

## *Electronic Supporting Information*

### **Silver nanoparticles as highly efficient and selective optical probe for Sulphide via dendrimer formation in aqueous medium†**

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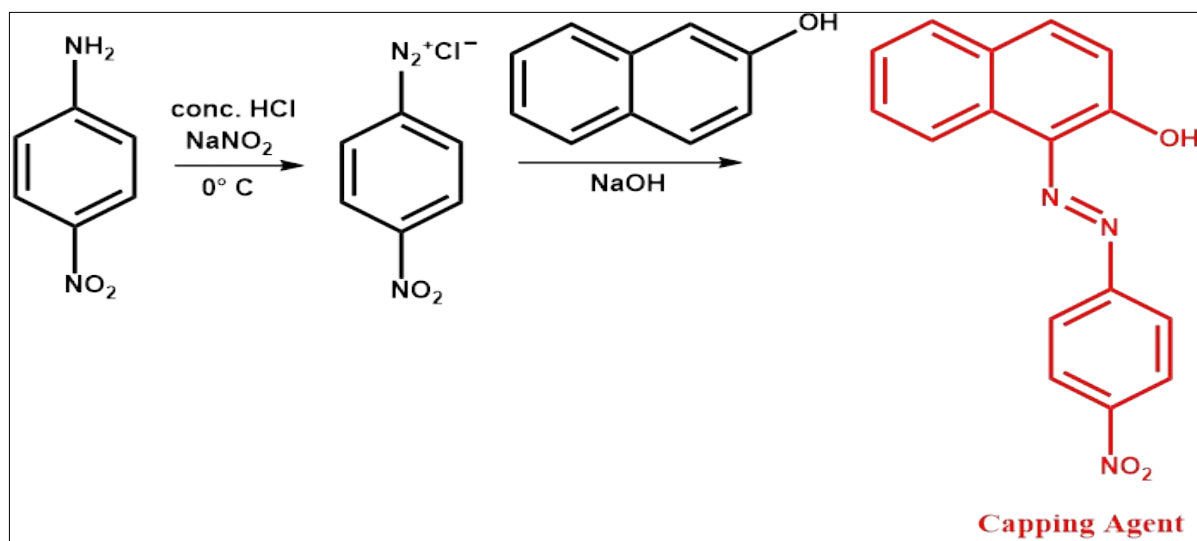
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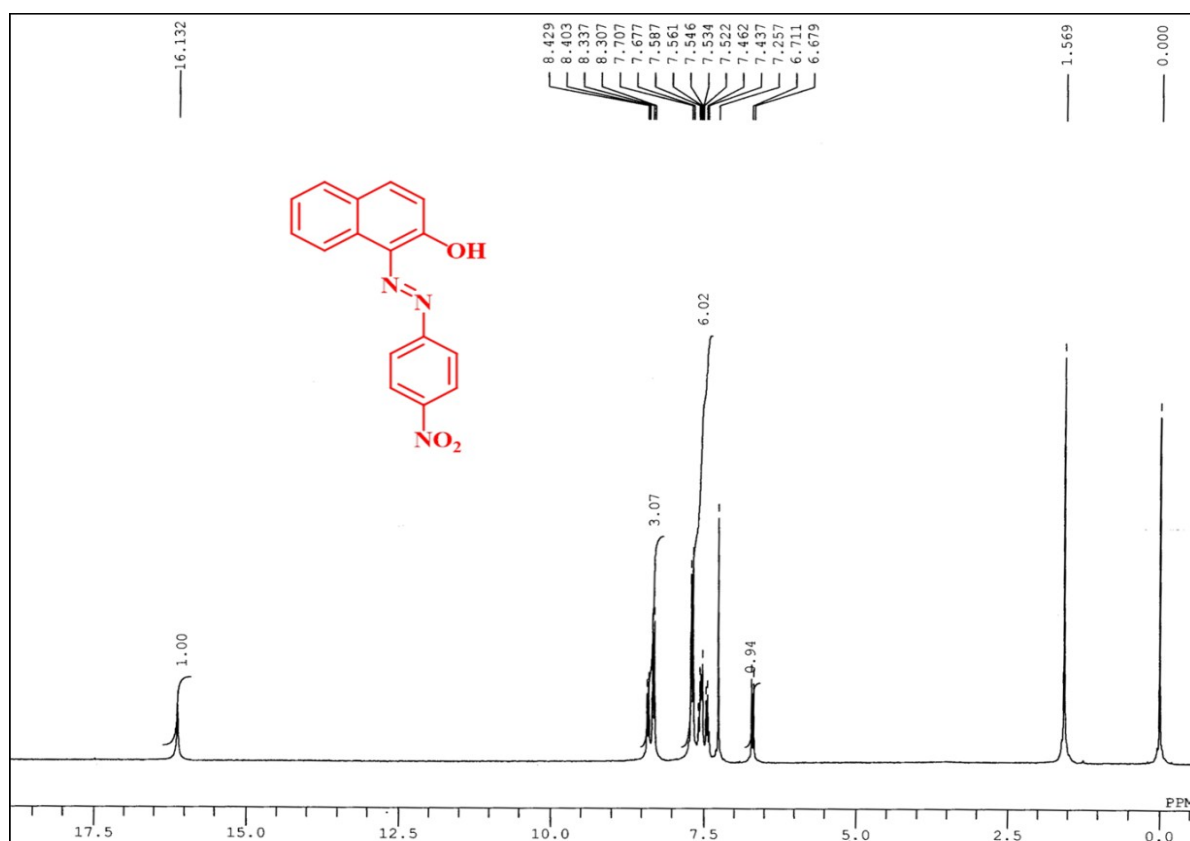
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**Scheme 1:** Synthesis of the Capping Agent (CA):



