

Functionalization of silver nanoparticles with 5-sulfoanthranilic acid dithiocarbamate for selective colorimetric detection of Mn^{2+} and Cd^{2+} ions

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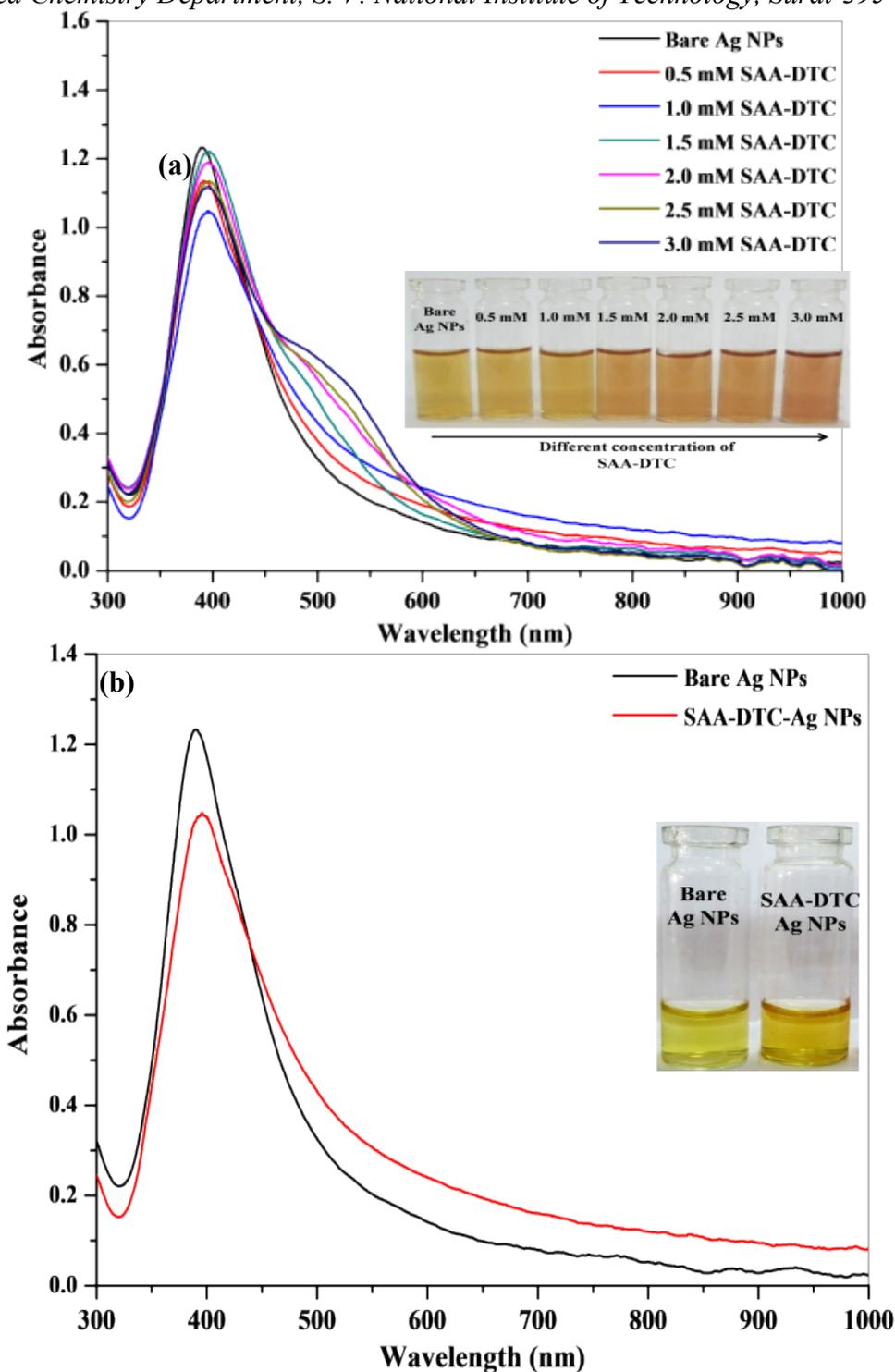


Figure S1. (a) UV-visible spectra and photographic images of Ag NPs after functionalization with different concentration of SAA-DTC ligands (0.5 to 3.0 mM). (b) UV-visible spectra and photographic images of bare Ag NPs and SAA-DTC-Ag NPs.

