

# Supporting Information

for

## **Tunable longitudinal modes in extended silver nanoparticle assemblies**

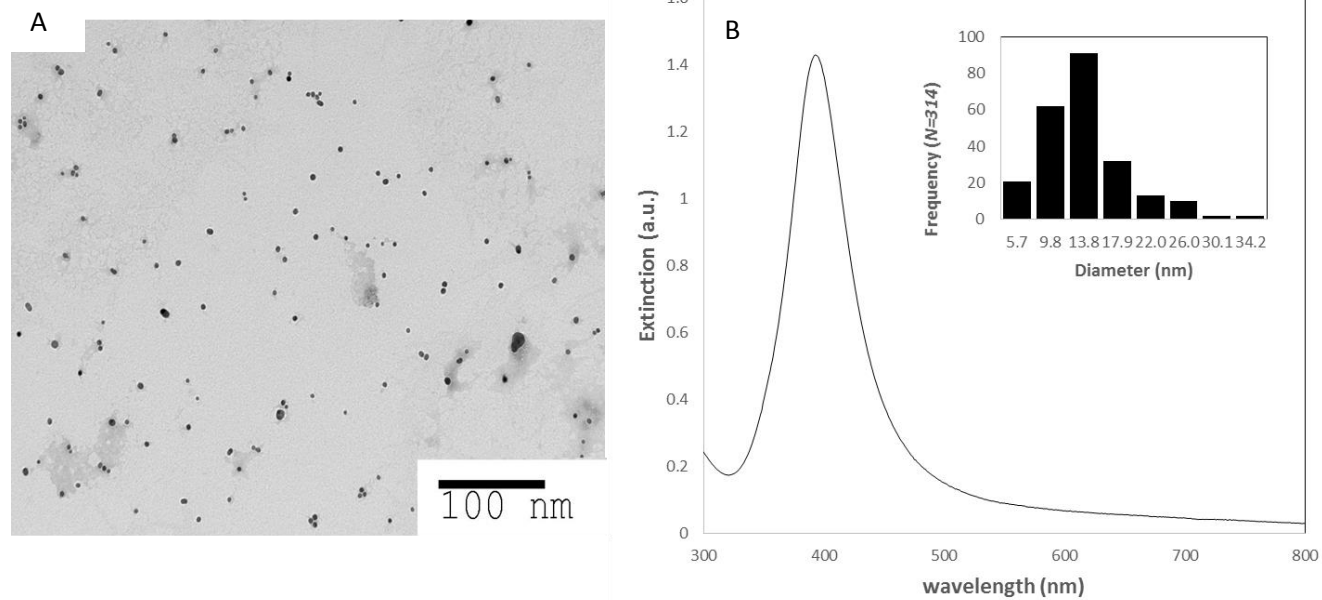