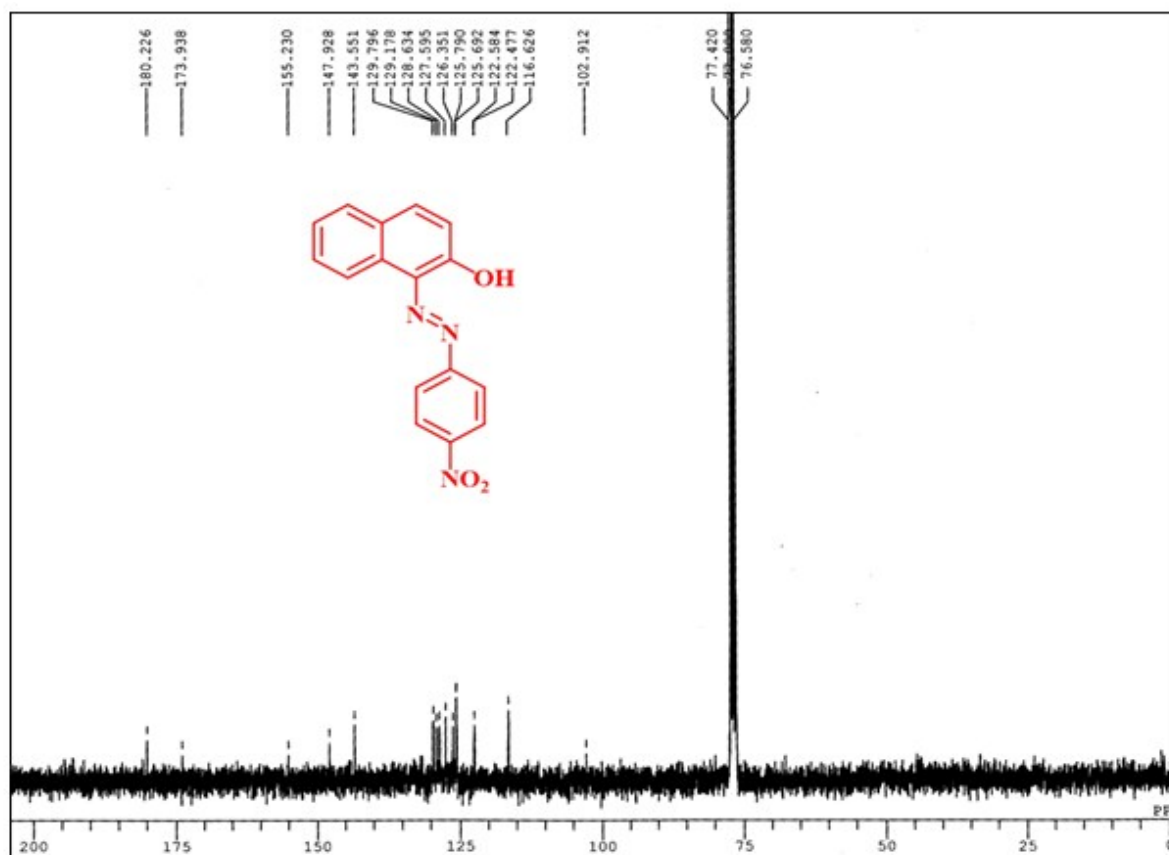
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**Figure S1:**  $^1\text{H}$  NMR spectrum of CA in  $\text{CDCl}_3$ :



