

Electronic supplementary information

Naked eye and optical biosensing of cysteine over the other amino acids using β -cyclodextrin decorated silver nanoparticles as a nanoprobe

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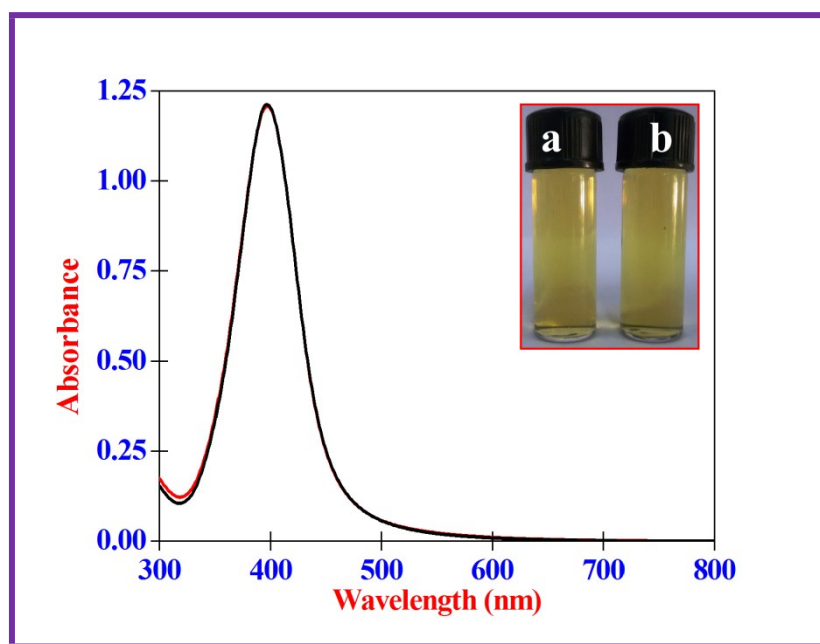


Fig. S1. Absorption spectra of freshly prepared and three months aged β -CD AgNPs. Inset shows photographic images of freshly prepared (a) and three months aged (b).