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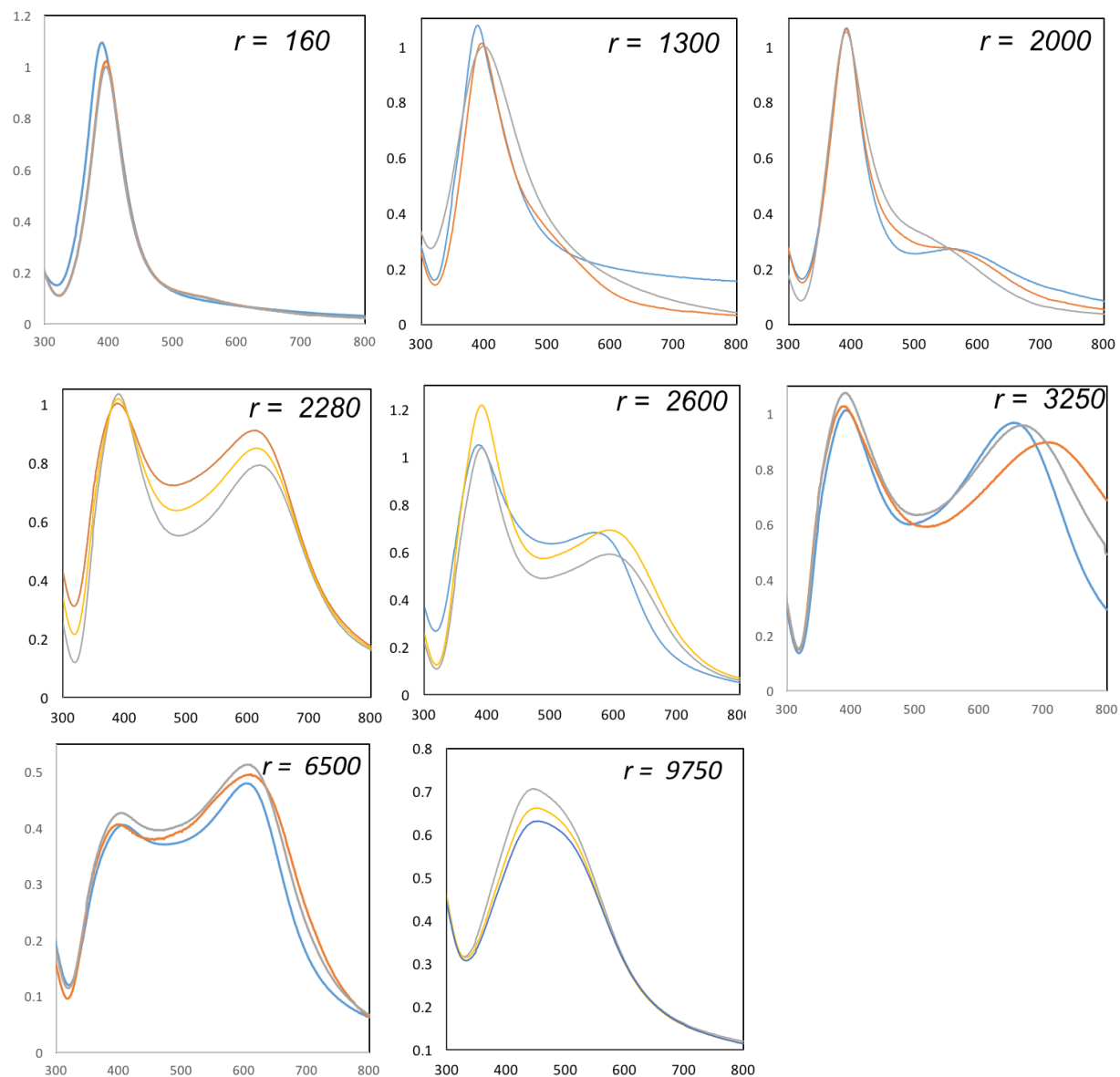
Email: Amy Blum\* - [amy.blum@mcgill.ca](mailto:amy.blum@mcgill.ca)

