Electronic supplementary information(ESI)

Highly sensitive colorimetric detection and removal of Hg^{II} and Cu^{II} in aqueous solution:From amino acids toward solid platforms

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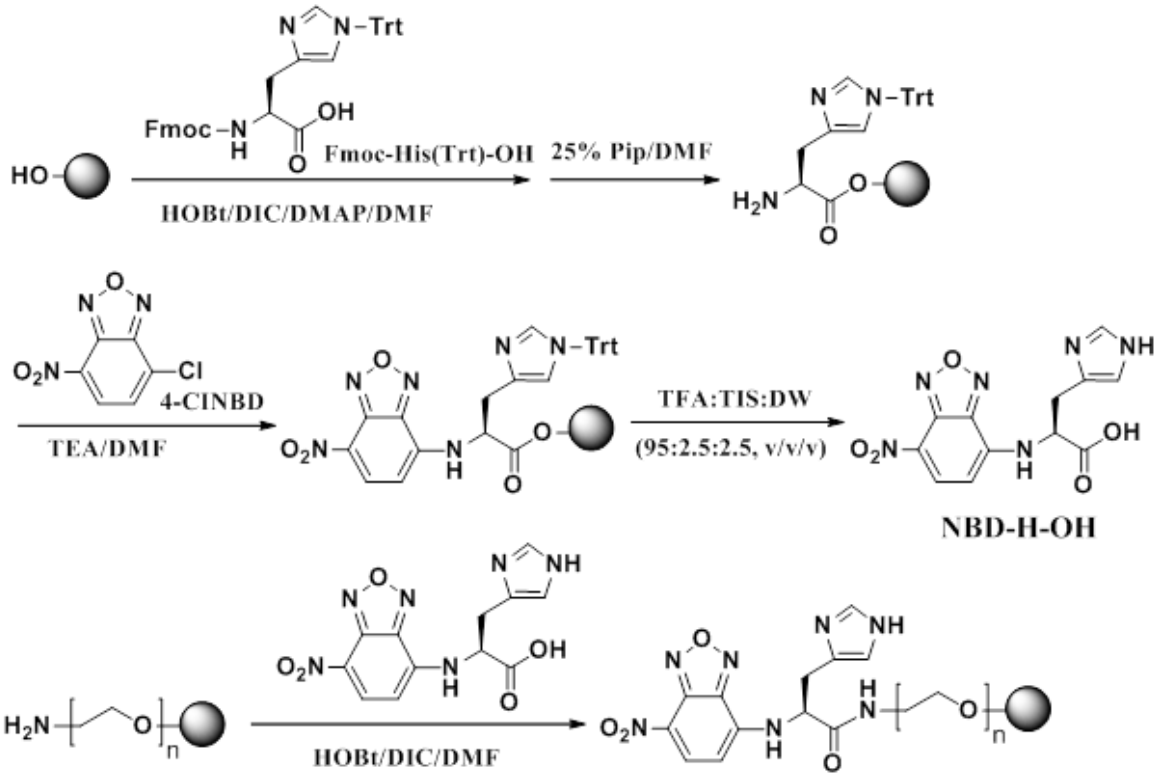