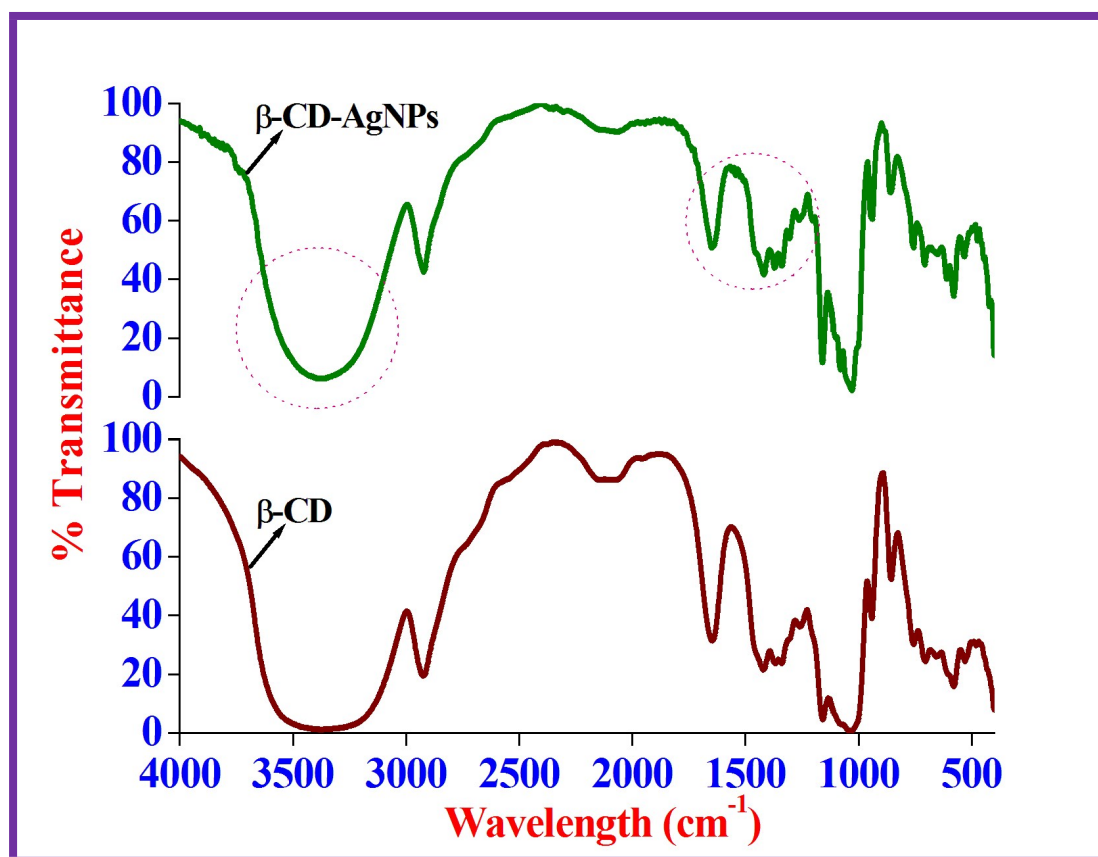


Fig. S2. FT-IR spectral results of $\beta\text{-CD}$ alone and $\beta\text{-CD}$ AgNPs

