Electronic Supplementary Material (ESI) for Analyst.

Supporting Information

Rare earth upconversion luminescent composite based on energy transfer for specific and sensitive detection of cysteine

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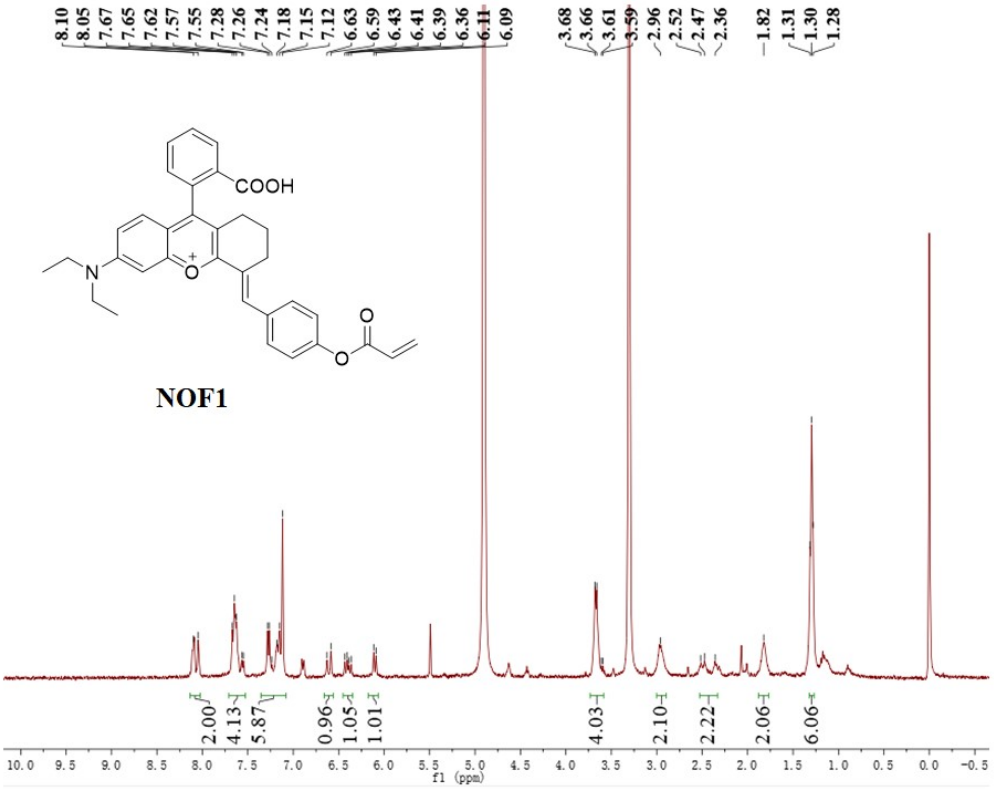

Figure S1. ^{1}H NMR of NOF1 in CD_3OD

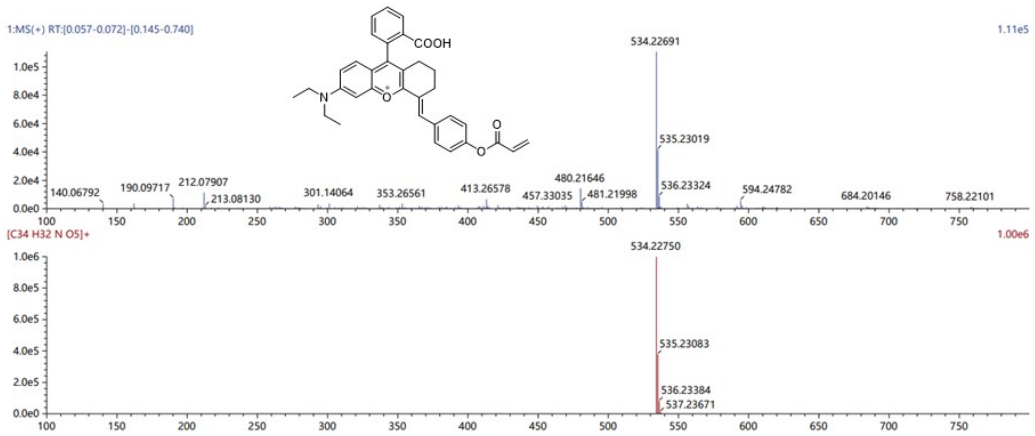

Figure S2. HR-MS spectrum of NOF1

Table S1. Elemental semi-quantitative analysis of nanoparticles

Sample	Na (Wt.%)	F (Wt.%)	Y (Wt.%)	Yb (Wt.%)	Er (Wt.%)
Core	7.54	35.56	37.32	17.72	1.86
UCNP	8.63	39.95	45.45	5.52	0.45
UCNP-PEG	8.14	39.11	46.63	5.12	1.00
UCNP-PEG-NOF1	7.84	39.54	47.09	4.63	0.90

