased stock solution.

2. MTT assays

Cytotoxicity was attained by standard MTT assays. MCF-7 cells were incubated in 96-well culture plates in the presence of 200 μL DMEM supplemented with 10% FBS and 1% penicillin and streptomycin at 37°C for 24 h in 5% CO_2. After discarding the culture medium, the cells were incubated in the solution of N-Se at different concentrations (0, 0.01, 0.05, 0.1, 0.5, 1, 5, 10, 20, and 40 μM). Following incubation for 24 h, the cells were rinsed with PBS for three times, and then 180 μL culture solution and 20 μL MTT (5 mg/mL) were added to each well for 4 h. Subsequently, the MTT solution was supplanted by 0.2 mL DMSO in each well. The absorbance of each well was acquired at 570 nm. 8 replicate wells per concentration were set and the viability of cells without N-Se was set to 100%.

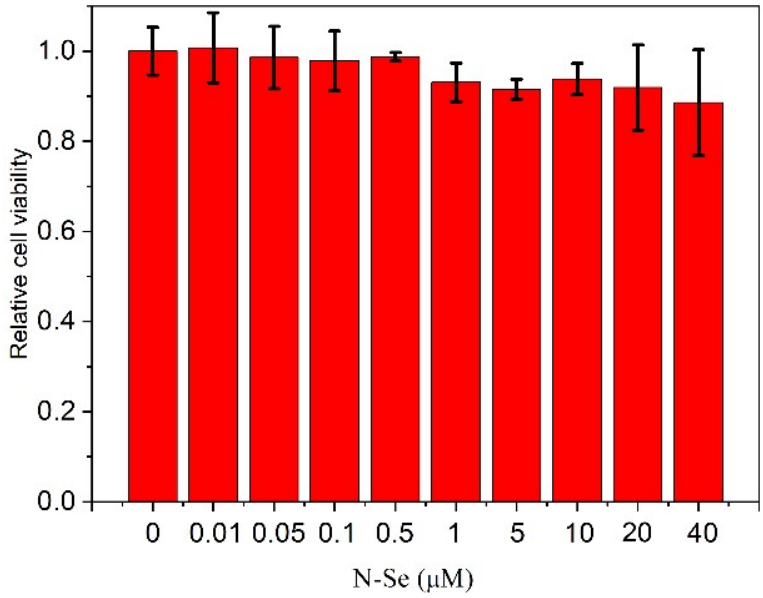

Fig. S1 Cytotoxicity assays of N-Se at different concentrations for MCF-7 cells.

3. Photostability

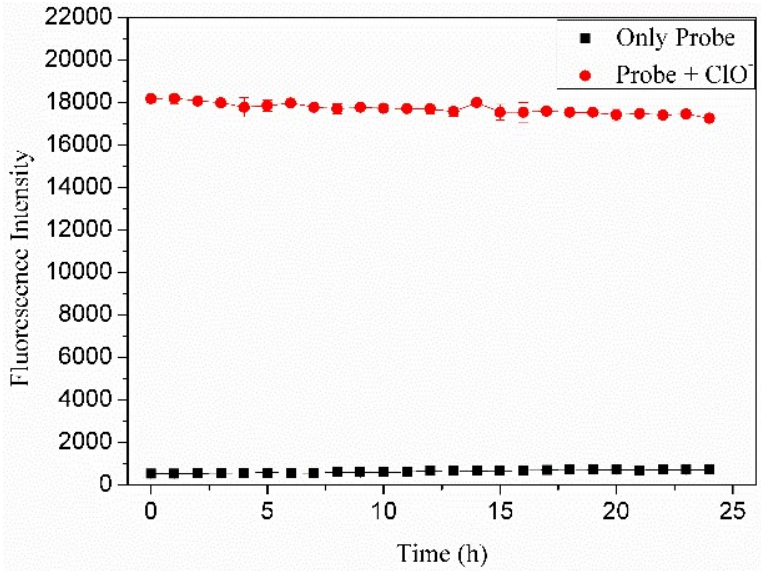

Fig. S2 Photostability of 10 μM N-Se and N-SeO. Slit widths: 3 and 5 nm for excitation and emission spectra. $\lambda_{ex}/\lambda_{em}$ = 417/540 nm.