Scheme S1. Synthesis of **NBD-H**-PEG-PS

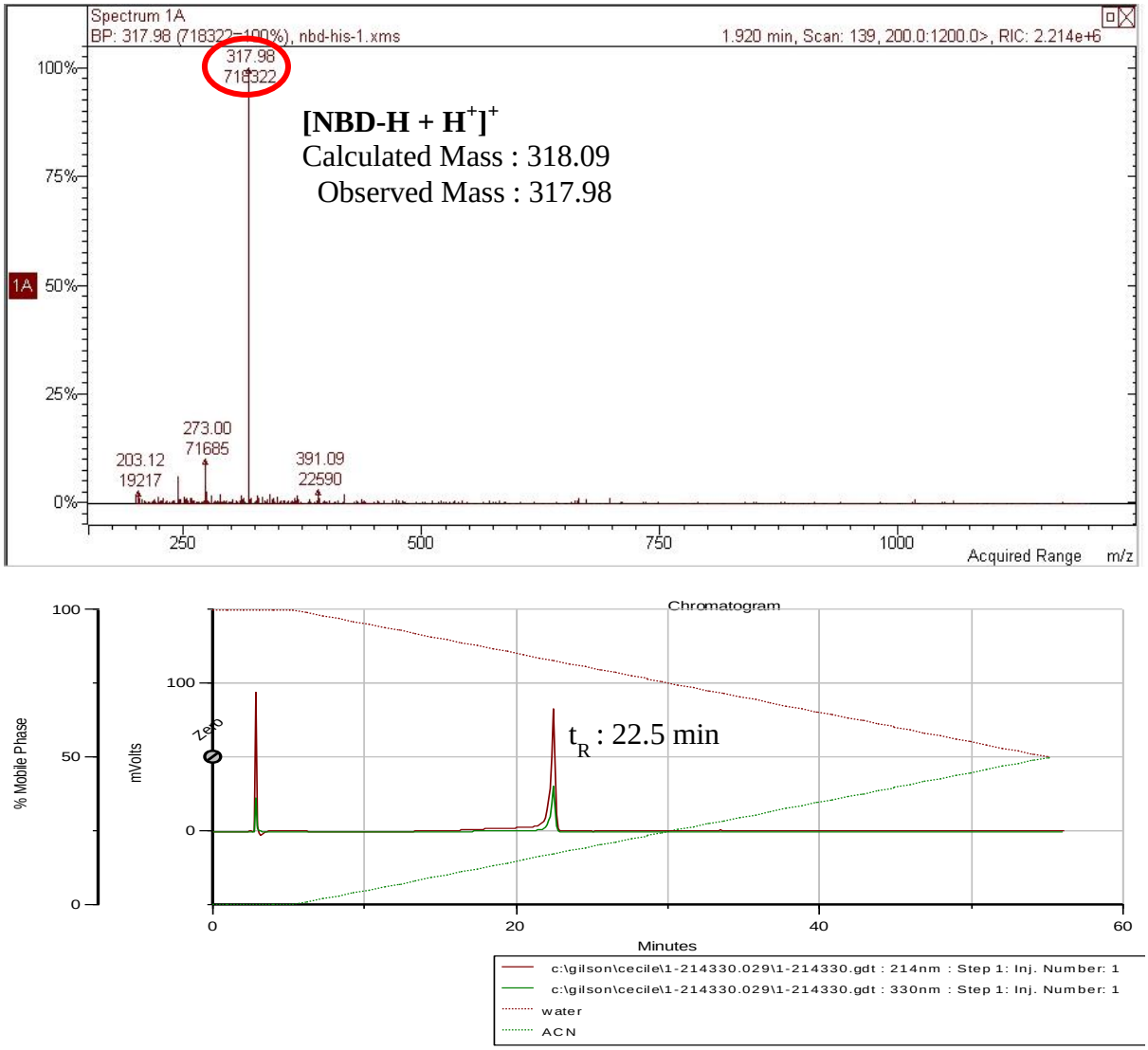


Figure S1. ESI-MS and HPLC spectrum of **NBD-H**

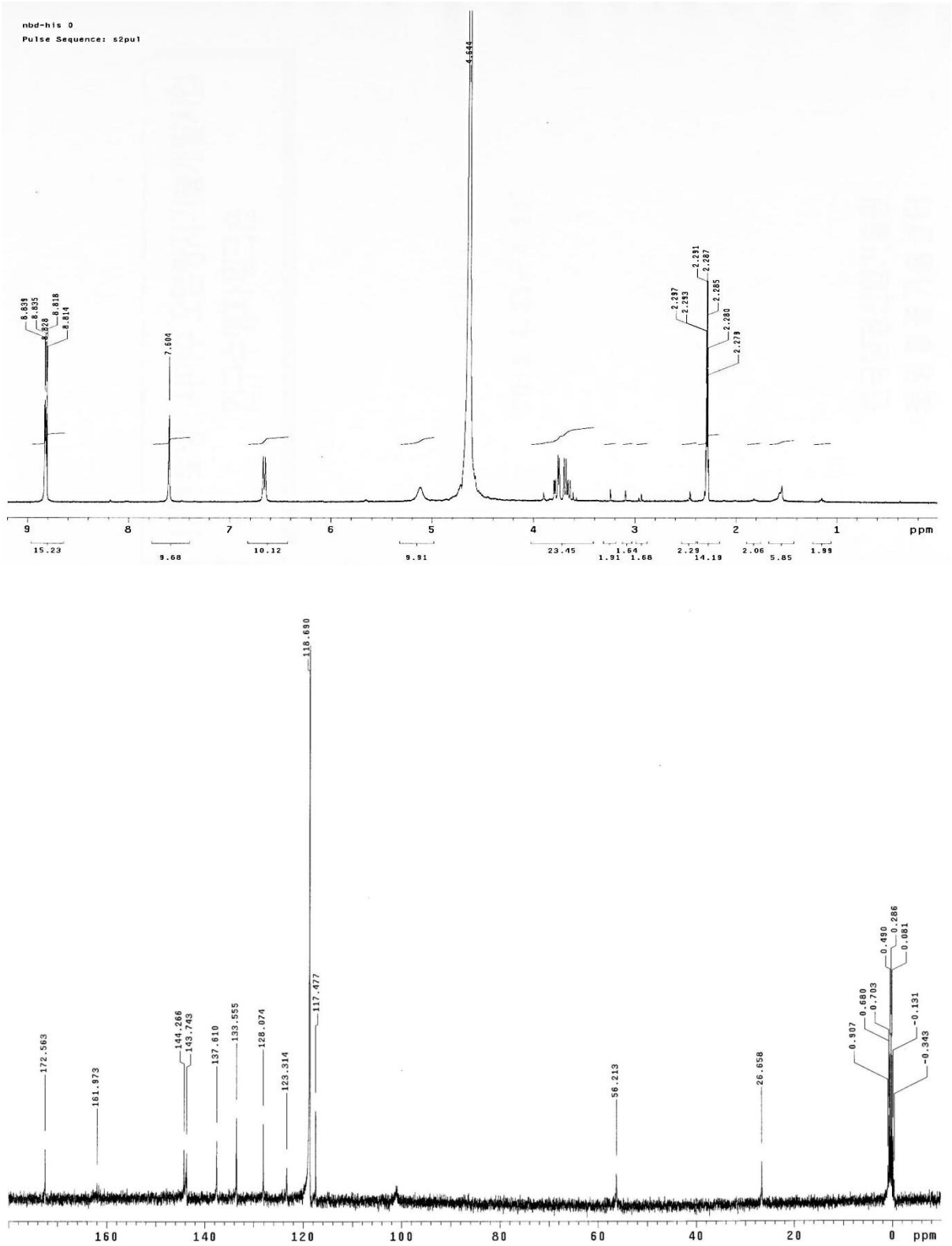


Figure S2. (a) ***^{1}H*** NMR of **NBD-H** (15 mM) in 50% ACN-d_3/D_2O and (b) ***^{13}C*** NMR of **NBD-H** in 50% ACN-d_3/D_2O at 25 ˚C.