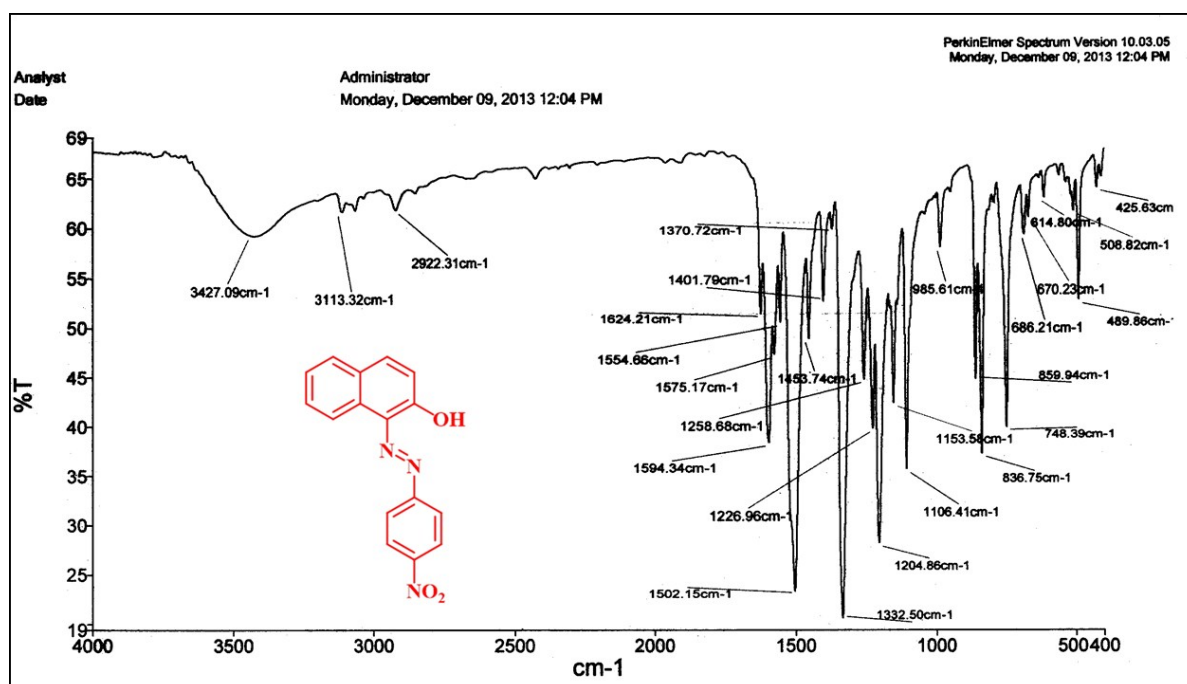
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**Figure S2:**  $^{13}\text{C}$  NMR spectrum of CA in  $\text{CDCl}_3$ :



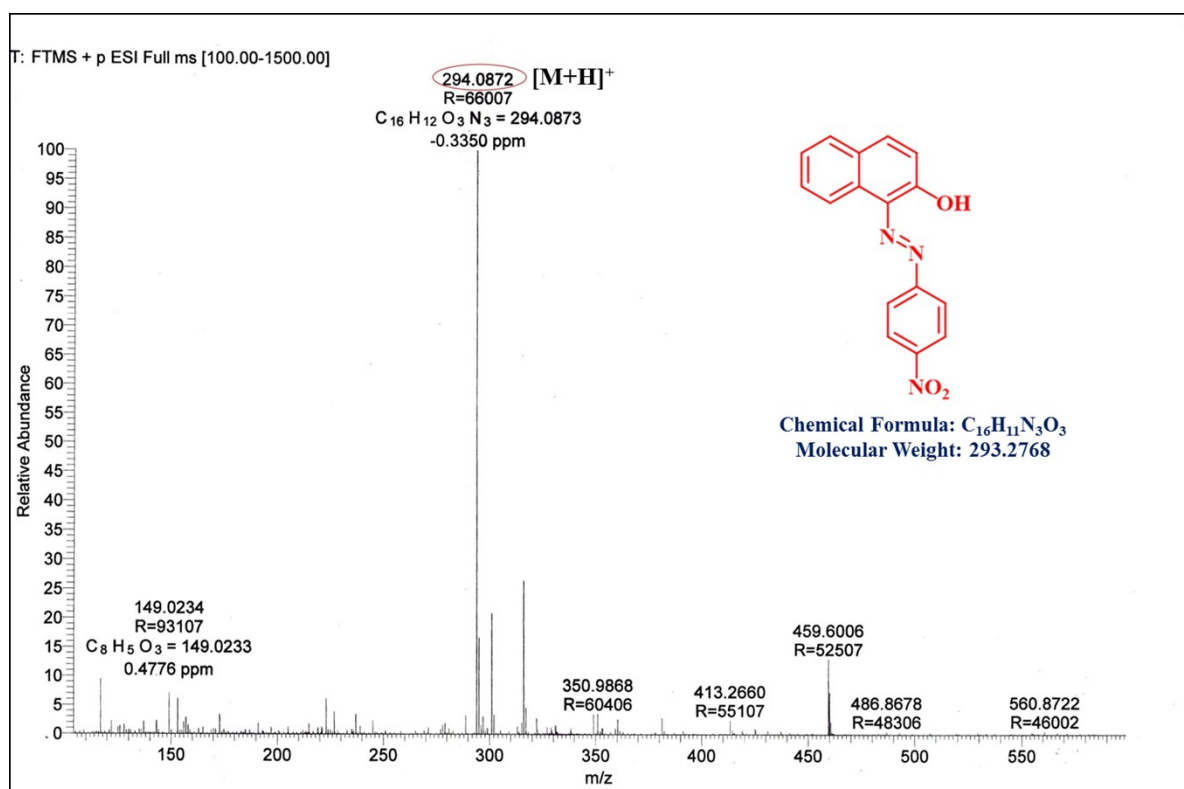
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Figure S3: IR spectrum of CA:



