

Supplementary information

SERS Tags Derived From Silver Nanoparticles And Aryl Diazonium Salts For Cell Raman Imaging

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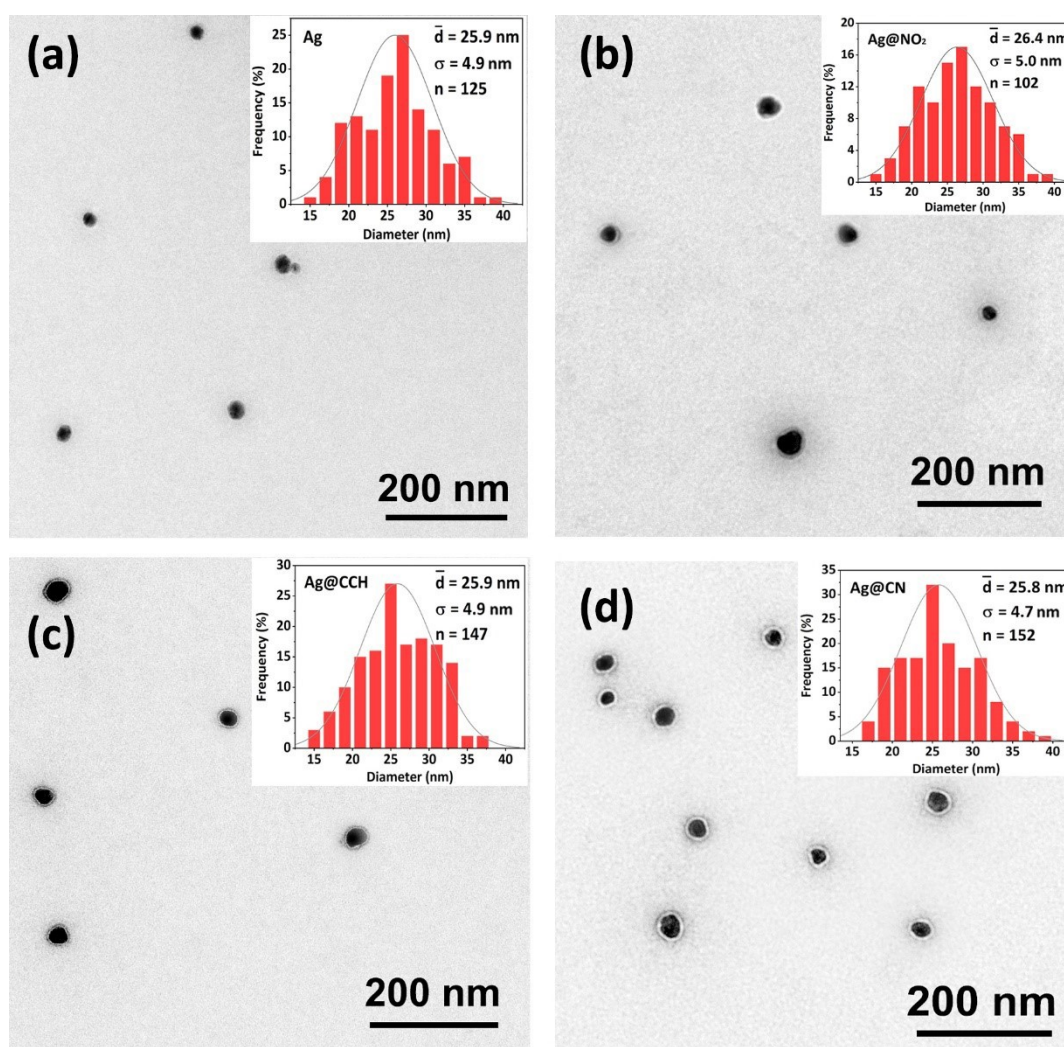


Figure S1. TEM images recorded before and after functionalization of Ag NPs by aryl diazonium salts: (a) bare Ag NPs, (b) Ag@NO₂ NPs, (c) Ag@CCH NPs and (d) Ag@CN NPs. Insets: size distribution curves of the Ag NPs cores (black spheres), estimated from over 100 NPs, for each sample.