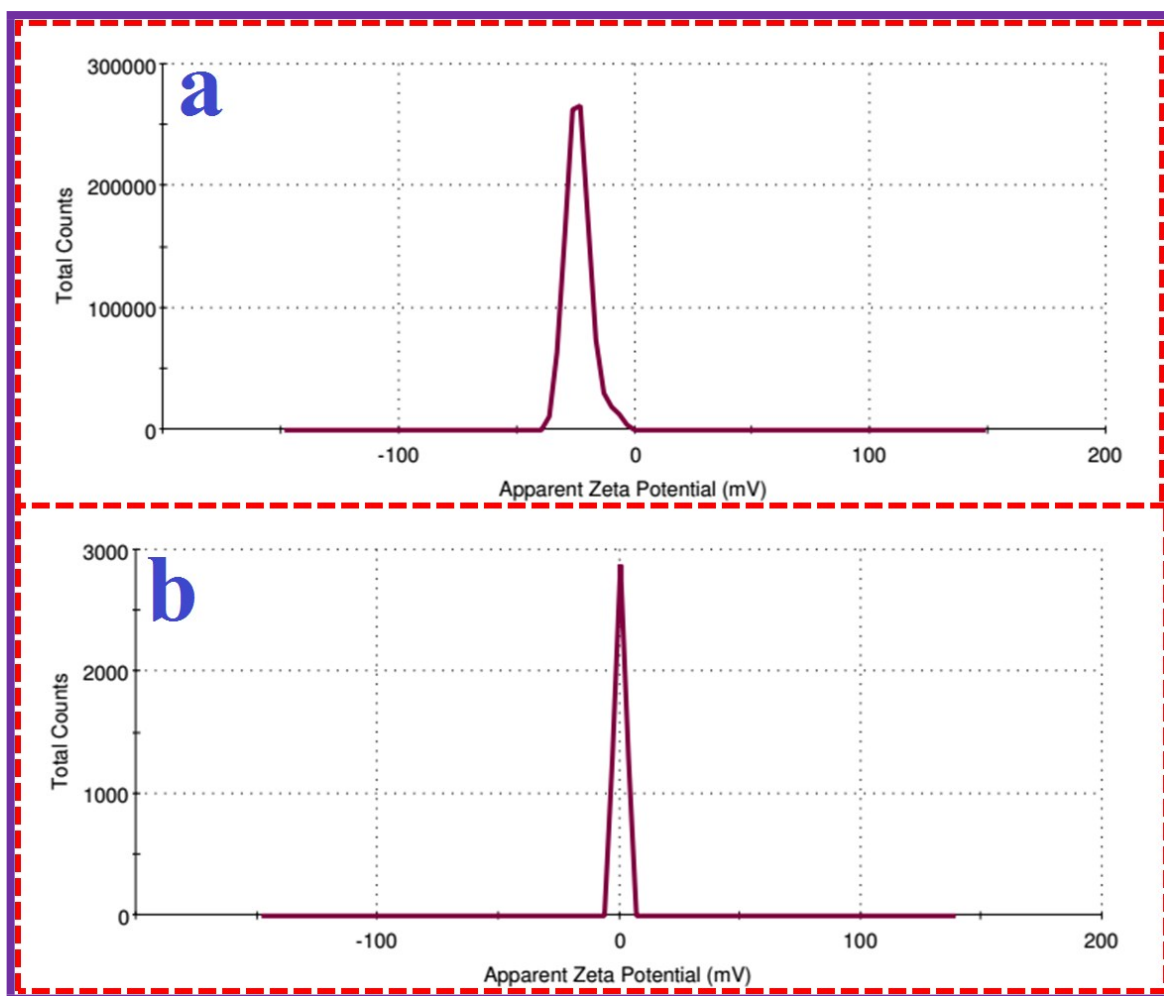


Fig. S3. Zeta potential data for β -CD AgNPs before (a) and after (b) the addition of 30.00×10^{-7} mol dm⁻³ concentration of Cys

