Supporting information for

Molecular imaging of biothiols and in vitro diagnostics based on an organic chromophore bearing terbium hybrid probe

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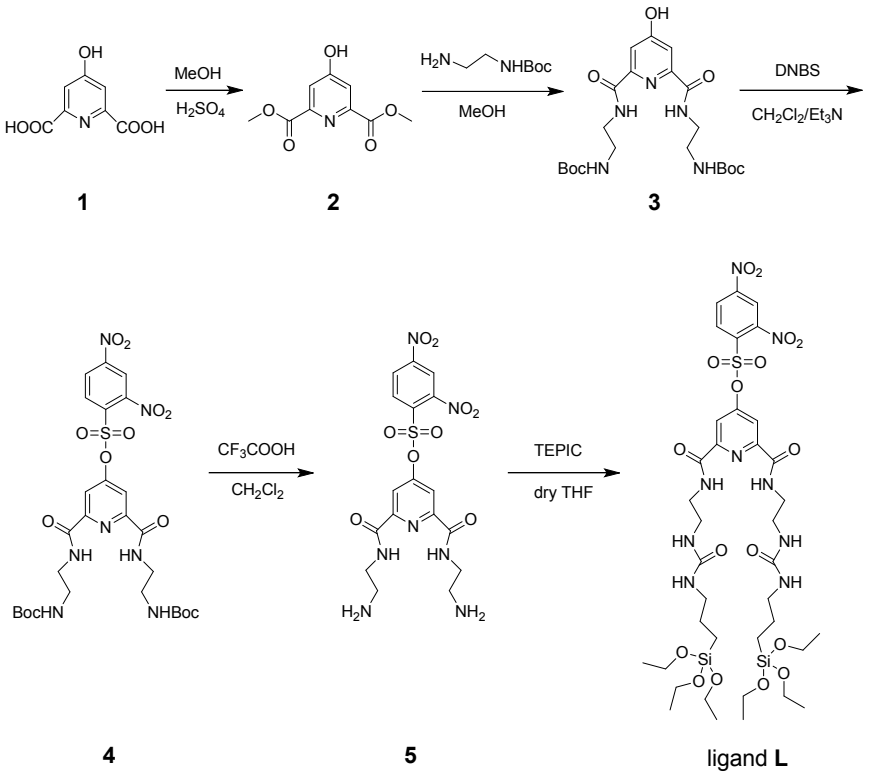

Figure S1 Reaction pathway for the synthesis of ligand **L**.

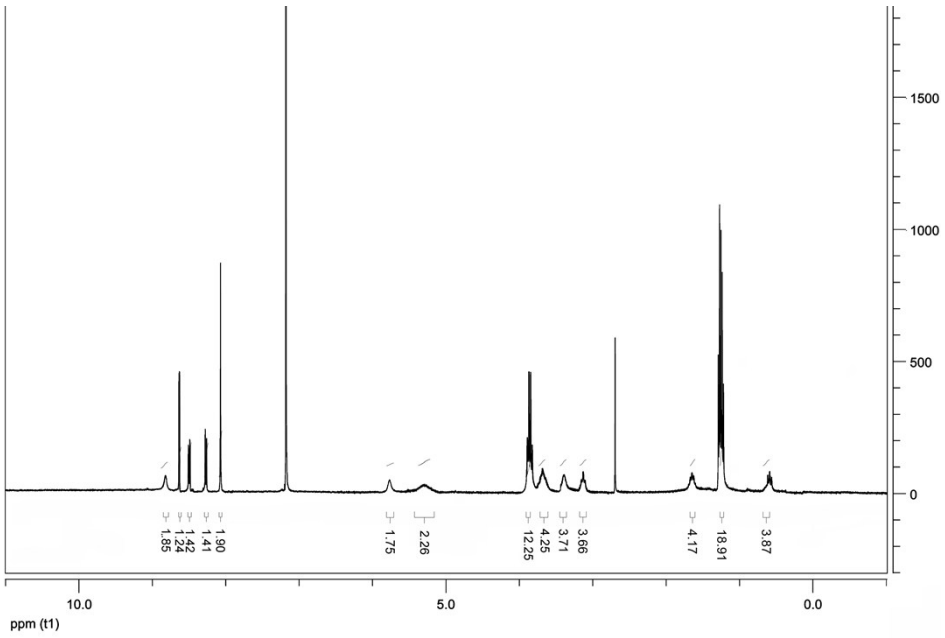

Figure S2 ^{1}H NMR spectra of ligand **L**.