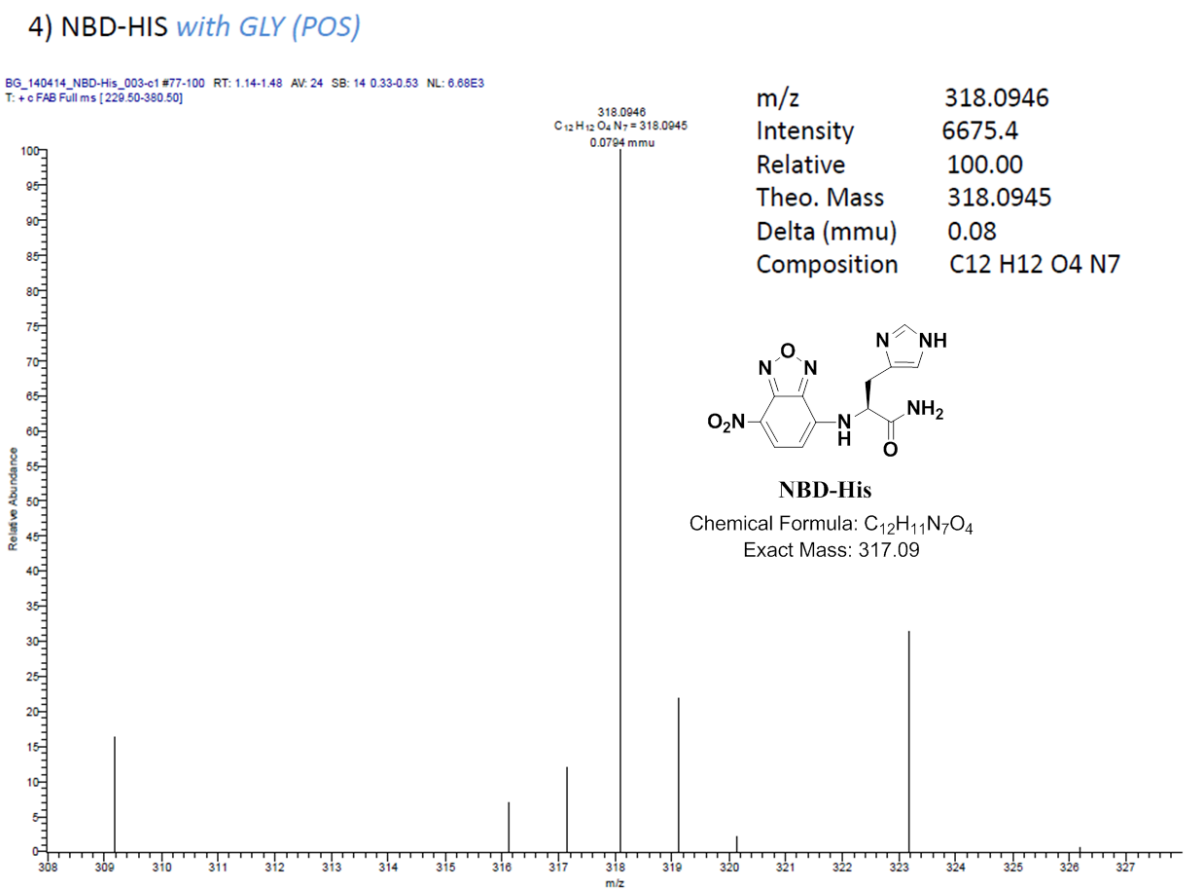


Figure S3. FAB-HRMS spectrum of **NBD-H**

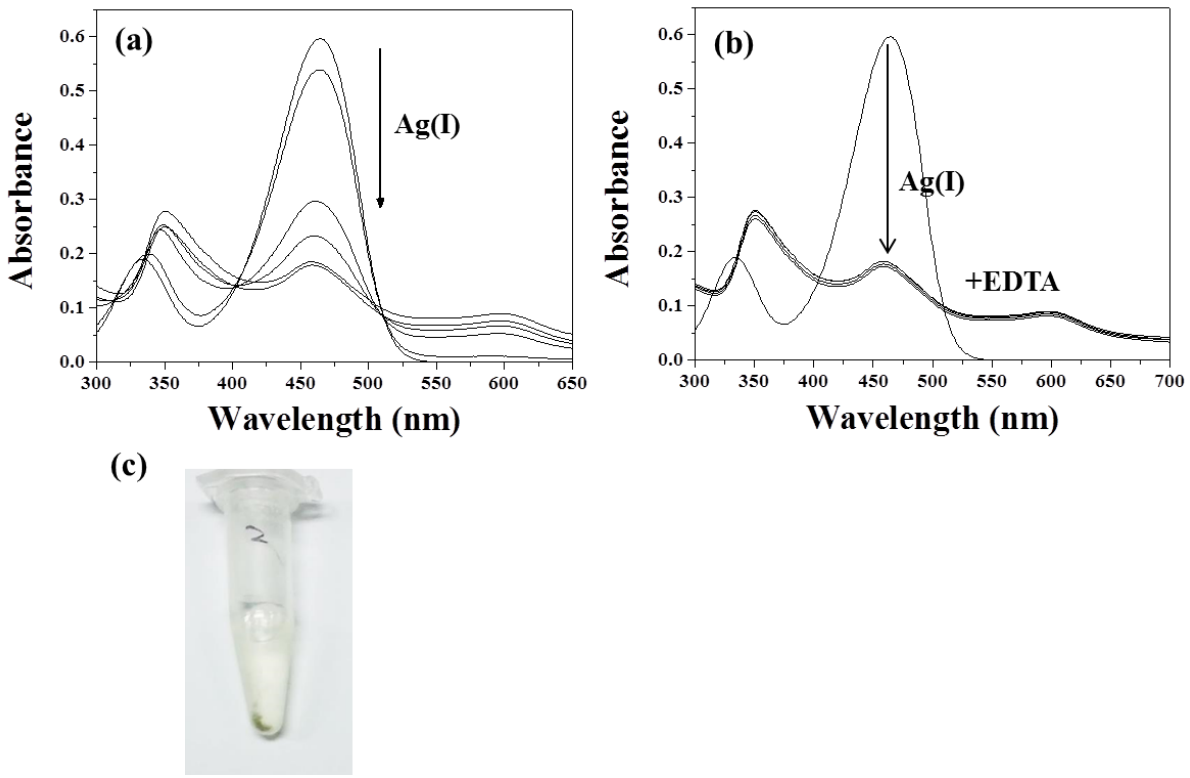


Figure S4. UV-VIS absorbance spectra of **NBD-H** (30 μM) in 10 mM HEPES buffer solution (pH 7.4) containing 3% ACN (a) with increasing concentration of Ag^{I} (0, 20, 40, ..., 