\* Corresponding author

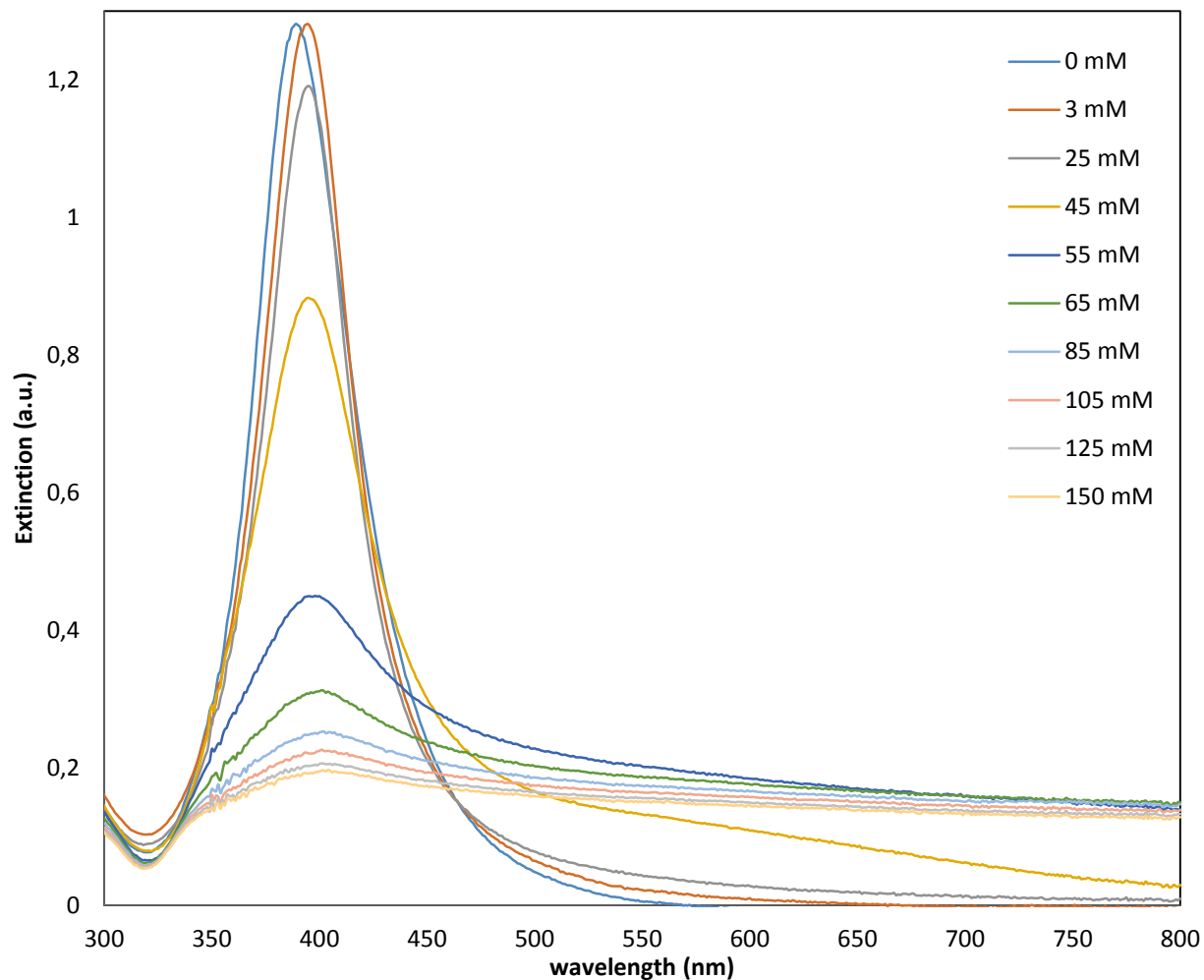
## **Additional experimental data**



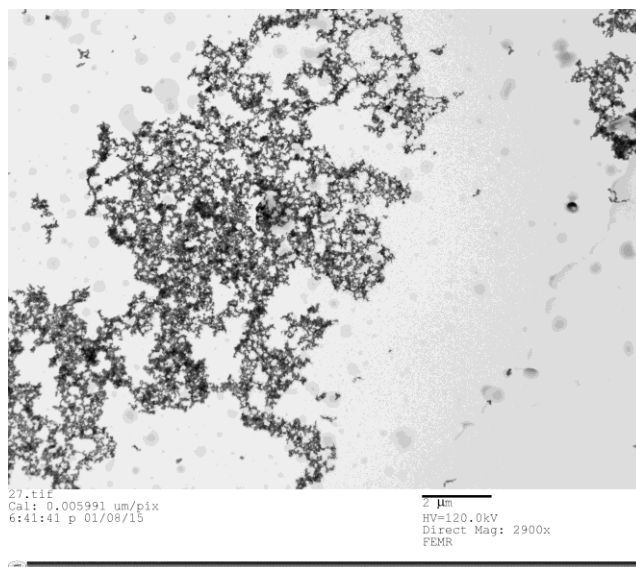
**Figure S1:** A) TEM image of as-synthesized AgNPs showing no sign of assembly. B) Extinction spectrum of the as-synthesized AgNPs showing the characteristic plasmon peak at 395 nm. Inset: Size distribution of AgNPs as measured from TEM showing an average diameter of 13.9 nm.