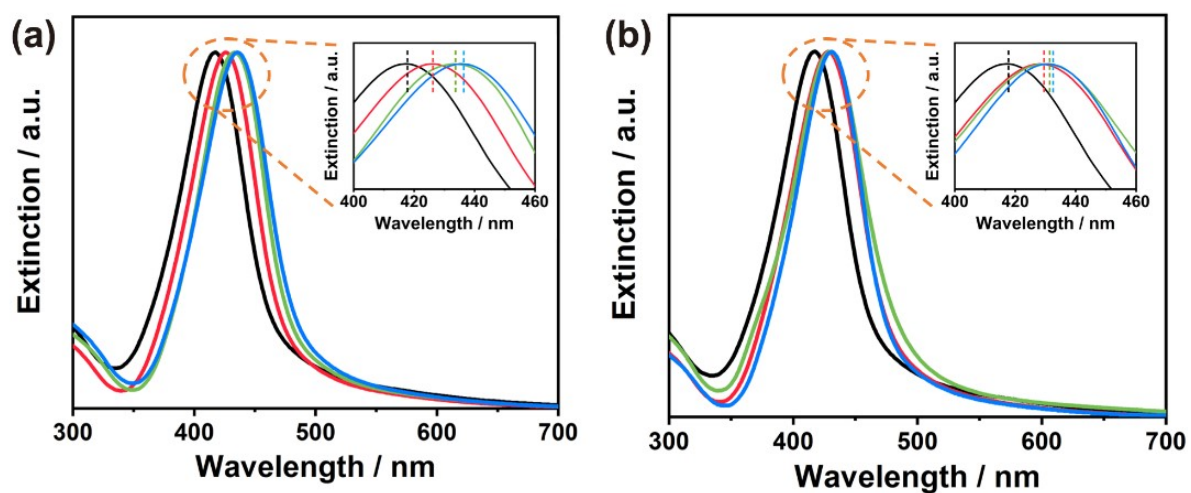


Figure S2. Normalized UV-vis spectra of Ag NPs before (black line) and after the step-by-step addition of multilayers for (a) Ag@NO₂@CCH@CN and (b) Ag@CCH@CN@NO₂.