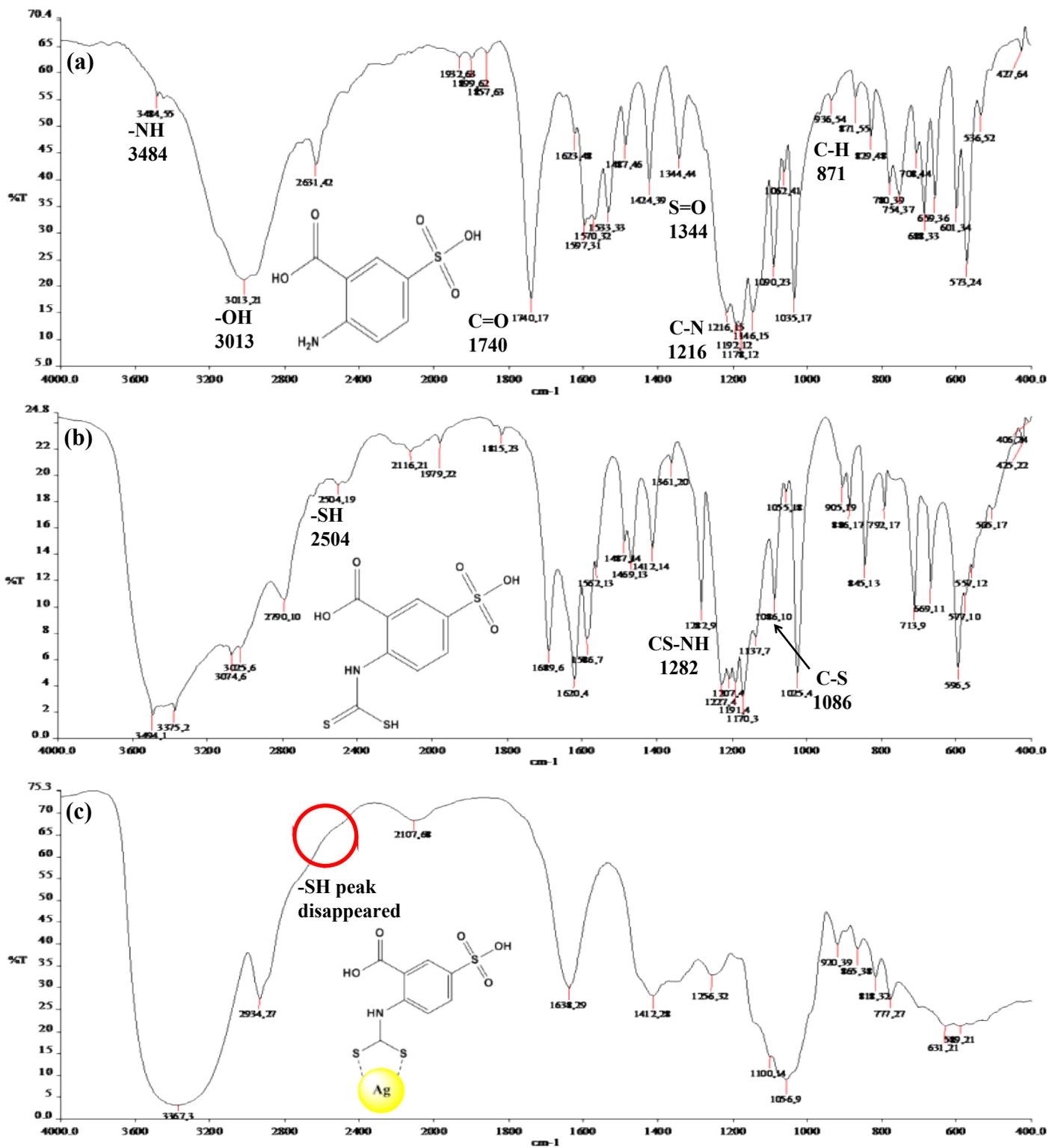


Figure S2. FT-IR spectra of (a) 5-sulfoanthranillic acid (b) SAA-DTC and (c) SAA-DTC-Ag NPs.