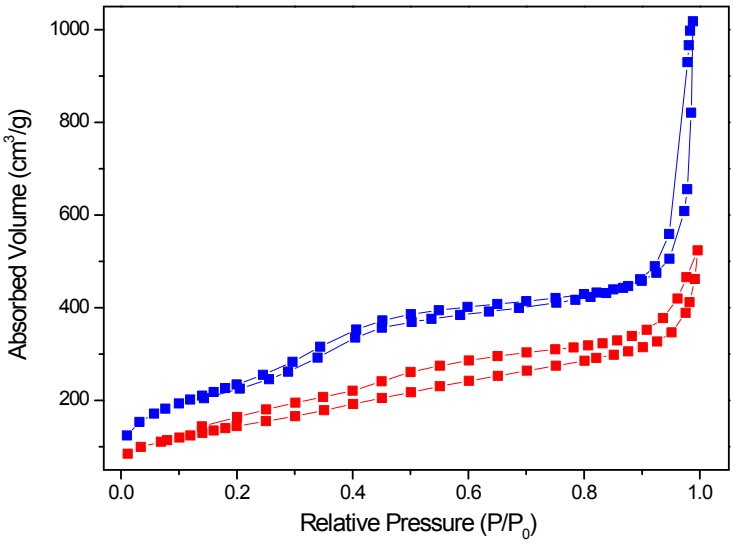

Figure S3 Nitrogen adsorption-desorption curves of MSN in the absence of terbium complex structure (blue) and H-MSN-Tb (red).

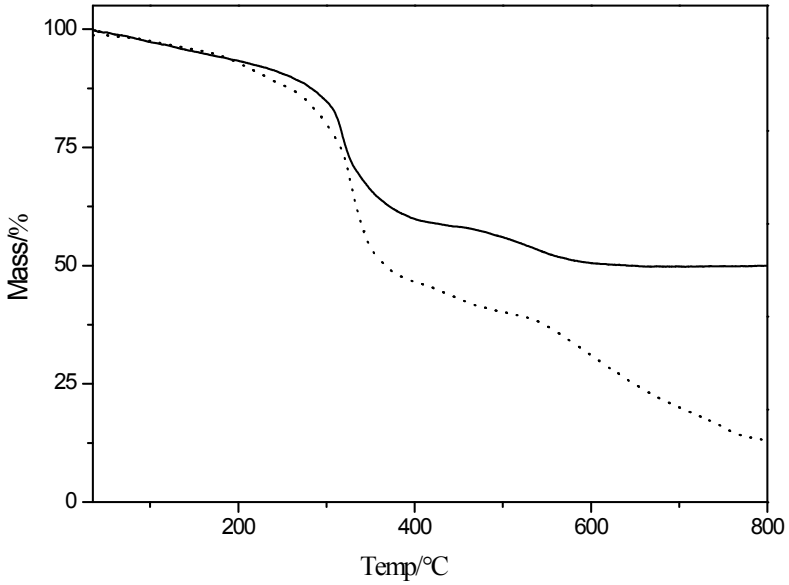

Figure S4 Thermogravimetric analysis traces of Tb-**L** (dotted line) and H-MSN-Tb (solid line).

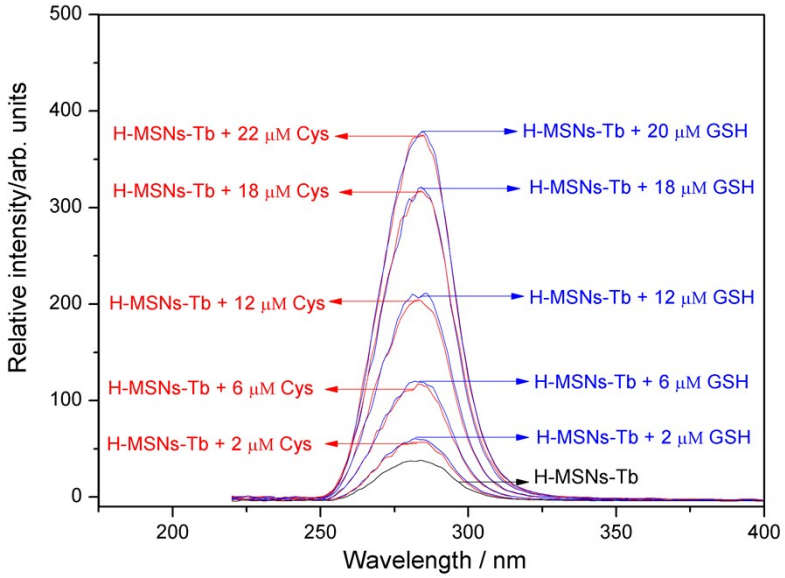

Figure S5 Excitation spectra of 50 μg/mL H-MSNs-Tb without (black line) or with 2, 6, 12, 18, 22 μM Cys (red lines) or 20 μM GSH (blue lines) in water (λ_{em}= 545 nm).