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**Figure S4:** HRMS of CA:



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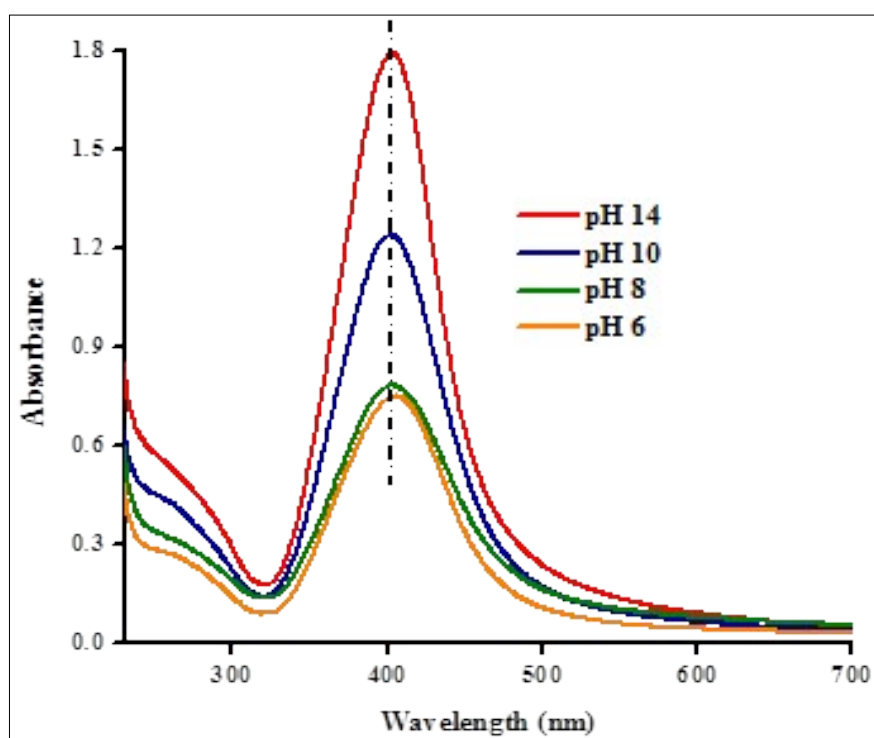
**Figure S5:** CA Capped AgNPs:





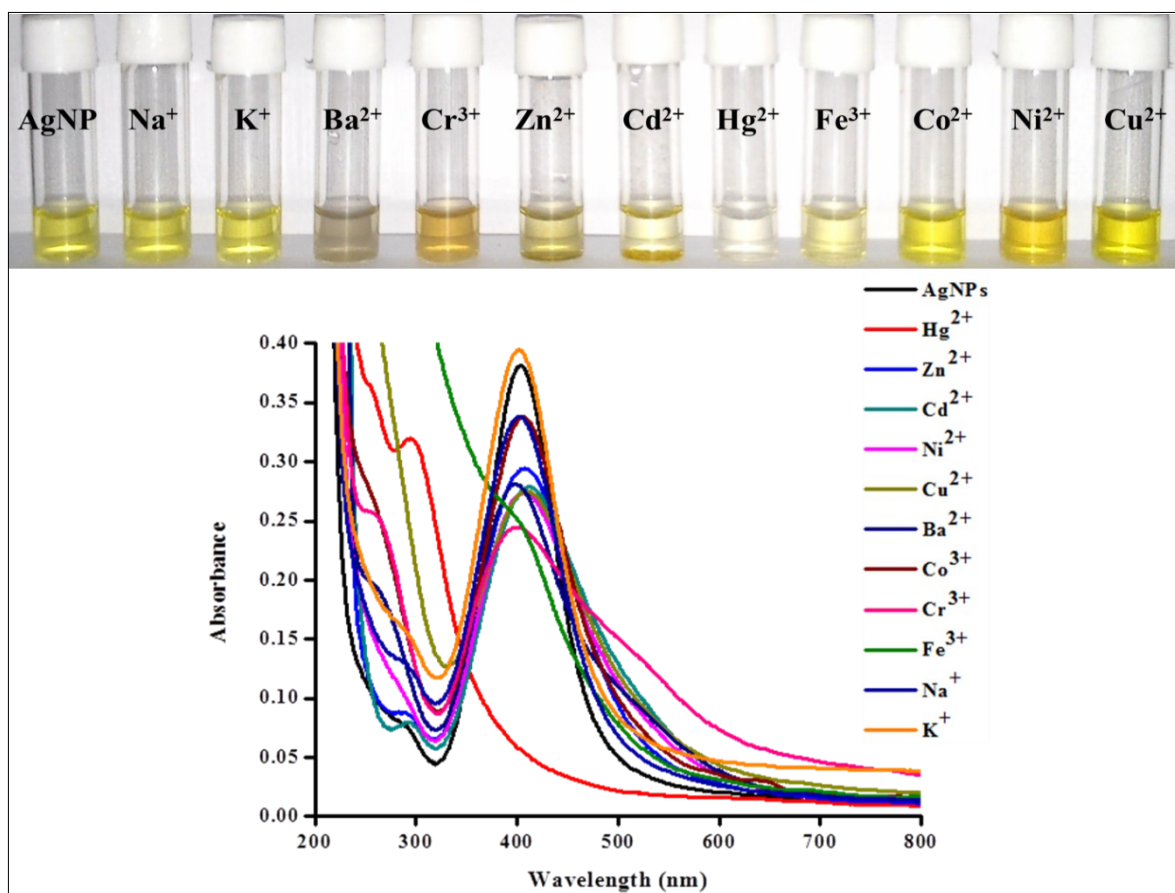
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**Figure S6:** UV-visible spectrum of synthesized AgNPs at different pH (6, 8, 10 and 14):



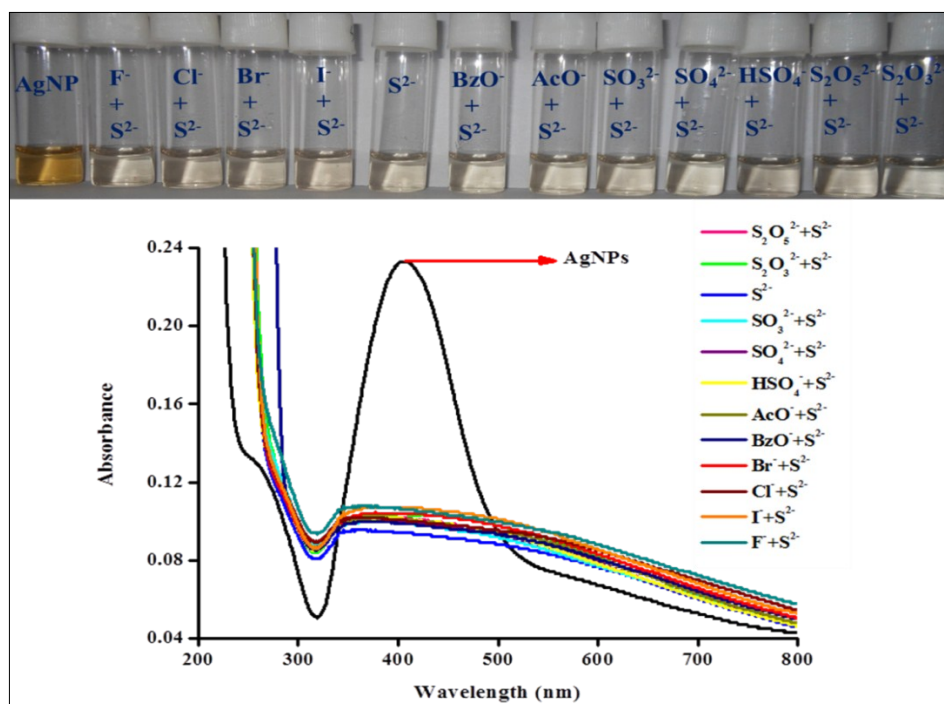
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**Figure S7:** Naked eye response and the corresponding UV-visible spectrum of AgNPs with metals ( $10\ \mu\text{l}$  of  $1.0 \times 10^{-1}\ \text{M}$ ):