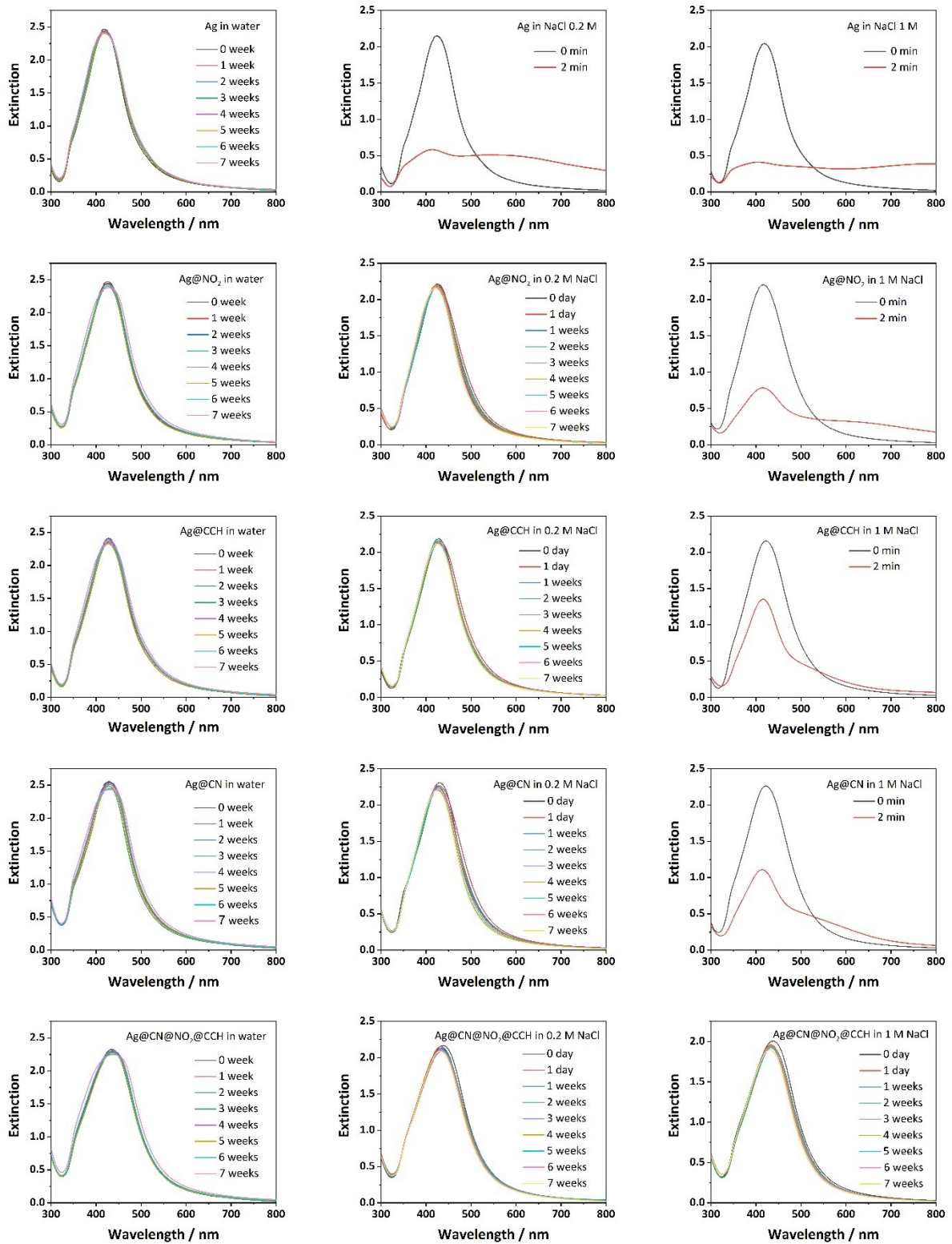


Figure S3. UV-vis extinction spectra of all NPs samples over time, in pure water media or in NaCl 0.2 M and 1 M aqueous solutions. The spectra were recorded each week during 7 weeks.

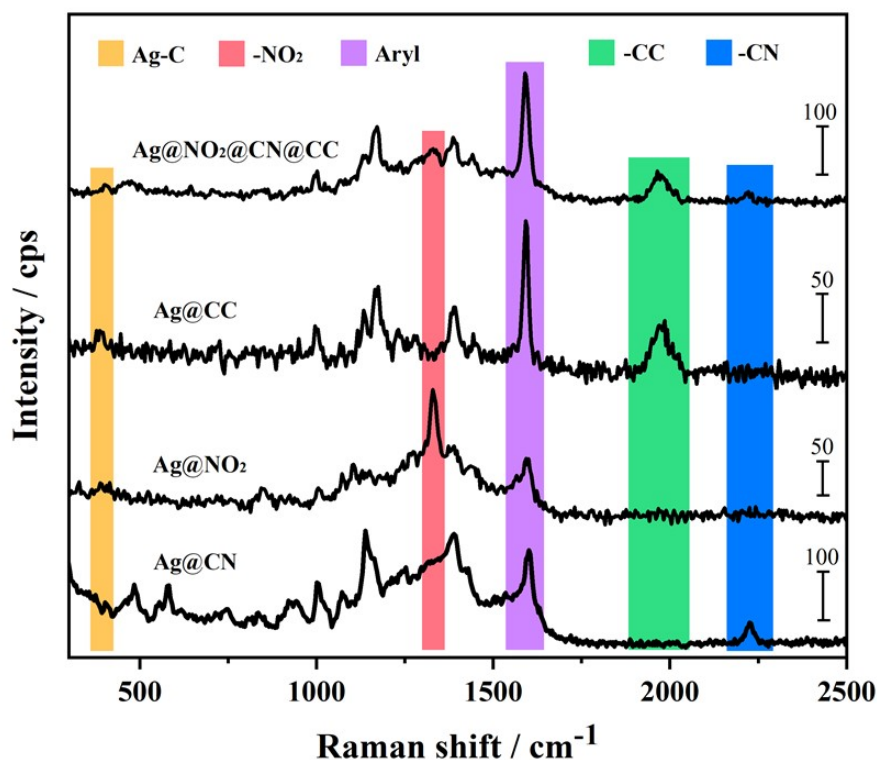


Figure S4. SERS spectra of concentrated aqueous dispersions of Ag NPs ($1.6 \text{ mg}\cdot\text{mL}^{-1}$) modified by aryl diazonium salts bearing either NO_2 , CN or CCH Raman reporter groups or multilayers. The SERS spectra were obtained with a 638 nm laser and a 100 \times objective lens.