4. NMR and HRMS data

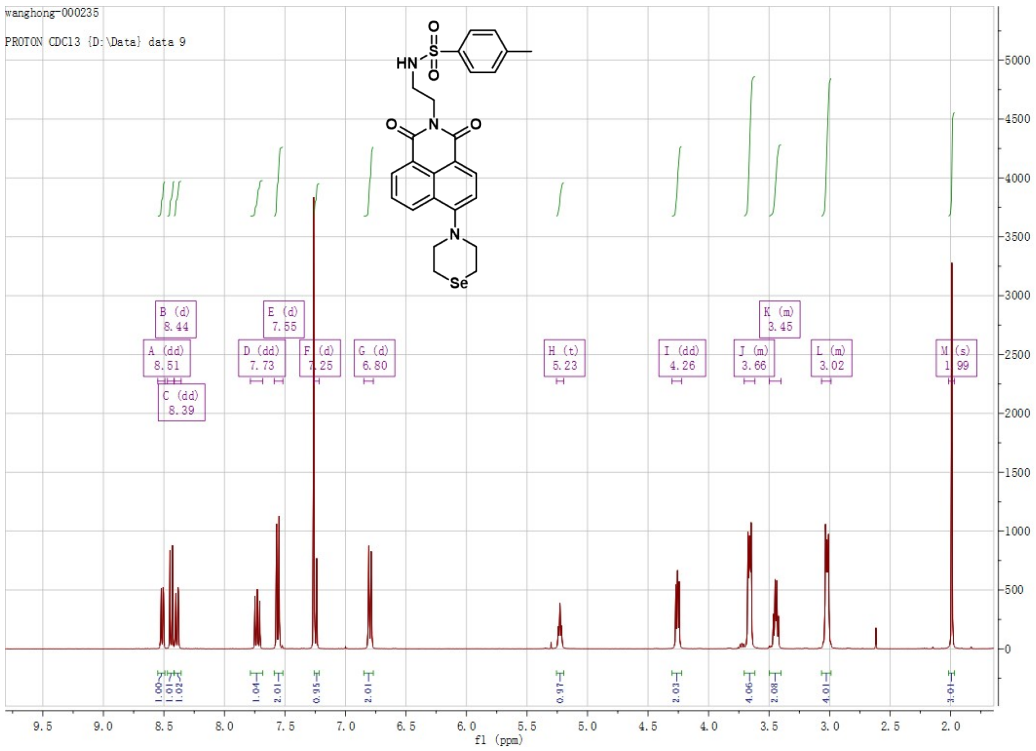

Fig. S3 1H NMR spectrum of N-Se.

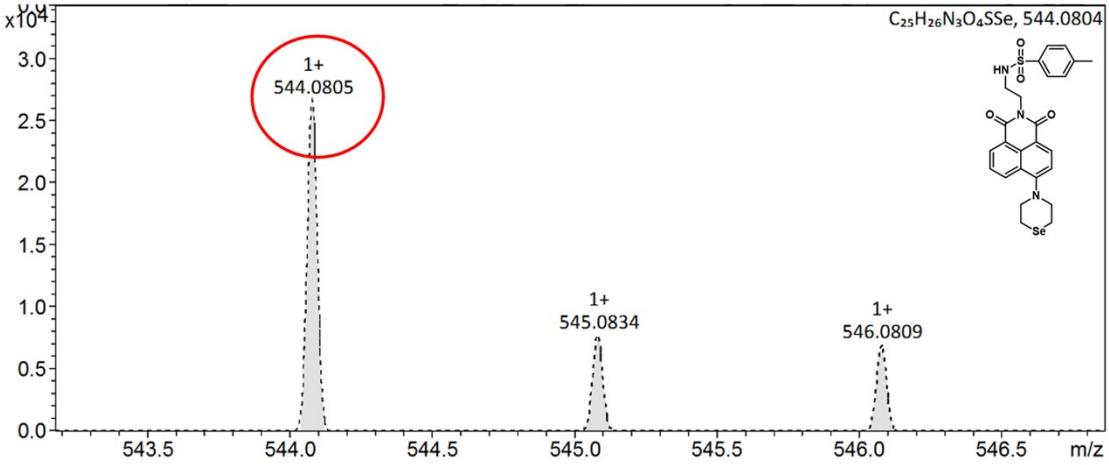

Fig. S4 HRMS spectrum of N-Se.

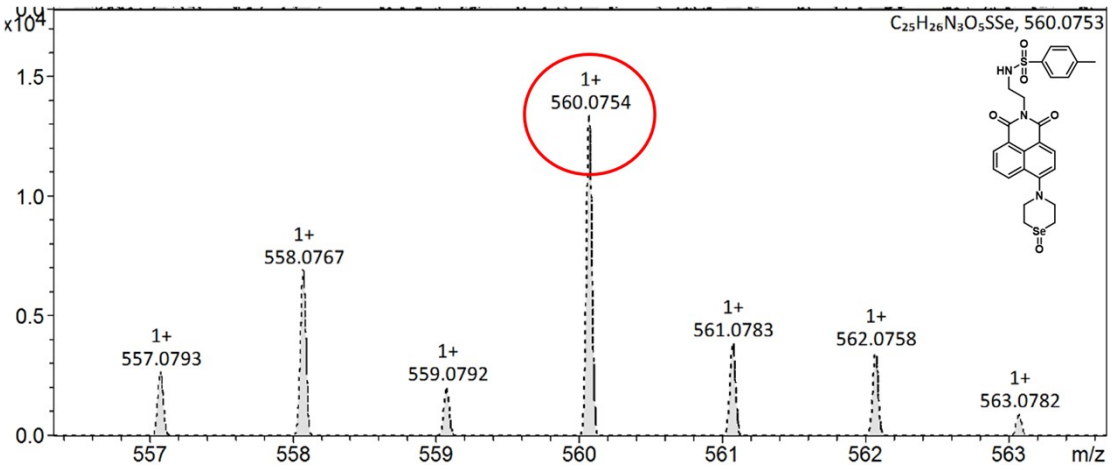

Fig. S5 HRMS spectrum of the mixture of N-Se and ClO^-.