100 μM) and (b) EDTA (100, 200, 300 μM) after adding Ag^{I} (100 μM). (d) The centrifuged solution of **NBD-H** with Ag^{I}.

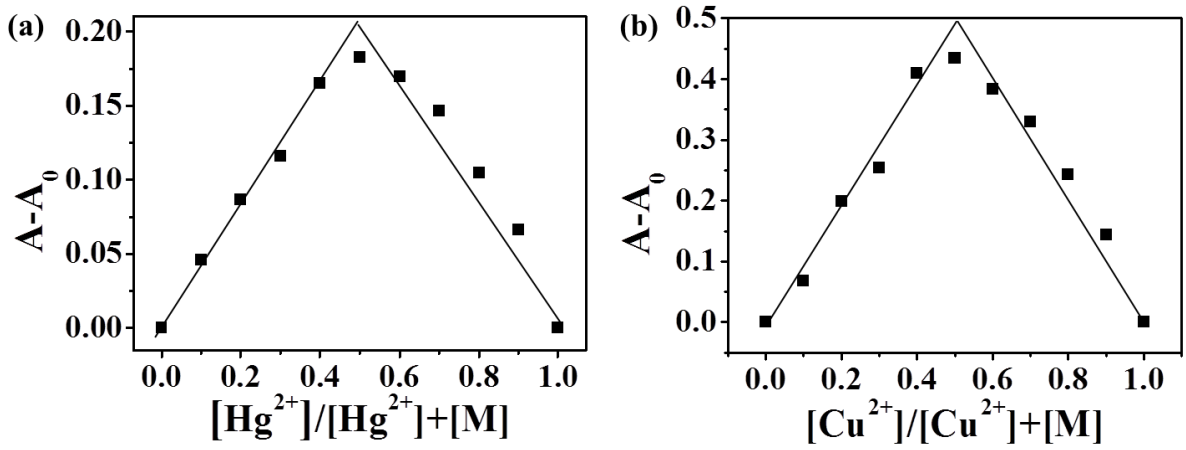


Figure S5. A Job plot for **NBD-H** (30 μM) with (a) Hg^{II} and (b) Cu^{II} in 10mM HEPES buffer solution (pH 7.4) containing 5% ACN.