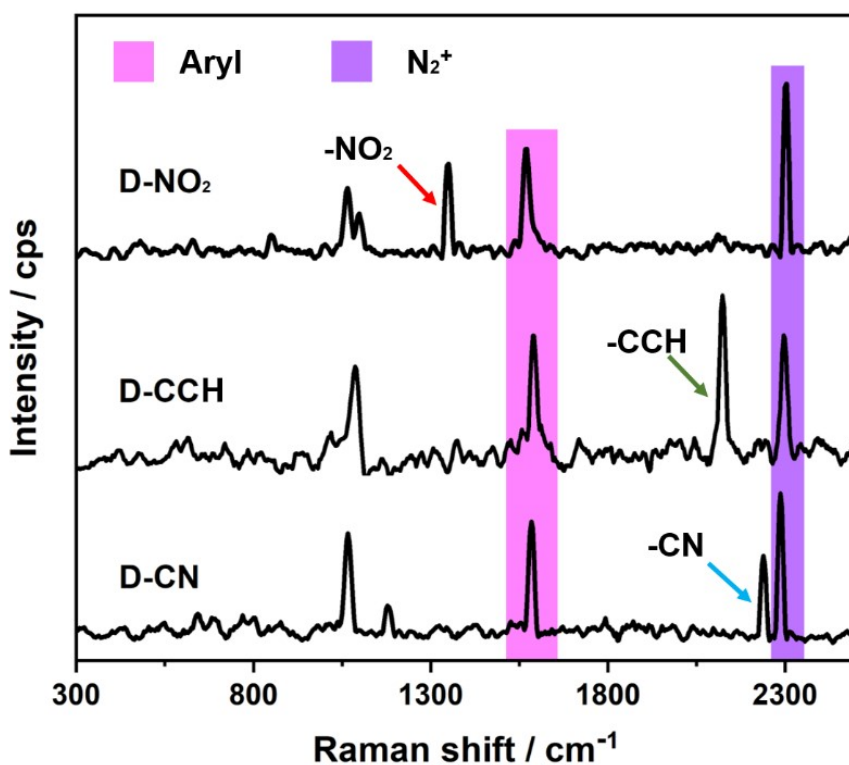


Figure S5. Raman spectra of aryl diazonium salts bearing $-\text{NO}_2$ (D- NO_2), CN (D-CN) and CCH (D-CCH) Raman reporter groups.

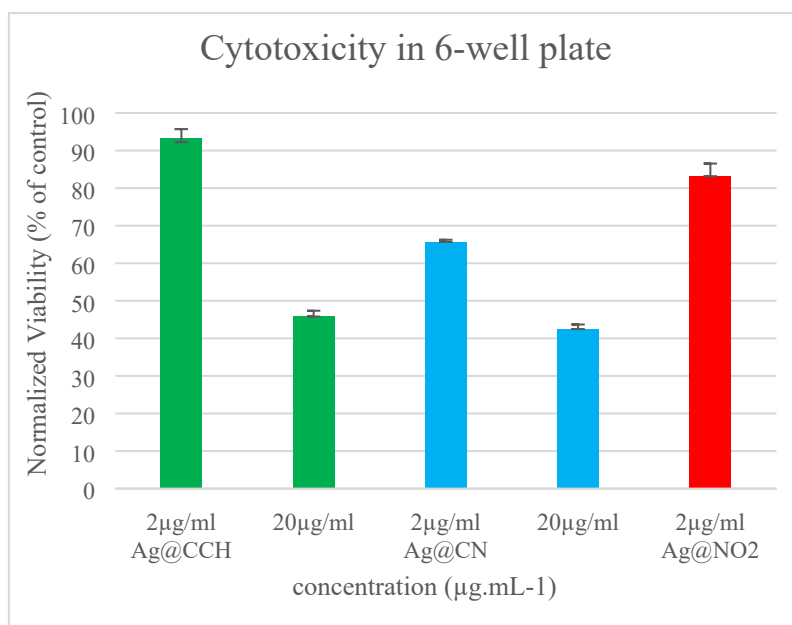


Figure S6. Cytotoxicity assay of NPs on HELA cells. Cell viability assessed by Alamar Blue metabolic activity test normalized to the control non-exposed cells. 300 000 Hela-HSP 70/GFP cells were seeded in 2 ml in 6-well plates. After 24 h, medium was renewed with 2 or 20 µg.mL⁻¹ of SERS labels and the NPs were left for incubation with cells during 6 hours. Then, the medium was replaced with 1 mL of medium containing 10% of Alamar Blue.