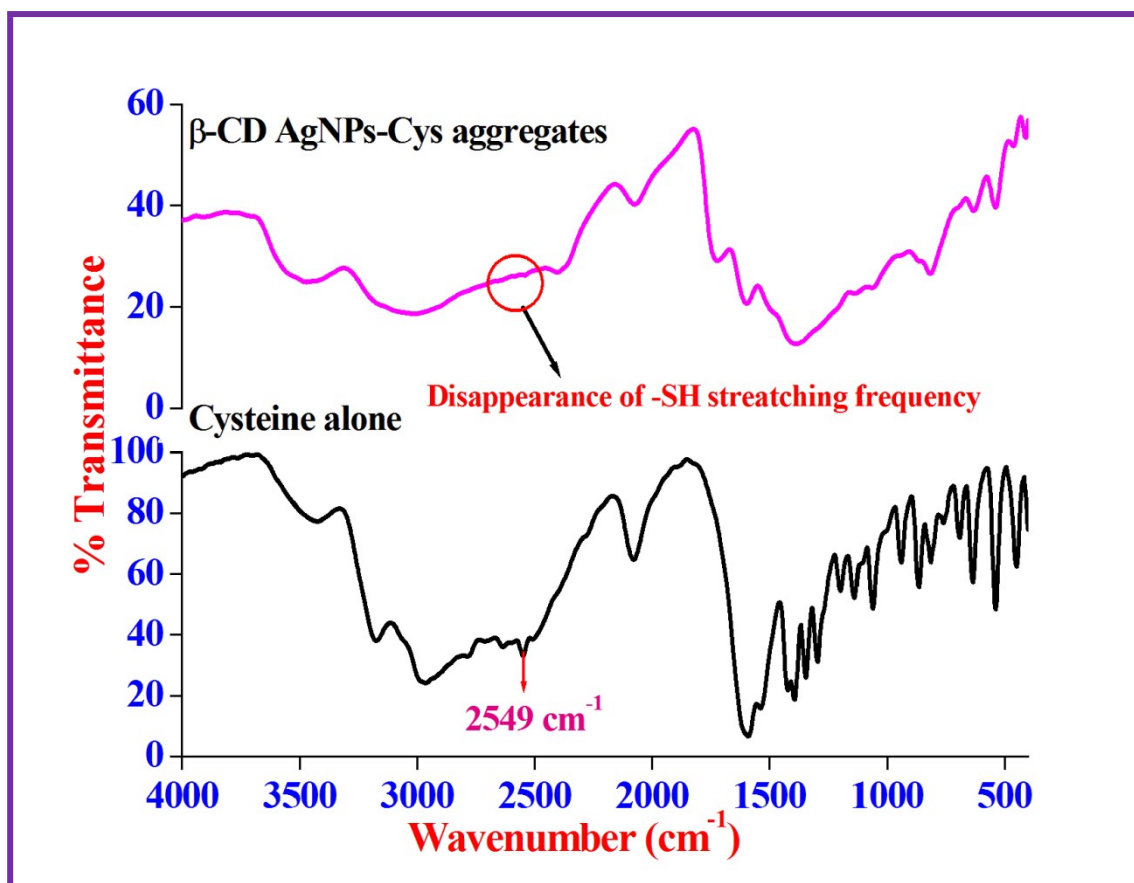


Fig. S4. FT-IR spectral results of Cys alone and Cys - β -CD AgNPs aggregates

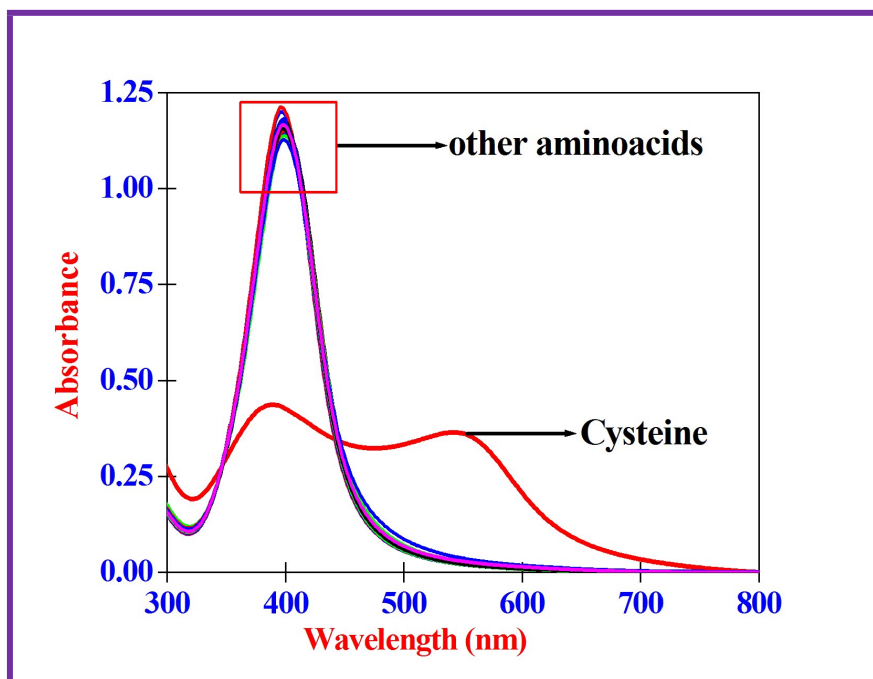


Fig. S5. Absorption spectral changes of β -CD AgNPs after the addition of 50-fold higher concentrations of essential amino acids

Table S1.

Comparison of present approach with some of the reported nanomaterials based sensors for Cys detection

Method	Nanoprobe	Linear range	LOD	Real samples	Interference from thiols	Ref
Electrochemistry	GO–AuNCs	0.05-20 μ M	20 nM	Urine	---	11
Electrochemistry	Nanoporous gold	1-400 μ M	50 nM	---	---	37
Chemiluminescence	Ag NCs	5 nM-1 μ M	2.5 nM	---	---	38
Fluorescence	BSA-AgNCs	2.0 - 90.0 μ M	0.81 μ M	Plasma samples	Yes	39
Fluorescence	PMMA-AgNCs	25 nM-6 μ M	20 nM	---	---	40
Fluorescence	CdTe/CdSe quantum dots	0.2–100 μ M	131 nM	Urine, Plasma, Cell extract sampls	Yes	41
Fluorescence	PEI-AgNCs	0.1– 10 μ M	42 nM	Plasma	Yes	42
Colorimetry	AuNPs	0.4-1 μ M	38.9 nM	Serum	Yes	19
Colorimetry	nonionic fluorosurfactant-capped Ag NPs	1.5 - 6.0 μ M	50 nM	Plasma and urine	---	30
Colorimetry	AgNPs	0.5-10 μ M	69 nM	---	---	31
Colorimetry	nonionic fluorosurfactant-capped AuNPs	0.5 - 4.5 μ M	0.4 μ M	Plasma and urine	Yes	43
Colorimetry	DNA-AuNPs	50 nM - 10 μ M	100 nM	---	---	44
Colorimetry	β –CD AgNPs	0.3 μ M- 4.8 μ M	4.65 nM	Serum and Urine samples	No	This work

GO-Graphene oxide

BSA- Bovine Serum Albumin

PMMA- Poly(methacrylic acid)

PEI-Polyethyleneimine