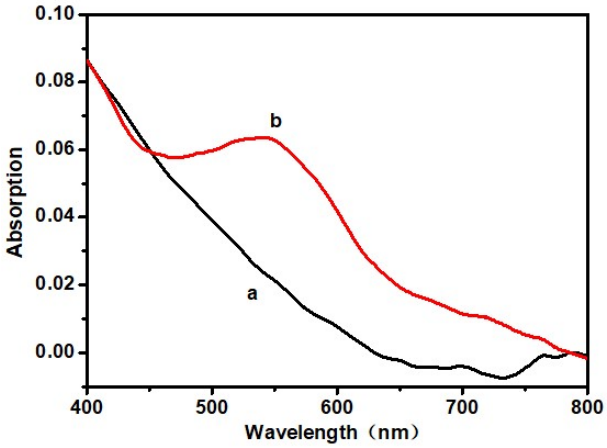

Figure S3. The UV–Vis spectra of (a) UCNP-PEG and (b) UCNP-PEG-NOF1

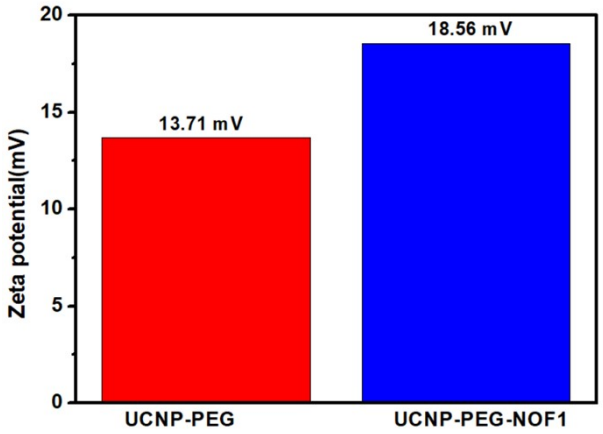

Figure S4. Zeta potentials of UCNP-PEG and UCNP-PEG-NOF1

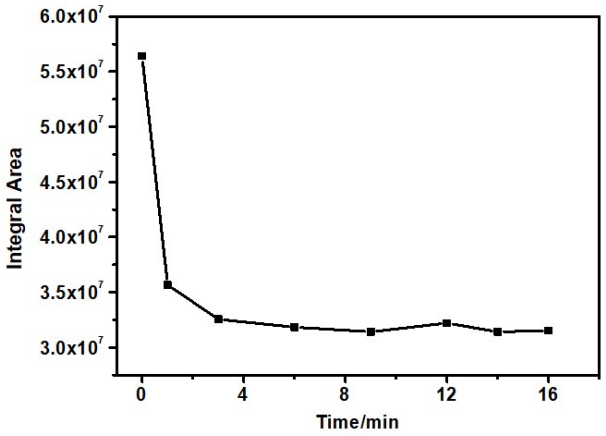

Figure S5. The variation of emission peak area with time at 660 ±20 nm after the addition of 200 μM Cys to UCNP-PEG-NOF1

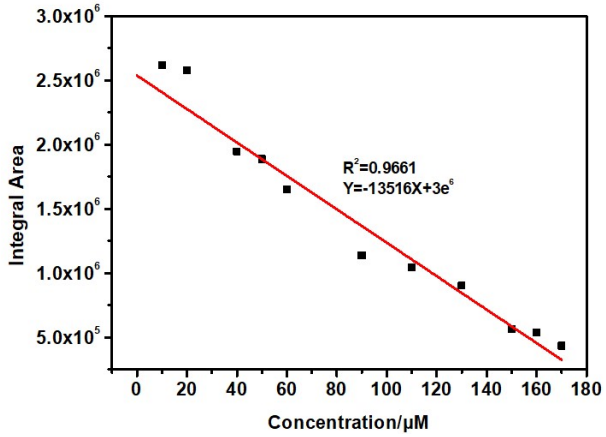

Figure S6. The integral area at 660 ± 20 nm as a function of Cys concentration

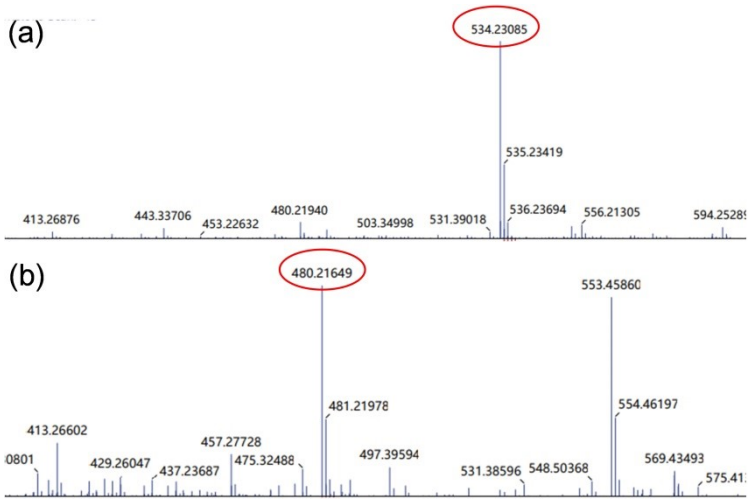

Figure S7. HR-MS of (a) NOF1 and (b) product of UCNP-PEG-NOF1 reacted with Cys

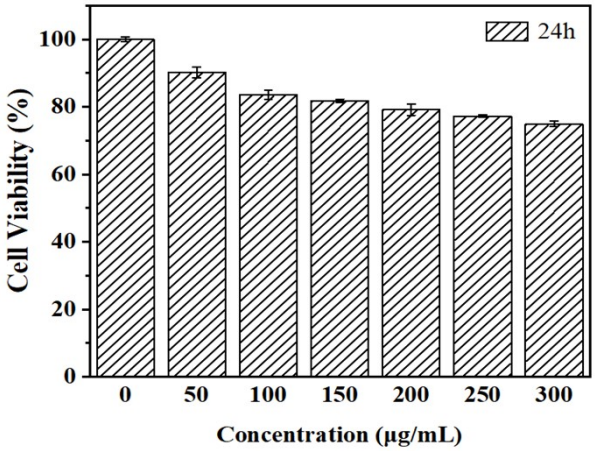

Figure S8. MTT assays of MCF-7 cells incubated with UCNP-PEG-NOF1 at different concentrations for 24 h