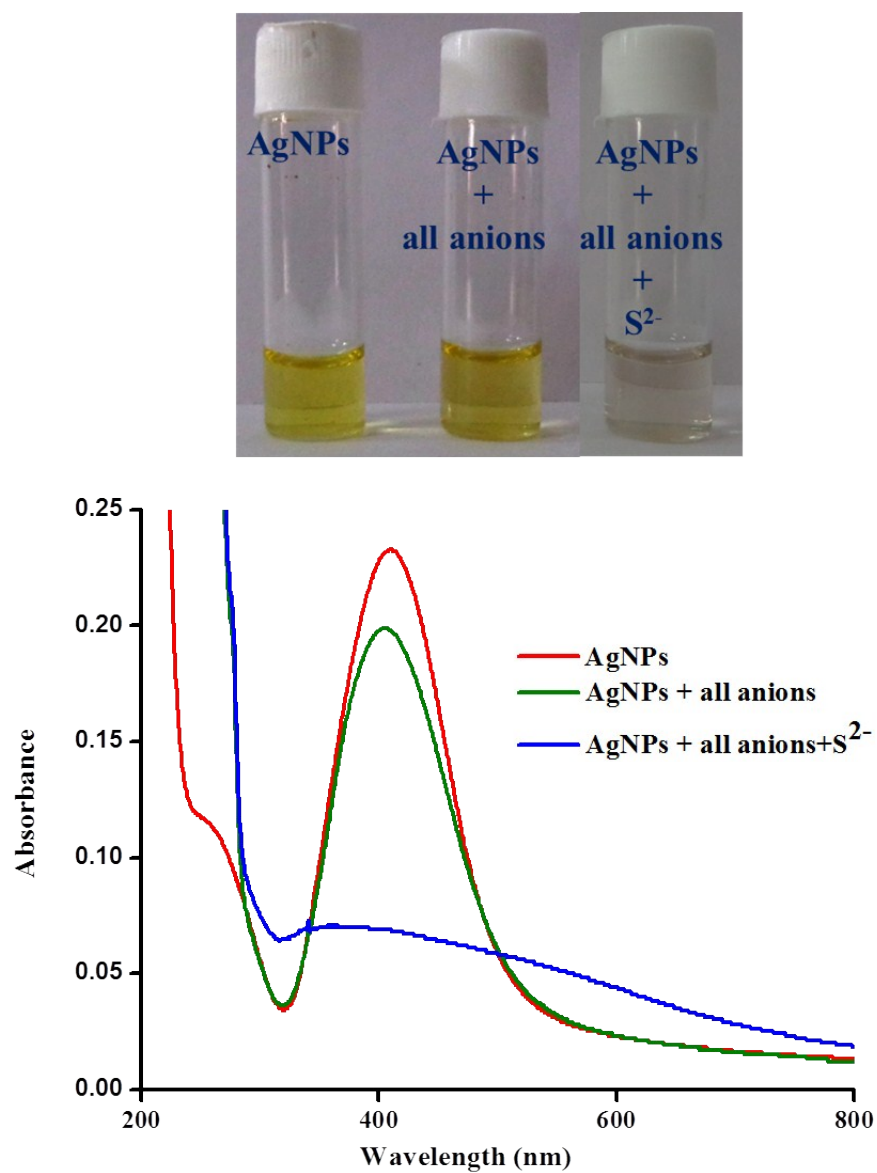
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**Figure S8:** Naked eye response and the corresponding UV-visible spectrum of AgNPs showing interference study in the individual mixture of  $S^{2-}$  with other anions:



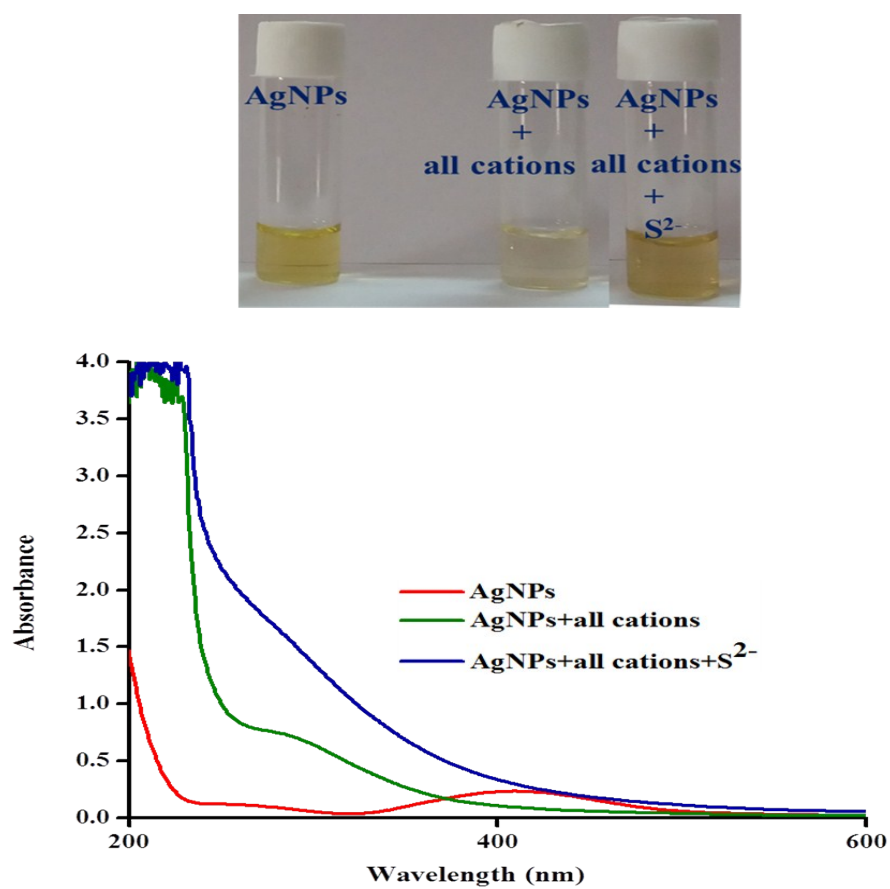
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**Figure S9:** Naked eye response and UV-visible spectrum of AgNPs in the mixture of all anions ( $10\ \mu\text{l}$  of  $1.0\times 10^{-1}\ \text{M}$ ) and addition of  $\text{S}^{2-}$  ( $10\ \mu\text{l}$  of  $1.0\times 10^{-1}\ \text{M}$ ) to the same:



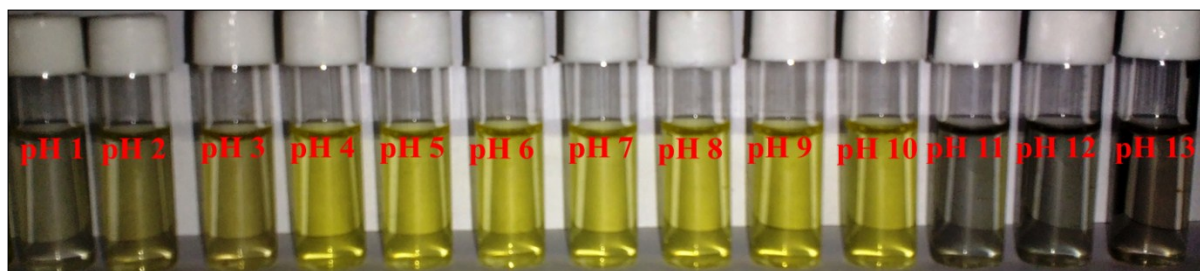
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**Figure S10:** Naked eye response and UV-visible spectrum of AgNPs in the mixture of all cations ( $10\ \mu\text{l}$  of  $1.0\times 10^{-1}\ \text{M}$ ) and addition of  $\text{S}^{2-}$  ( $10\ \mu\text{l}$  of  $1.0\times 10^{-1}\ \text{M}$ ) to the same:

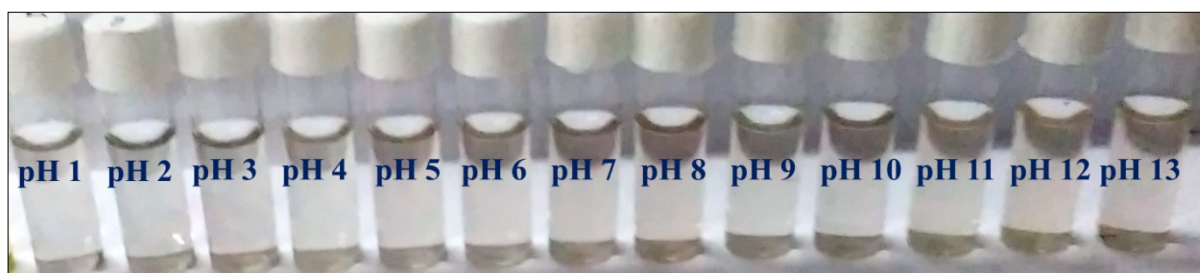


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**Figure S11a:** Stability of AgNPs at different pH (1 to 13):