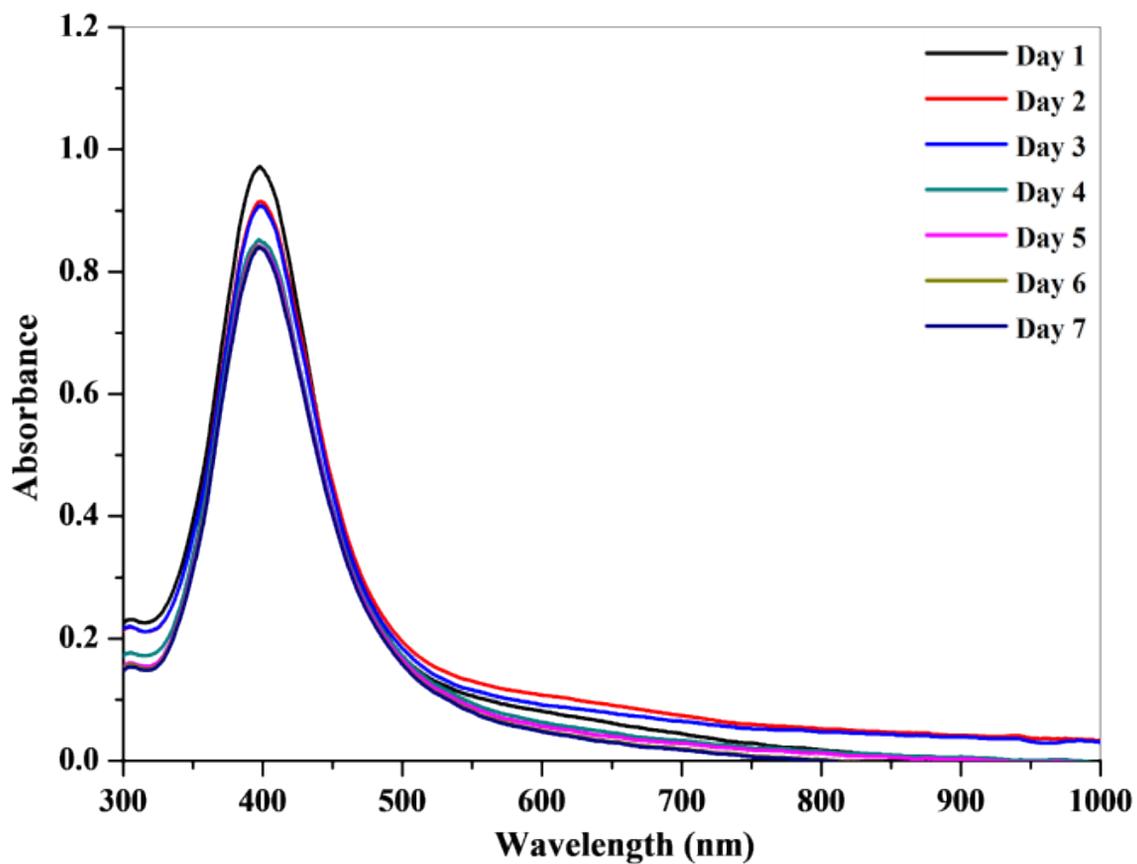
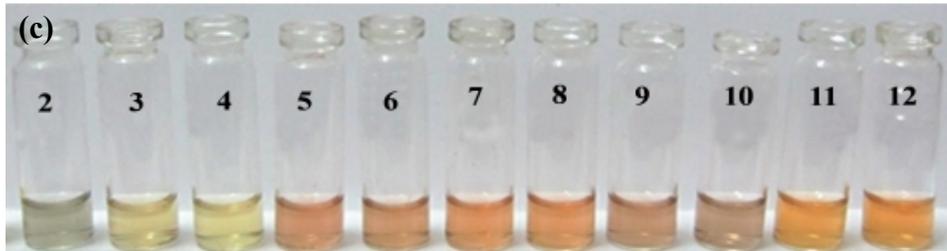