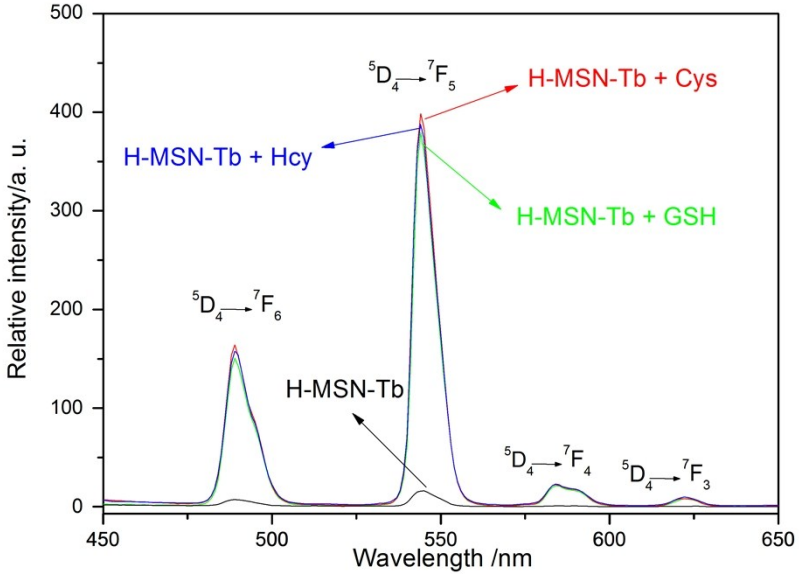

Figure S6 Emission spectra of H-MSN-Tb (50 μg/mL) in the absence and in the presence of biothiol (20 μM) in 30 mM HEPES buffer, pH 7.0 (λ_{ex}= 284 nm).

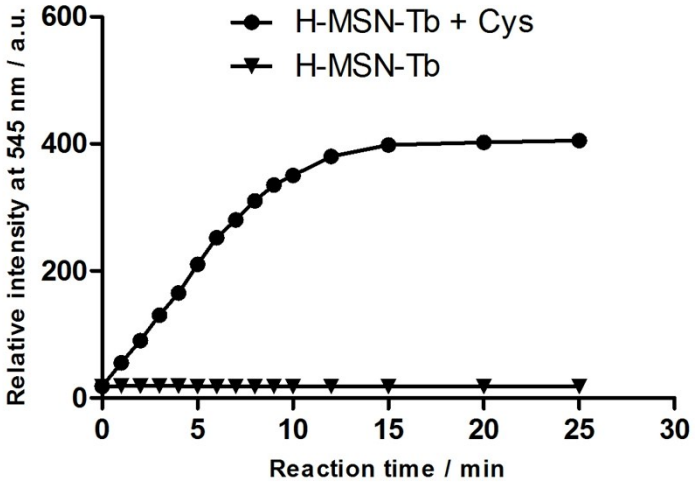

Figure S7 Fluorescence response of H-MSN-Tb (50 μg/mL) as a function of time with or without Cys (20 μM) treatment in 30 mM HEPES buffer, pH 7.0 (λ_{ex}= 284 nm).