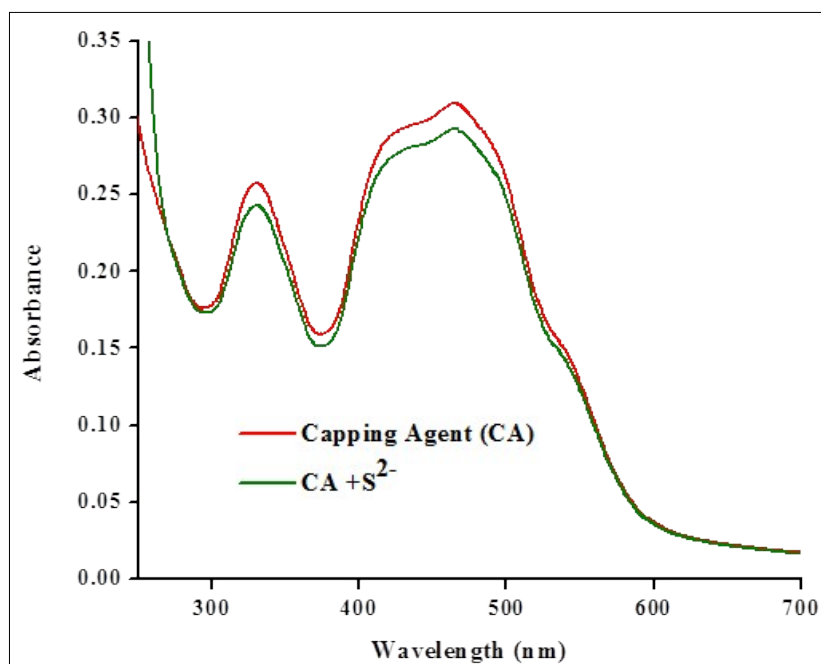


**Figure S11b:** Colorimetric sensing of  $S^{2-}$  through AgNPs at different pH (1 to 13):



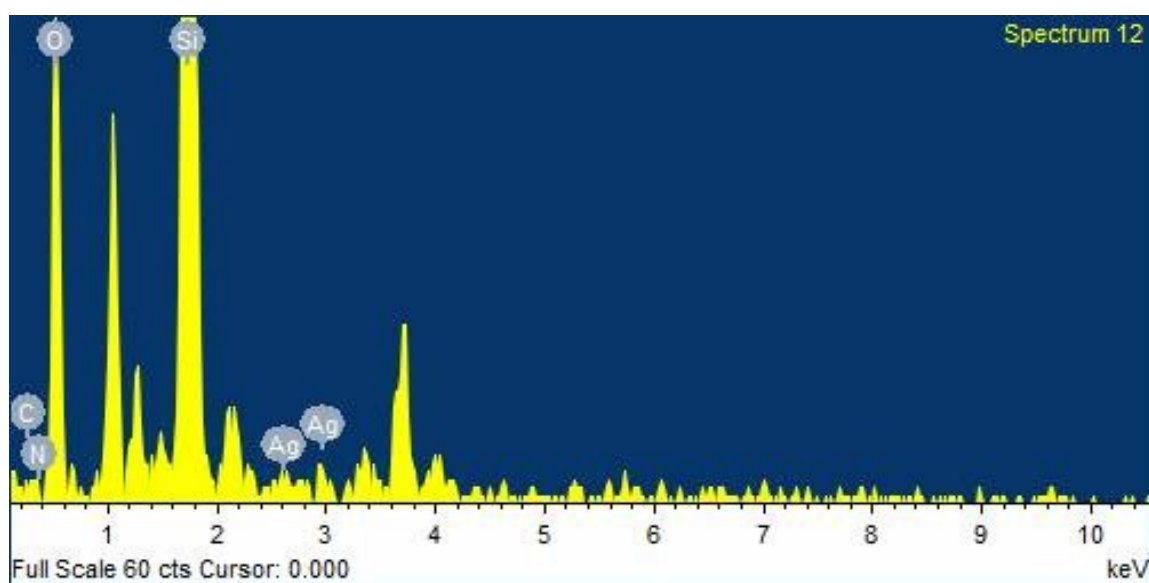
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**Figure S12:** UV-visible spectrum of  $5 \times 10^{-5}$  M CA and on the addition of  $10 \mu\text{l}$  of  $1.0 \times 10^{-1}$  M  $\text{S}^{2-}$  to it:



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**Figure S13a:** EDX of spherical shaped CA capped AgNPs:



**Figure S13b:** EDX of S<sup>2-</sup> induced dendritic architecture of AgNPs.