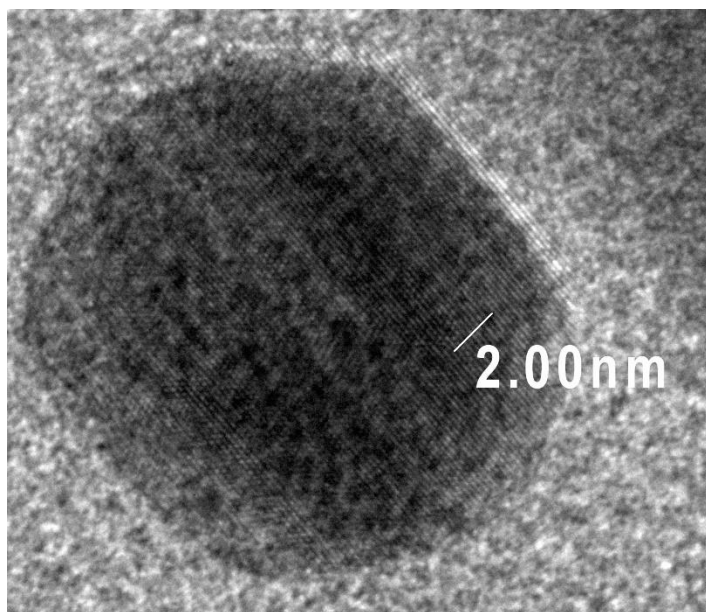
**Figure S2:** Extinction spectra replicates ( $N = 3$ ) of AgNPs assembled under different cysteamine/AgNPs ratio conditions.



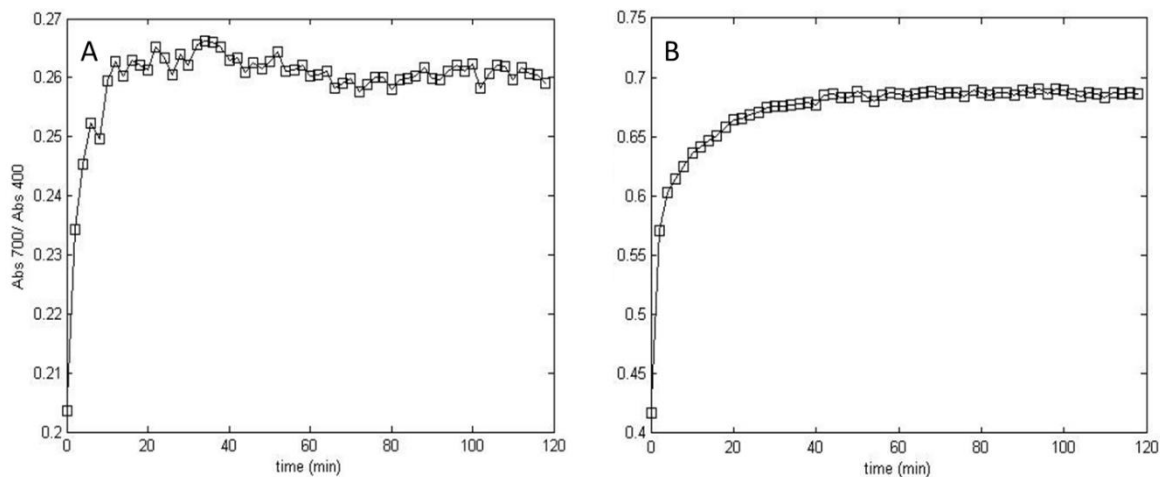
**Figure S3:** Extinction spectra of AgNPs aggregated by increasing concentrations of NaCl. At no concentration does a longitudinal mode appear. Increasing salt concentration causes a gradual red-shift from 398 to 406 nm with a collapse of the plasmon band as the nanoparticles start to crash out of solution.