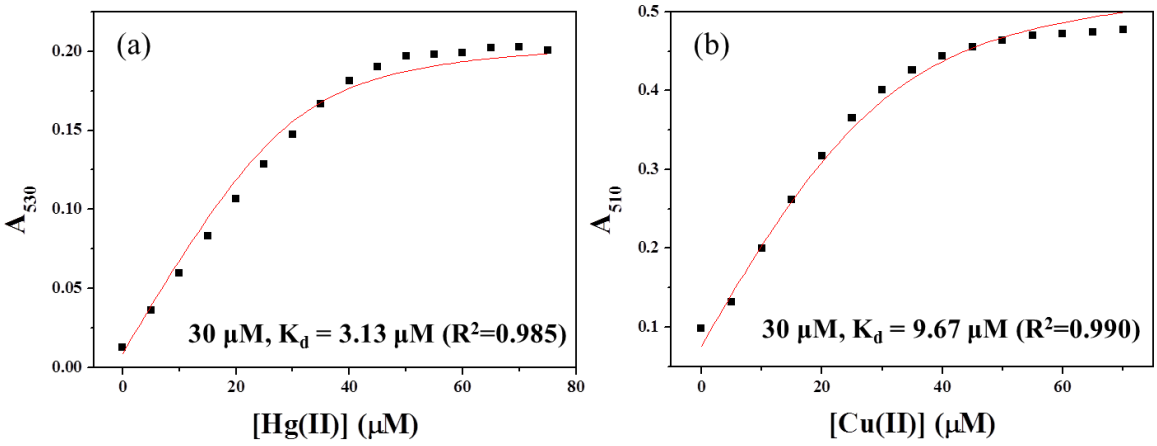
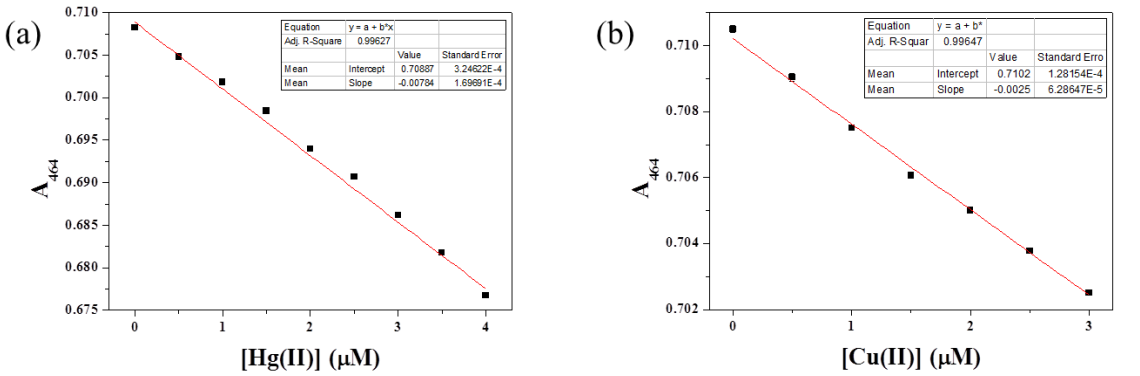


Figure S6. Absorbance titration curve of **NBD-H** (30 μM) in 10 mM HEPES buffer solution (pH 7.4) containing 3% ACN (a) with increasing concentration of Hg^{II} (0, 5, 10, 15, ..., 70, 75 μM) and (b) Cu^{II} (0, 5, 10, 15, ..., 65, 70 μM)



$\left|\frac{3\sigma}{M}\right| = \left|\frac{3 * 0.00046}{-0.00784}\right| = 0.176\ \mu M$ (R^2=0.99627)

$\left|\frac{3\sigma}{M}\right| = \left|\frac{3 * 0.000141}{-0.00259}\right| = 0.163\ \mu M$ (R^2=0.99647)

Figure S7. Detection limit of **NBD-H** (30 μM) with (a) Hg^{II} or (b) Cu^{II} ions in 10 mM HEPES buffer solution (pH 7.4) containing 3% ACN.

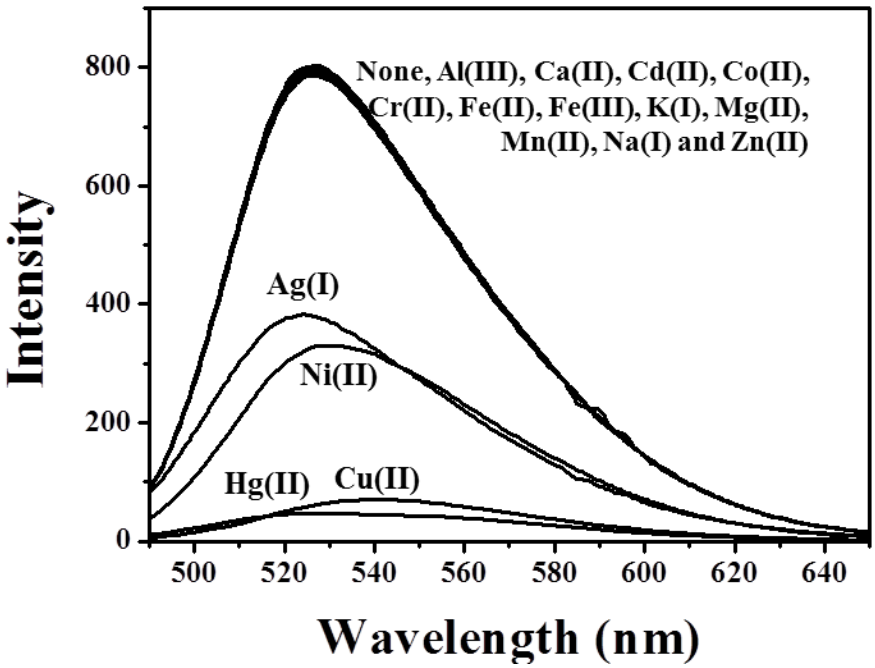


Figure S8. Fluorescence emission spectra of **NBD-H** (30 μM) in 10 mM HEPES buffer solution (pH 7.4) containing 3% ACN in presence of various metal ions (60 μM).