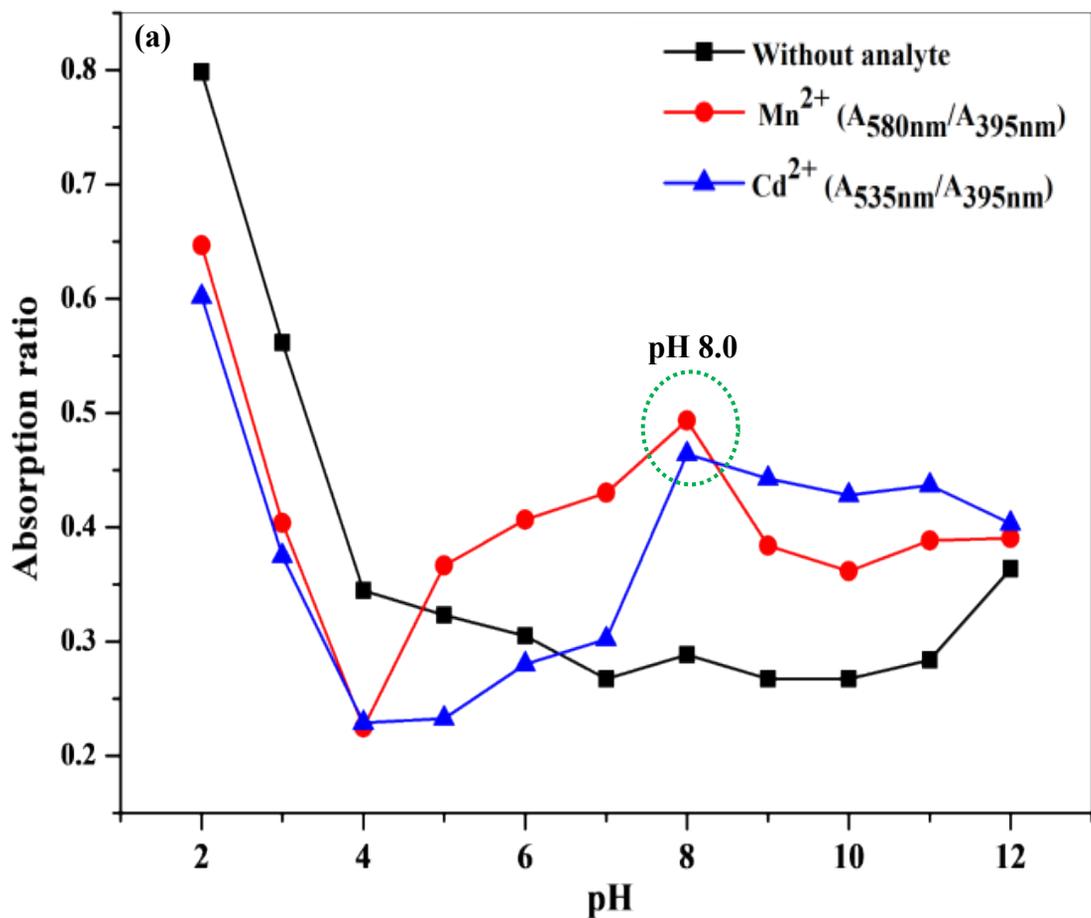