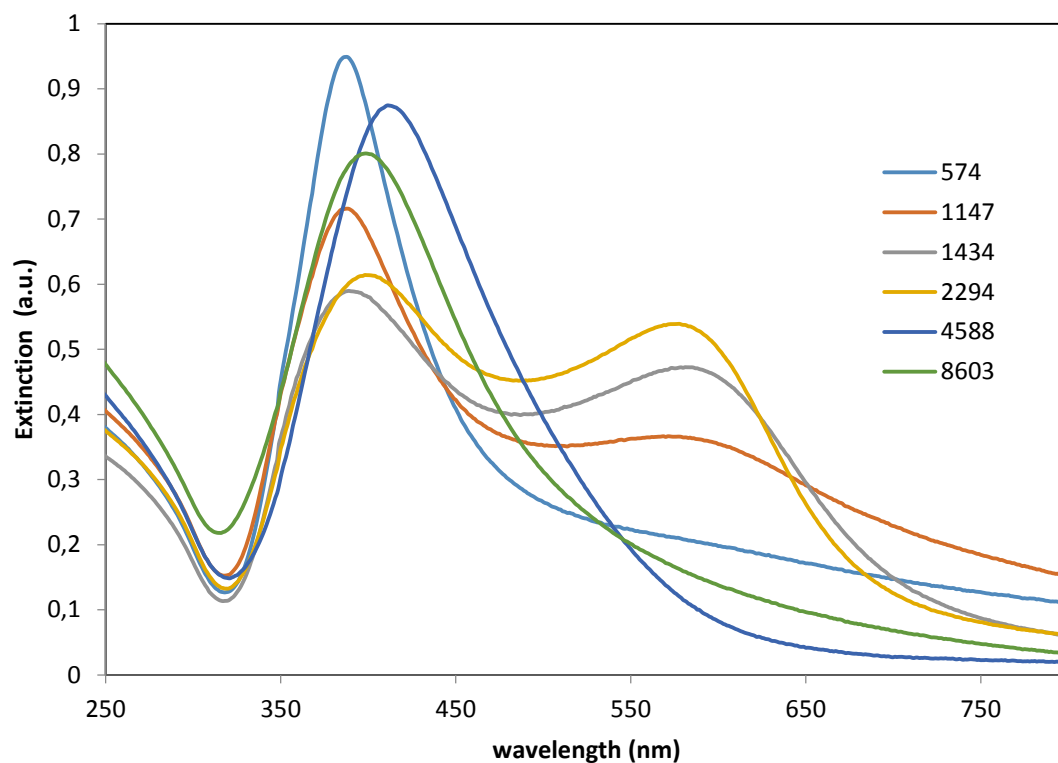
**Figure S4:** TEM showing the extended assembly of cysteamine-modified AgNPs ( $r = 3250$ ). The micrograph shows that assemblies extend to more than 20  $\mu\text{m}$  in length.



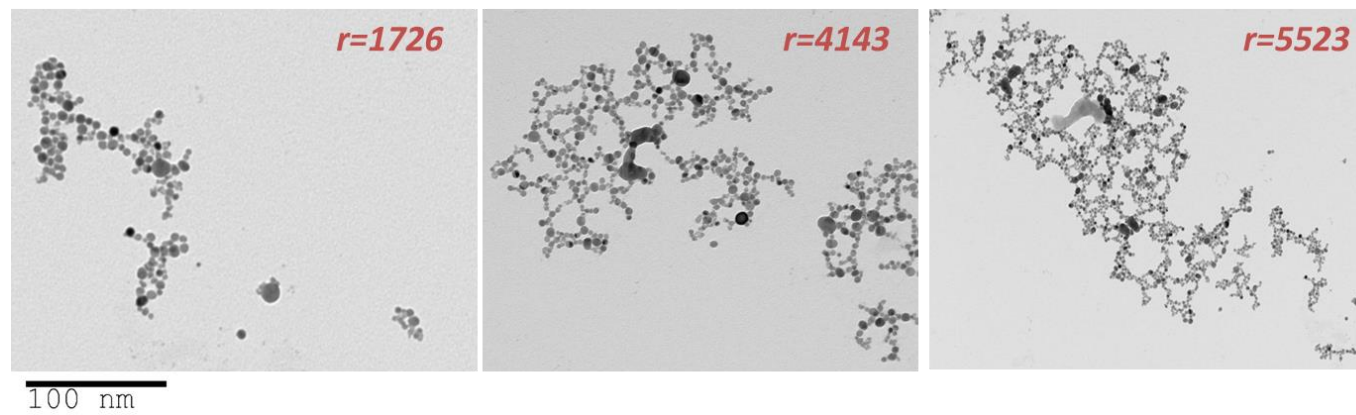
**Figure S5:** HRTEM of a silver nanoparticle showing the [200] facet. The distance shown in the image corresponds to  $10 \times d$  ( $d =$  inter-planar distance) that was determined using the relation:  $d = a/(h^2 + k^2 + l^2)^{1/2}$  where  $a$  is the lattice constant (4.08  $\text{\AA}$  for silver).



**Figure S6:** Kinetic profiles: Abs<sub>700</sub>/Abs<sub>400</sub> ratios for A) Ag-“light” cysteamine and B) Ag-“heavy” cysteamine.



**Figure S7:** Extinction spectra of Ag-DDT with different *r*.



**Figure S8:** TEM images showing the growth of silver networks as the ratio of cysteine ligand to AgNPs increases.