

Electronic Supplementary Information

Colorimetric and microfluidic paper-based detection of cysteine using 1,5-diphenylcarbazine capped silver nanoparticles

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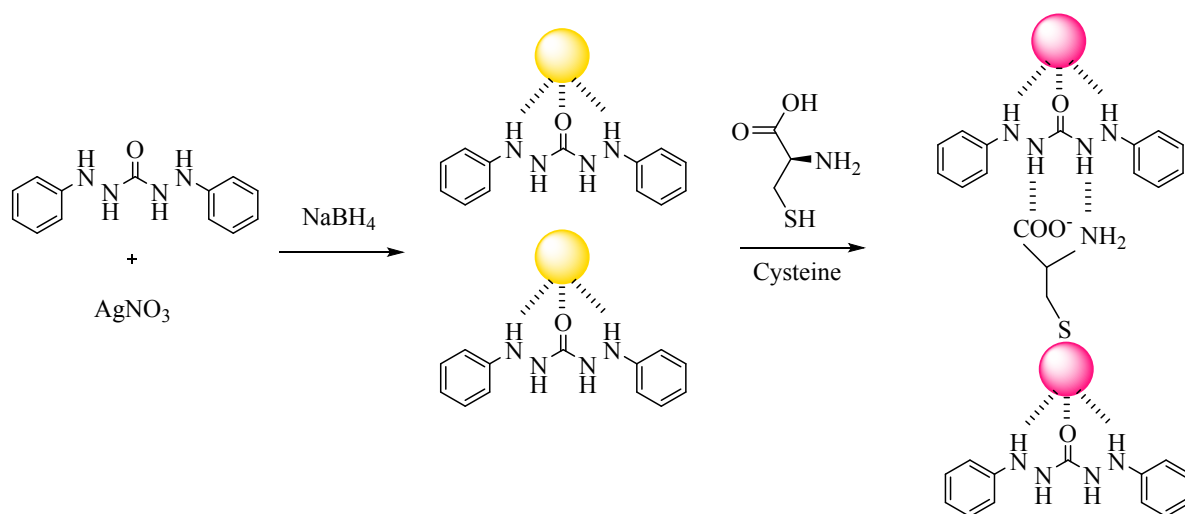


Fig.S1. A possible mechanism for aggregation of DPC-AgNPs in the presence of cysteine

The bonding status of 1,5-diphenylcarbazide (DPC) on the surface of the Ag nanoparticle was characterized using FTIR spectroscopy and the results are shown in FTIR spectrum (Fig S2).

In the DPC, IR spectra, the strong peaks at 1710 cm^{-1} is attributed to C=O stretching vibration. The peaks at 732 cm^{-1} , 796 cm^{-1} , 3097 cm^{-1} and 3330 cm^{-1} can be attributed to the wagging and stretching vibration of -NH groups in DPC. When DPC are coated onto the surface of AgNPs, the carboxylic peak is shifted from 1710 cm^{-1} to 1627 cm^{-1} and peaks of amine groups are expanding and disappearing. Comparing of the two spectra (a, b) of pure DPC and DPC-AgNPs, is concluded that DPC located on AgNPs. Decrease in peak intensity of C=O stretching bond and shifted to 1616 cm^{-1} may be due to interaction of Cys with DPC-AgNPs.

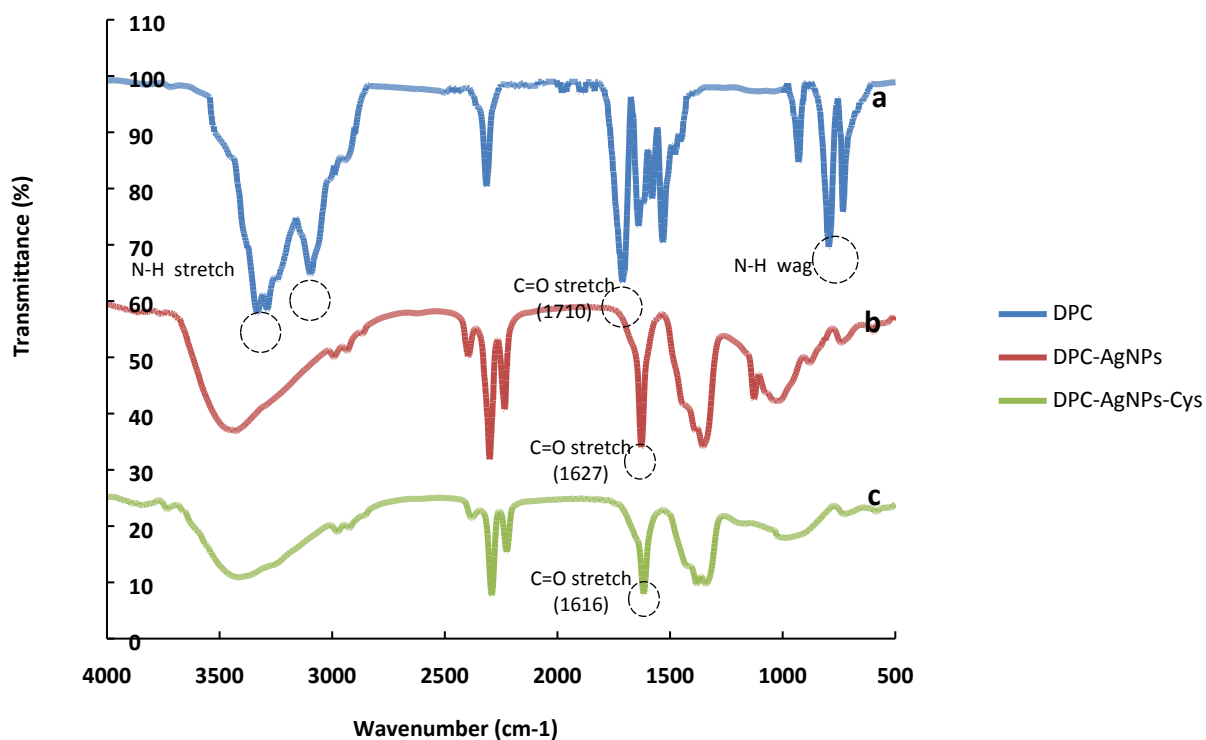


Fig. S2. FT-IR Spectra of (a) DPC, (b) DPC-AgNPs and (c) DPC-AgNPs-Cys