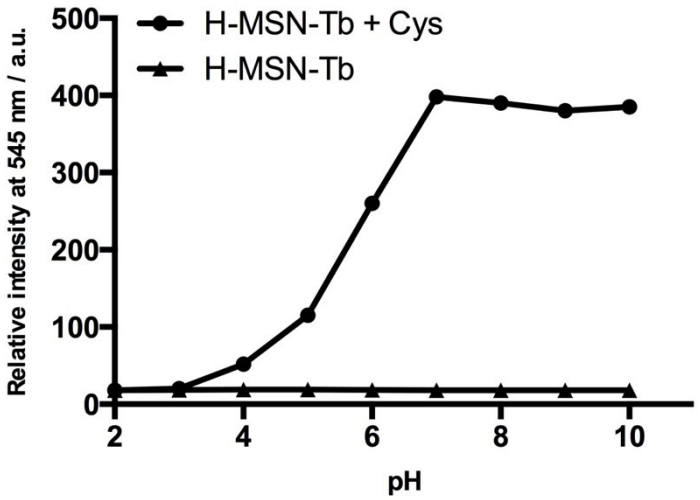

Figure S8 The fluorescence intensity of H-MSN-Tb at 545 nm in the presence and absence of Cys (20 μM) at different pH.

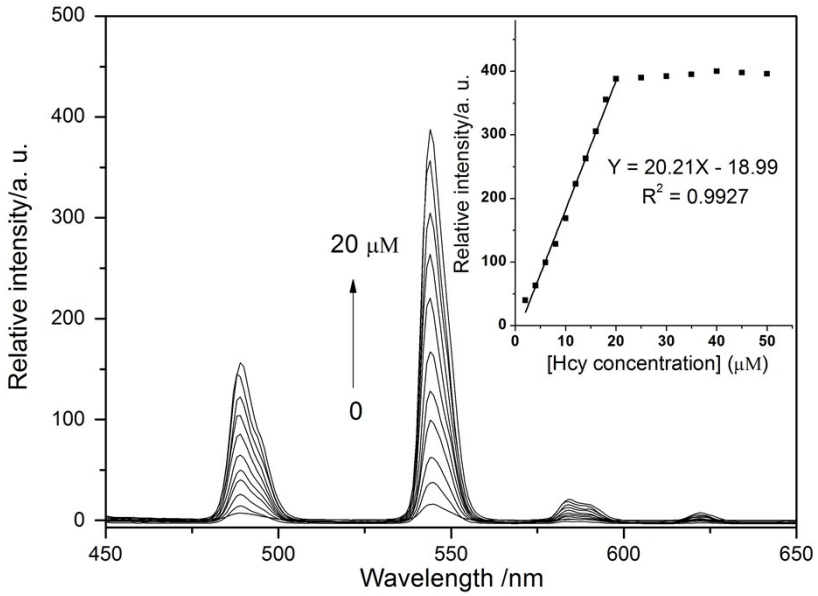

Figure S9 Emission spectra of H-MSN-Tb (50 μg/mL) upon addition of Hcy (from 0 to 20 μM) in 30 mM HEPES buffer, pH 7.0 (λ_{ex}= 284 nm). Inset: Relative intensity of H-MSN-Tb at 545 nm as a function of Hcy concentration from 2 to 20 μM.

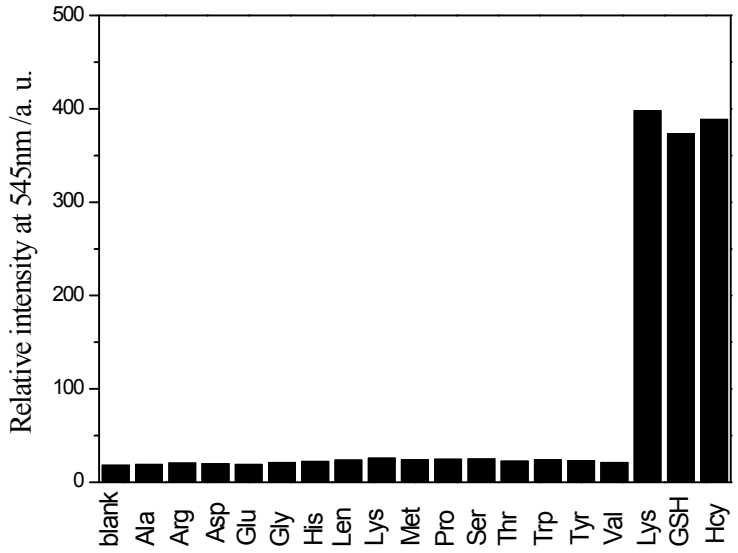

Figure S10 Emission intensities of H-MSNs-Tb at 545 nm in the presence of various amino acids (20 μM for Cys, GSH and Hcy, 100 μM for otheramino acids) in 30 mM HEPES buffer, pH 7.