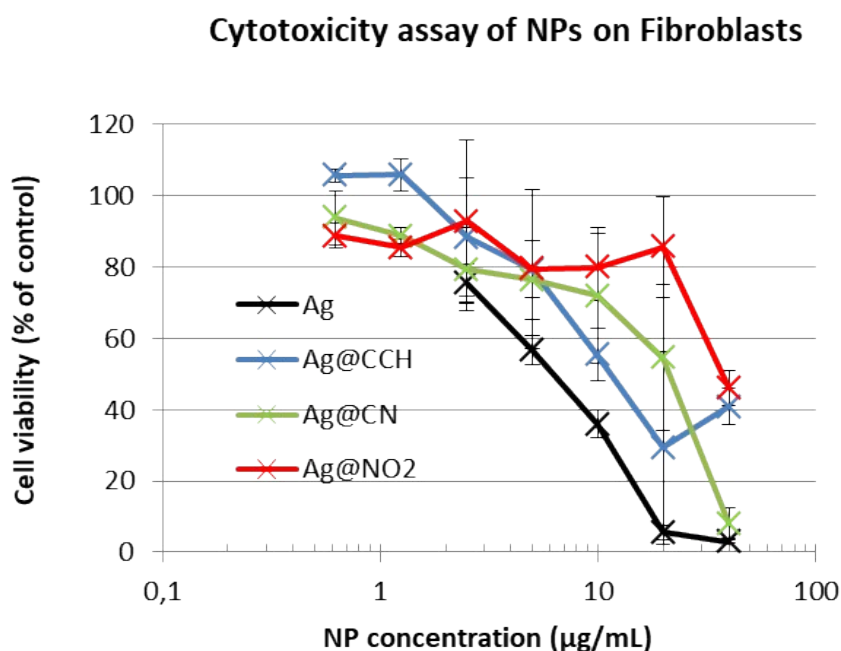


Figure S7. Cytotoxicity assay of NPs on fibroblasts. 20 000 fibroblasts per wells were cultivated in 48-well plates in 400 µl of medium for 24 h. Medium was replaced with 200 µl of fresh medium containing different concentrations of Ag NPs functionalized with CCH, CN or NO₂ groups and left for 24 hours. The medium was then replaced with 200 µl of fresh medium containing 10 % of Alamar Blue.

Table S1. Hydrodynamic diameters determined by DLS

Samples	Ag NPs	Ag@NO ₂	Ag@CN	Ag@CCH	Ag@NO ₂ @CN@CCH
D _H (nm)	32	39	43	46	51
PDI	0.24	0.31	0.30	0.30	0.31

Table S2. Description of the Supplementary Excel File Table on cytotoxicity assays

All raw data obtained from cytotoxicity assays are provided in this Table:

- ***Sheets 1 to 3*** display the raw data for the 3 experiments of cytotoxicity assessment by Alamar blue for Ag@CCH, Ag@CN, Ag@NO₂ and Ag@CN@NO₂@CCH on HELA Cells.
- ***Sheet 4*** displays the raw data for the single experiment of cytotoxicity assessment by Alamar blue for bare unmodified Ag NPs, Ag@CCH, Ag@CN and Ag@NO₂ on HELA Cells.
- ***Sheet 5*** displays the histogram of all cytotoxicity results for each kind of NPs (Ag NPs, Ag@CCH, Ag@CN and Ag@NO₂ and Ag@CN@NO₂@CCH) on HELA Cells.
- ***Sheet 6*** displays the data gathered in the Table which has been used for analysis by the software Prism of cytotoxicity experiments on HELA Cells.
- ***Sheet 7*** displays the raw data for the single experiment of cytotoxicity assessment by Alamar blue for Ag@CCH, Ag@CN and Ag@NO₂ performed in 6-well plates on HELA Cells.
- ***Sheets 8 and 9*** display the raw data for the 2 experiments of cytotoxicity assessment by Alamar blue for Ag@CCH, Ag@CN, Ag@NO₂ and Ag@CN@NO₂@CCH on fibroblasts.