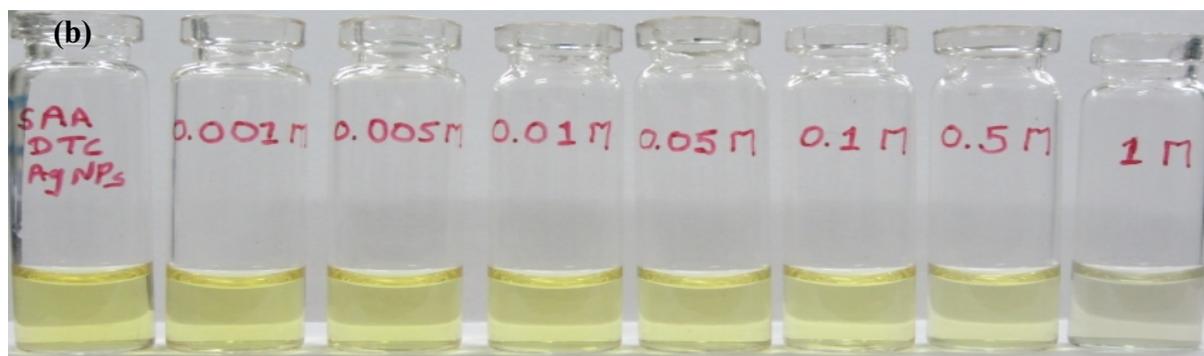
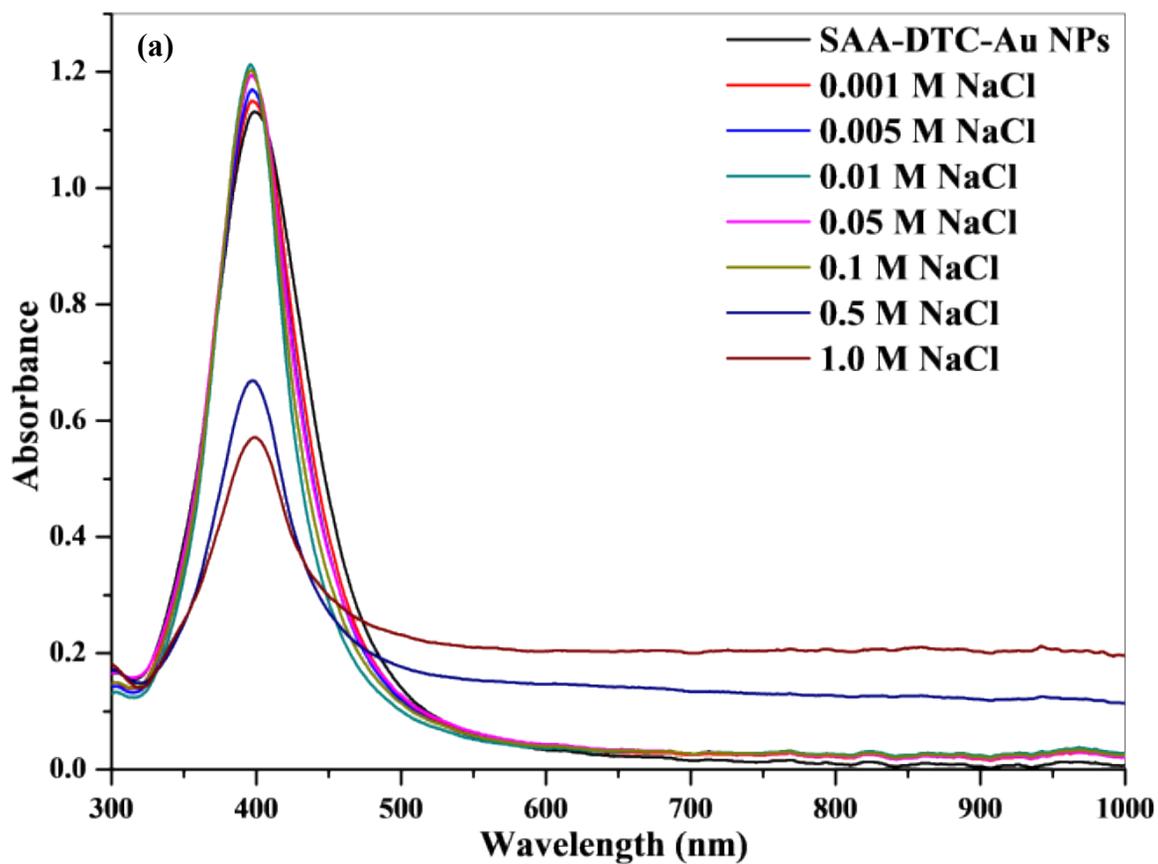