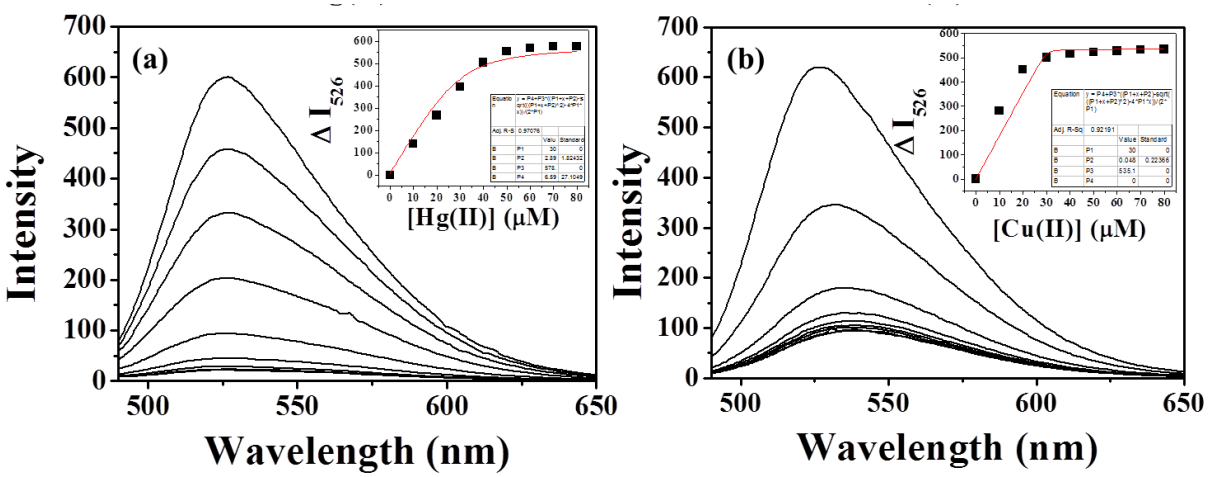


Figure S9. Fluorescence emission spectra of **NBD-H** (30 μM) in 10 mM HEPES buffer solution (pH 7.4) containing 3% ACN (a) with increasing concentration of Hg^{II} and (b) Cu^{II} (0, 10, ..., 80 μM). Inset: Fluorescence titration curve of **NBD-H** (30 μM) with increasing concentration of (a) Hg^{II} and (b) Cu^{II}

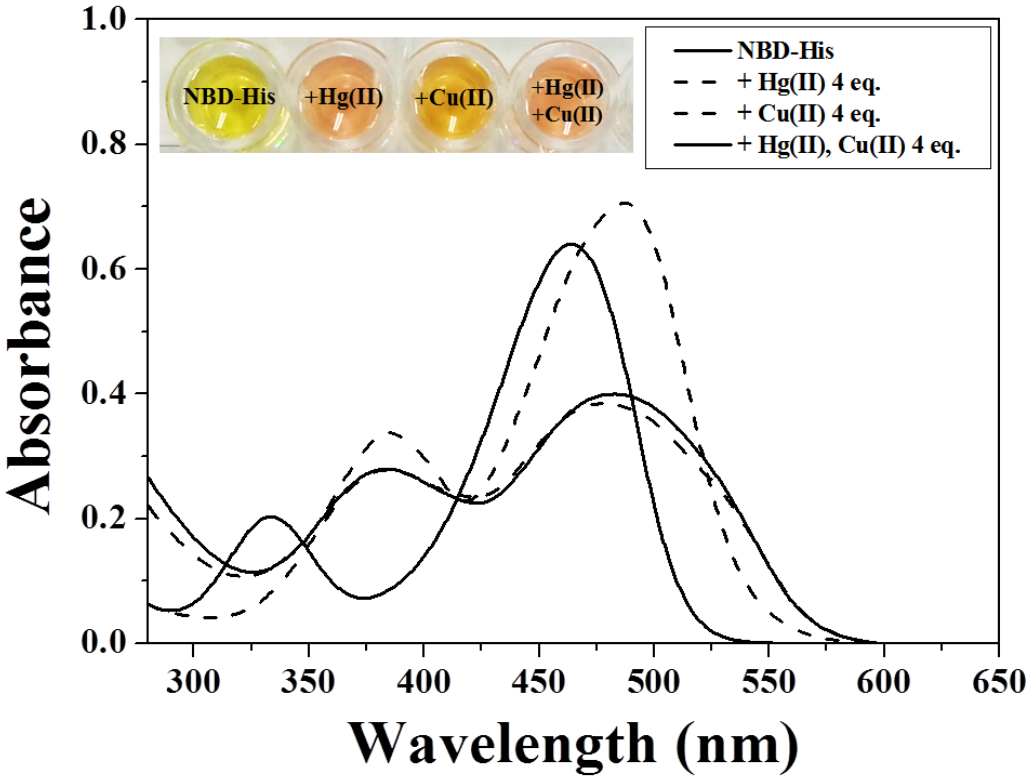


Figure S10. UV-VIS absorbance spectra of **NBD-H**(30 μM) in 10 mM HEPES buffer solution (pH 7.4) containing 3% ACN in the presence of Hg^{II} and/or Cu^{II}.