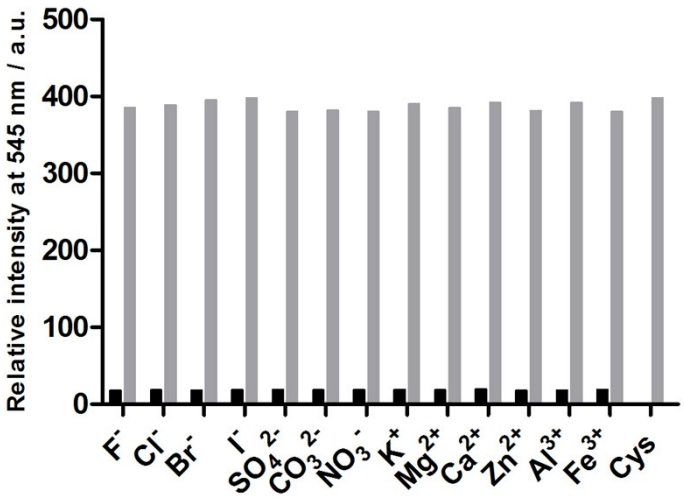

Figure S11 Emission intensities of H-MSNs-Tb at 545 nm to various ions in in 30 mM HEPES buffer, pH 7. The black bars represent the fluorescence intersity of H-MSNs-Tb in the presence of miscellaneous ions (20 μM). The grey bars represent the fluorescence enhancement upon the subsequent addition of Cys (20 μM) to the above solution.

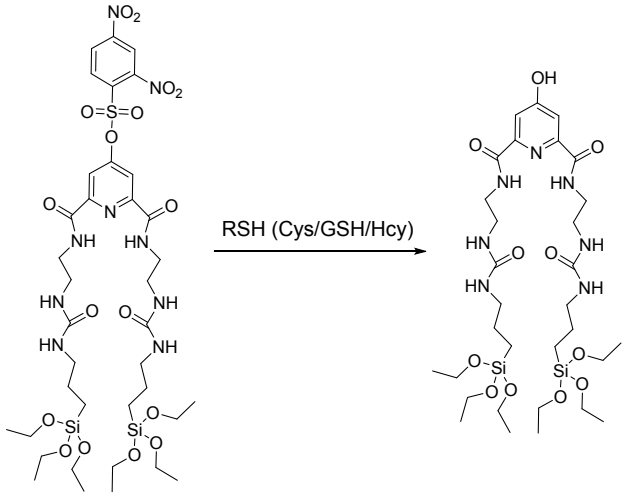

Figure S12 Molecular structures of **L** and **L'**.

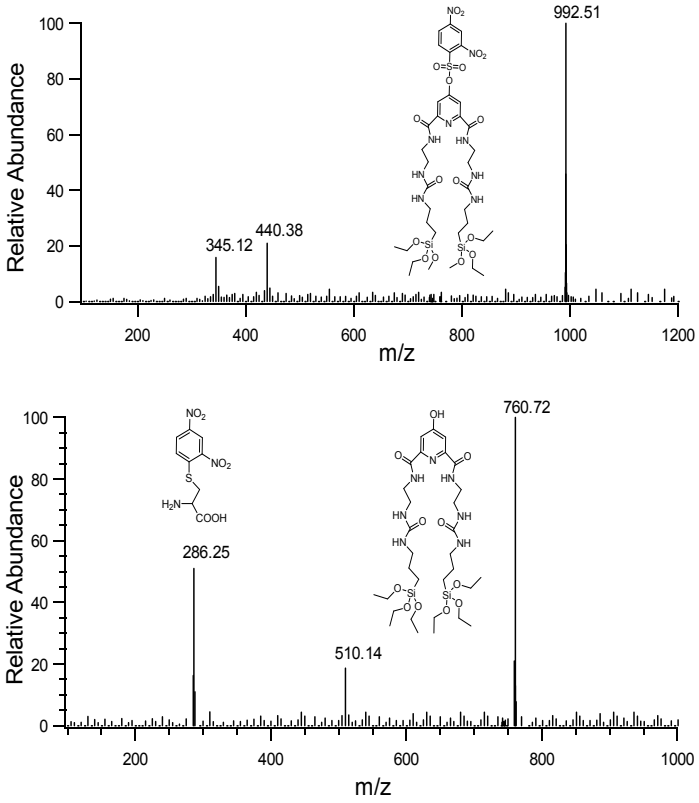

Figure S13 Mass spectra of ligand **L** in the absence (top) and presence of Cys (bottom).