Figure S4. UV-visible absorption spectra of SAA-DTC-Ag NPs at different days from 1 to 7 day.



pH (2.0-12)

Figure S5. (a) The UV-visible absorption ratios ($A_{580\text{ nm}}/A_{395\text{ nm}}$ and $A_{535\text{ nm}}/A_{395\text{ nm}}$) of SAA-DTC-Ag NPs aggregation induced by Mn^{2+} and Cd^{2+} ions using PBS pH at 8.0. Photographic images of SAA-DTC-Ag NPs (b) without analyte, in presence of (c) Mn^{2+} ion and (d) Cd^{2+} ion at PBS 2.0-12.



Concentration of NaCl (M)

Figure S6. UV-visible absorption spectra of SAA-DTC-Ag NPs dispersions with increasing concentrations of NaCl from 0.001 M to 1.0 M.

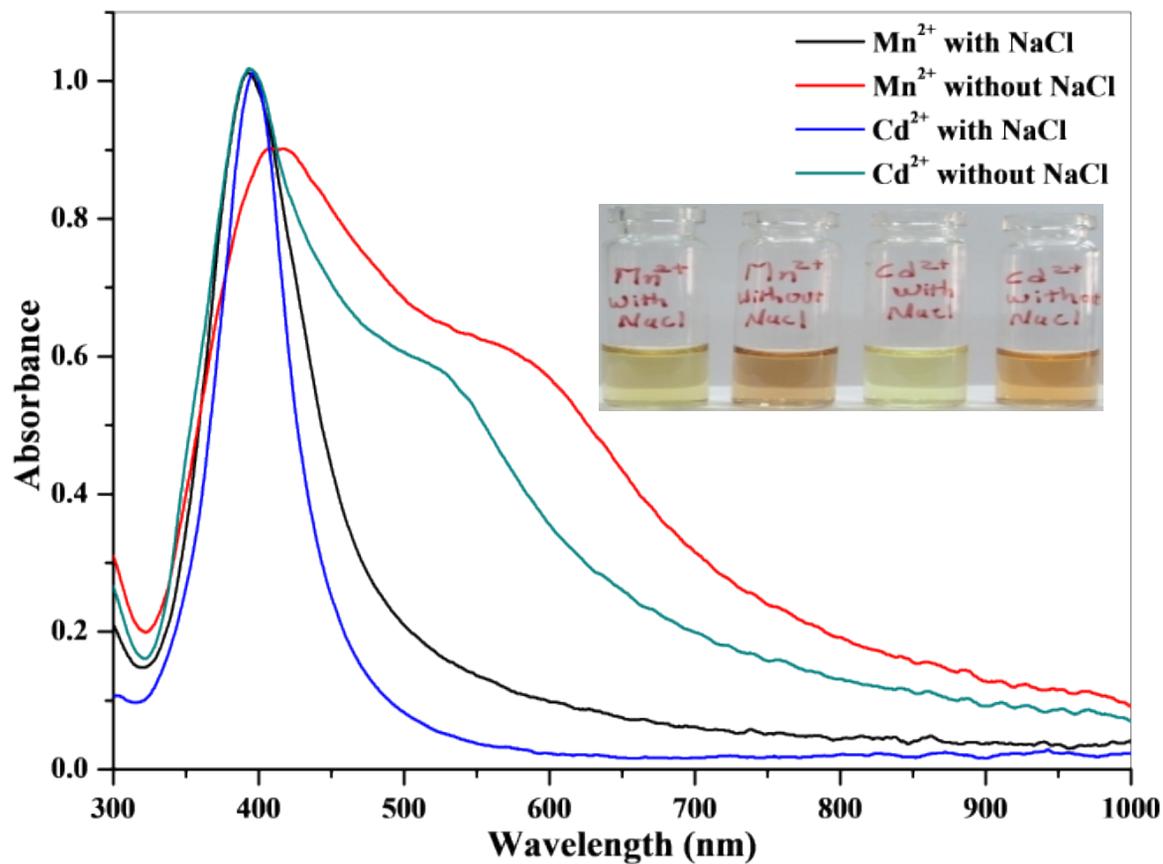


Figure S7. UV-visible absorption spectra of SAA-DTC-Ag NPs upon the addition of Mn²⁺ (1 mM) and Cd²⁺ (1 mM) at PBS pH 8 with and without NaCl (0.1 M).