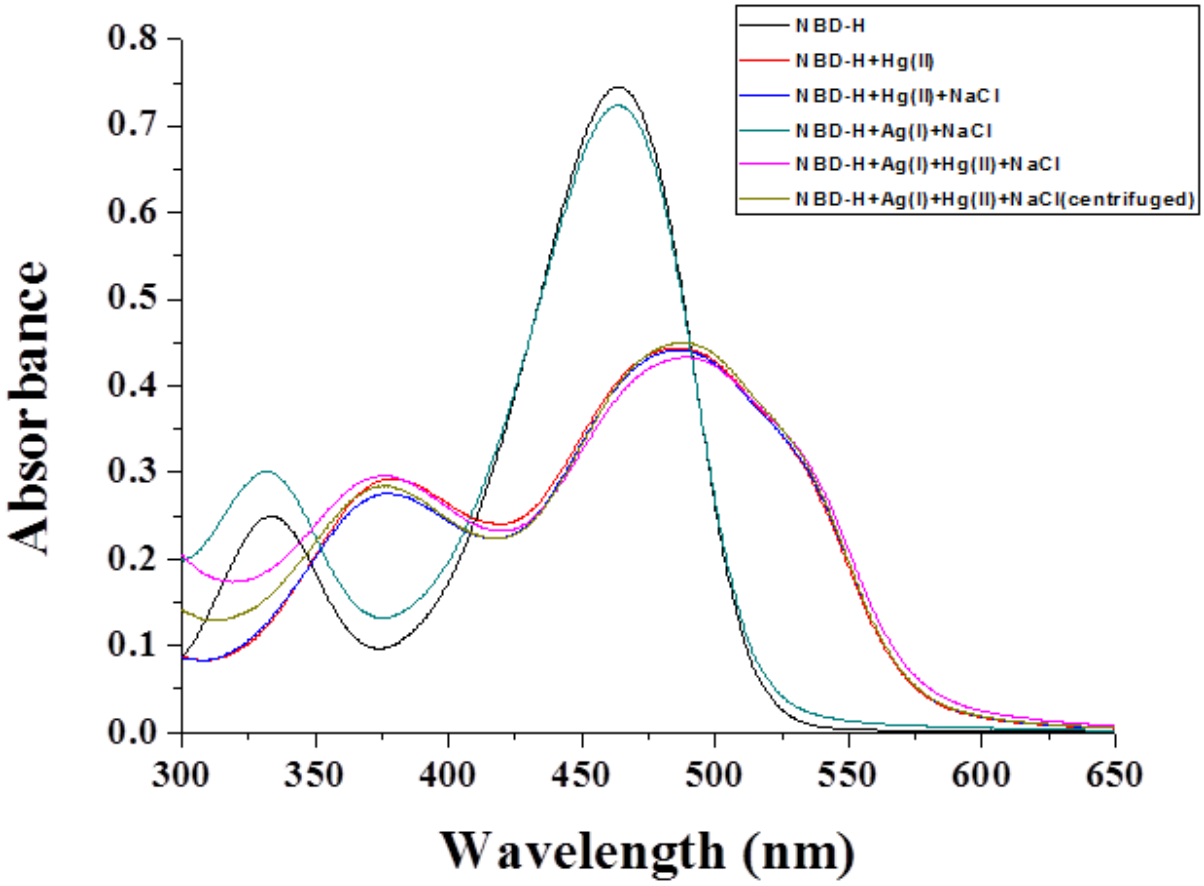


Figure S11. UV-VIS absorbance spectra of **NBD-H** (30 μM) in 10 mM HEPES buffer solution at pH 7.4 containing 3% ACN and 1 mM NaCl in the presence of Ag^{I} (2 equiv.) and/or Hg^{II} (2 equiv.).

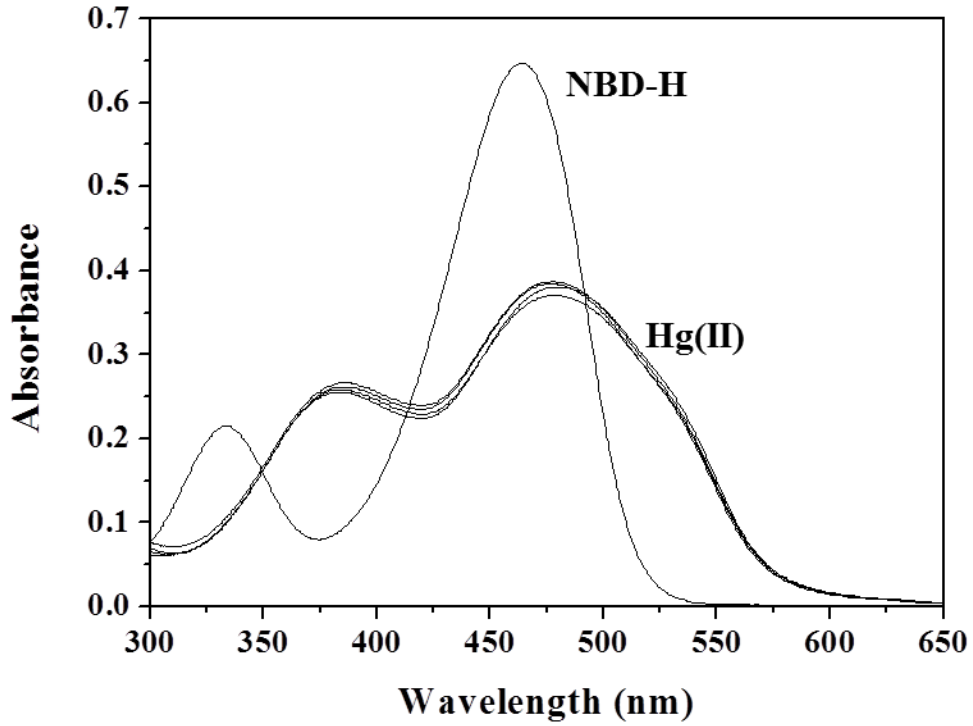


Figure S12. UV-VIS absorbance spectra of **NBD-H** (30 μM) in 10 mM HEPES buffer solution (pH 7.4) containing 3% ACN in presence of 2 equiv. of Hg^{II} ($HgCl_2$, $Hg(OAc)_2$, $Hg(NO_3)_2$, and $Hg(ClO_4)_2$).

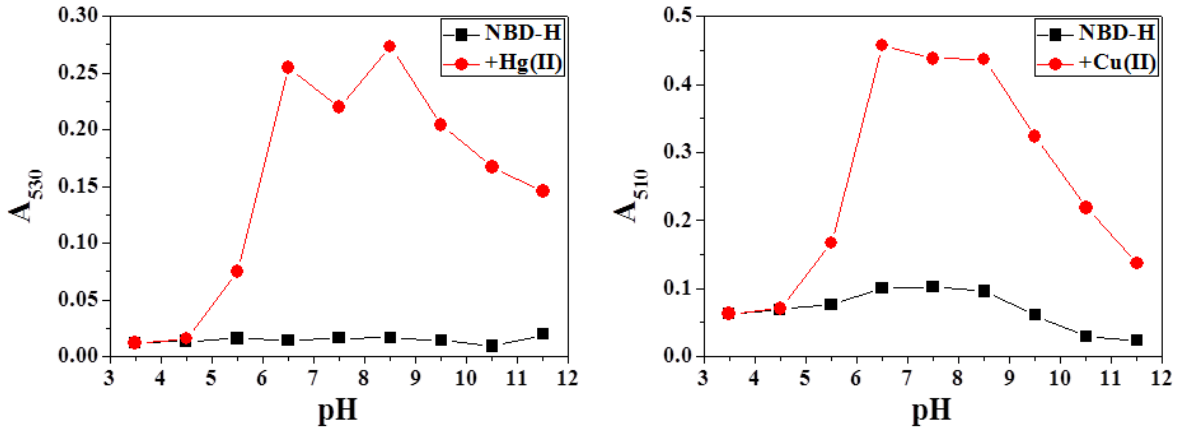


Figure S13. UV/VIS absorbance spectra of **NBD-H** in different pH of 10 mM buffer solution in absence of these metal ions (black line) and in presence of (a) Hg^{II} and (b) Cu^{II} (2 equiv.) (red line)

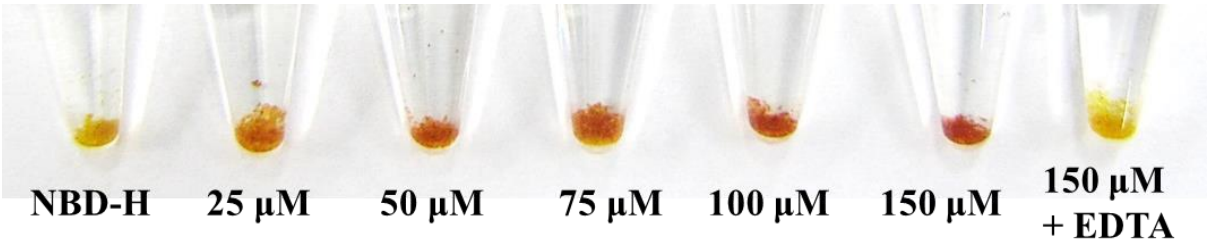


Figure S14. Color change of **NBD-H**-PEG-PS (100 μM) in 10 mM HEPES buffer (pH 7.4) with increasing concentration of Cu^{II} and/or 300 μM EDTA.