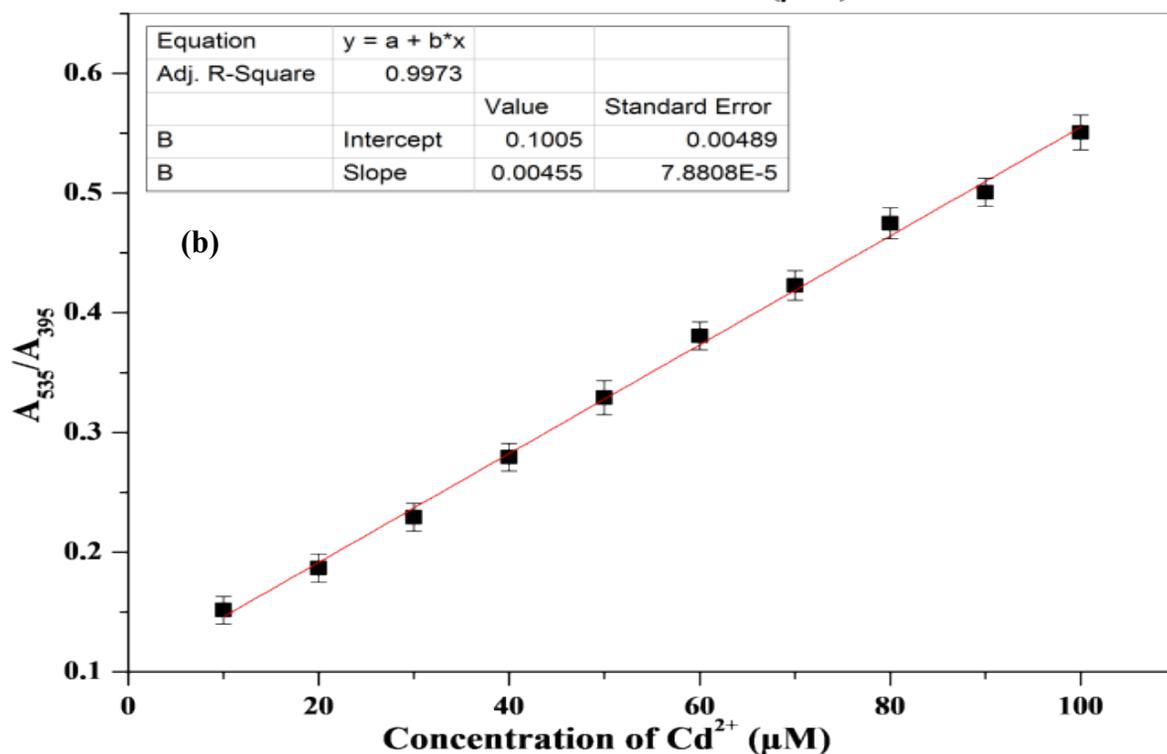
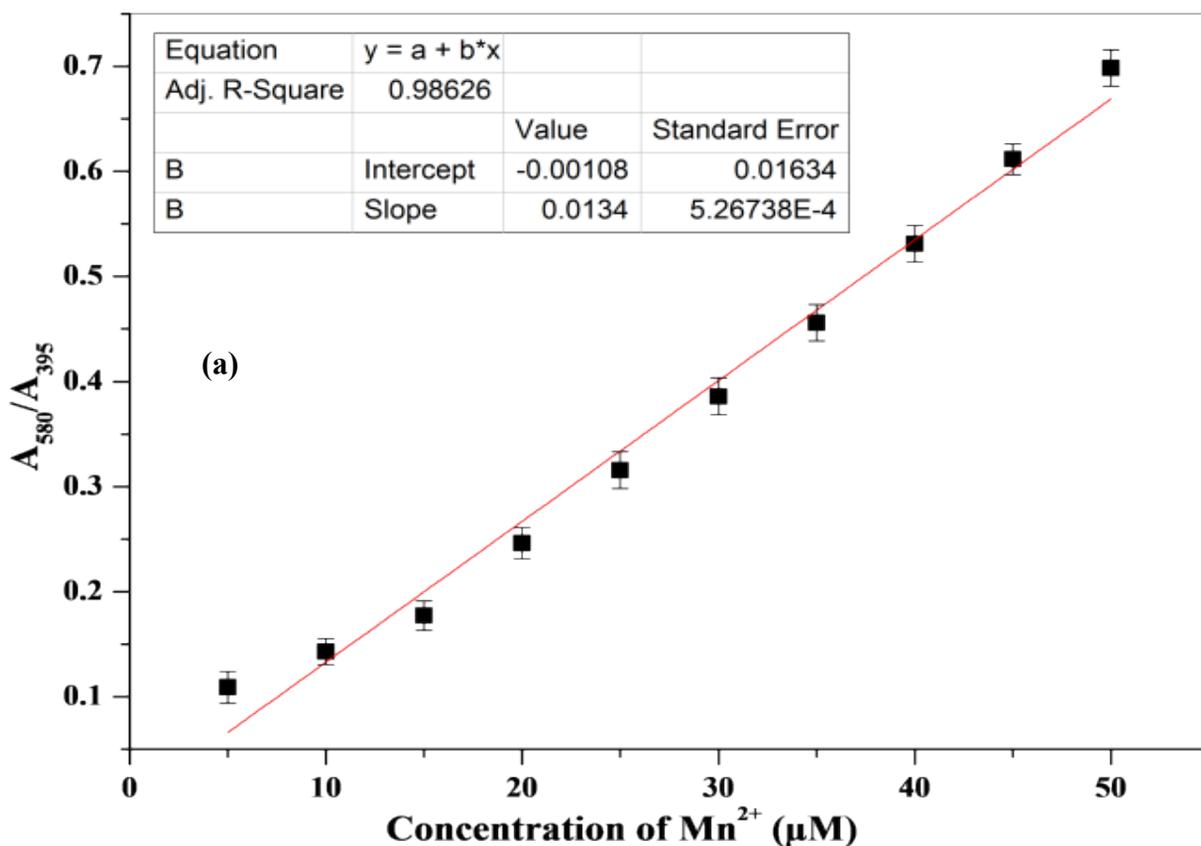


Figure S8. Calibration graphs plotted between the absorption ratios at (a) A_{580nm}/A_{395nm} and concentration of Mn^{2+} ion and (b) at A_{535nm}/A_{395nm} and concentration of Cd^{2+} ion using SAA-DTC-Ag NPs as a colorimetric probe. Error bars show standard deviations between three independent experiments