Supplementary material (ESI) for Journal of Materials Chemistry

Supporting Information for:

Reshaping and LSPR tuning of Au nanostars in the presence of CTAB

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Control Experiments.

Control experiments were carried out adding (separately) CTAC or NaBr to the NS colloid, so as to test the individual roles of CTA^+ (Figure S1a) and Br^-.(Figure S1b). No reshaping was observed in either case, indicating the need of having both the surfactant and the Br^- counterion present, to activate the etching process.

A different experiment was performed by adding $CaCO_3$ after the addition of CTAB, to stop the reshaping process at certain time. The reshaping process was slowed down, and eventually continued (Figure S1c).

Finally, Figure S1d presents the *non-normalized* data from a typical reshaping process (from 0 to 270min) where a constant value of absorption at 400nm can be seen, ruling out the possibility of loosing gold from the initial NPs

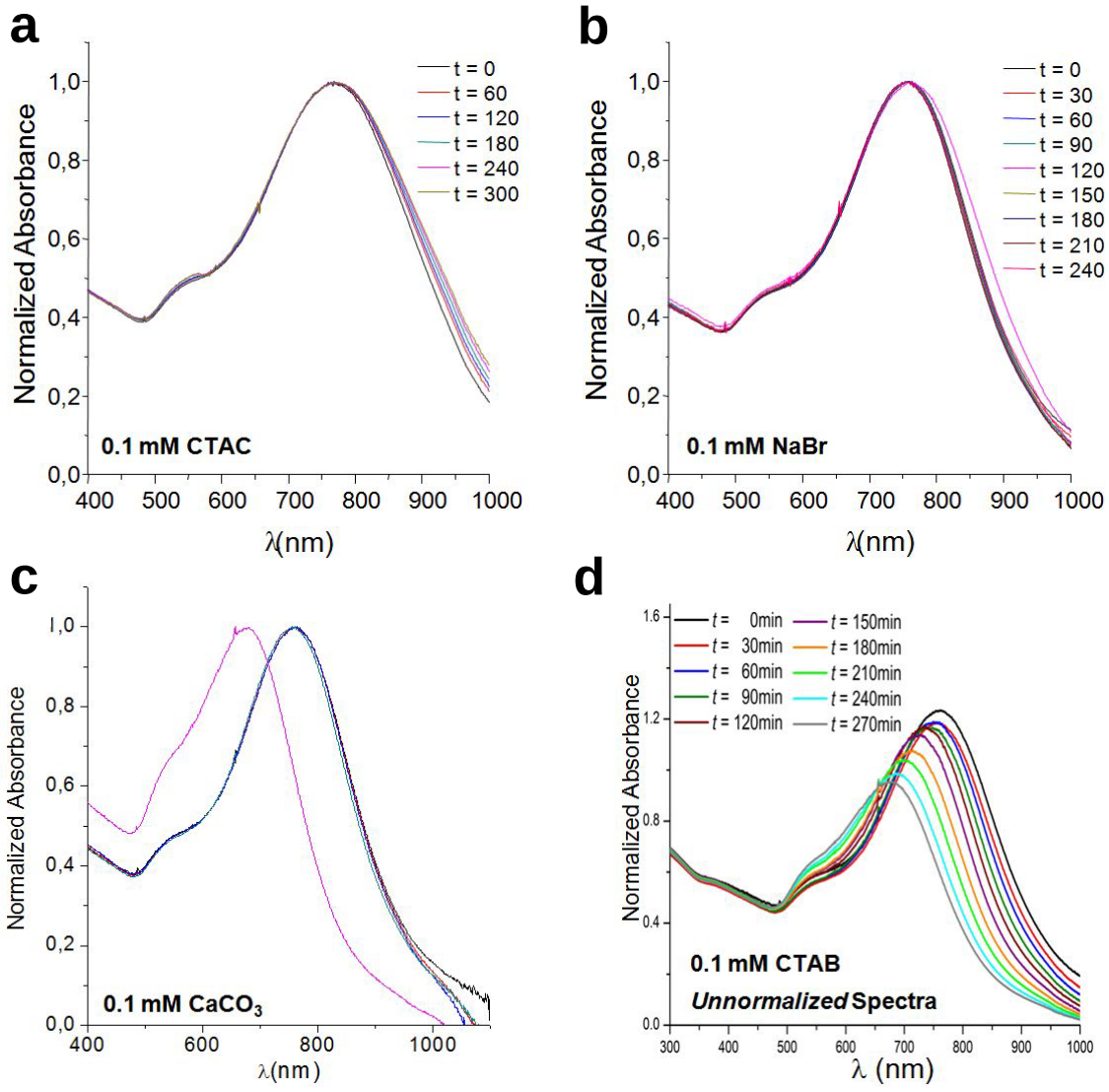

Figure S1. Spectral evolution of gold nanostars in presence of 0.1 mM CTAC (a), 0.1mM NaBr (b) and 0.1mM CTAB + 0.1 mM CaCO3 (c). Non-normalized spectral evolution of gold nanostars in the presence of 0.1 mM CTAB (d).

PVP influence.

The influence of the PVP coating was studied systematically by exposing samples with different amount of washing cycles to CTAB, keeping the rest of the conditions fixed, following the time evolution of the LSPR tip-mode.

When AuNSs containing more PVP (less washing cycles) were used, the reshaping rate was observed to get slower. This is ascribed to the protection of the tips by the adsorbed PVP layer.

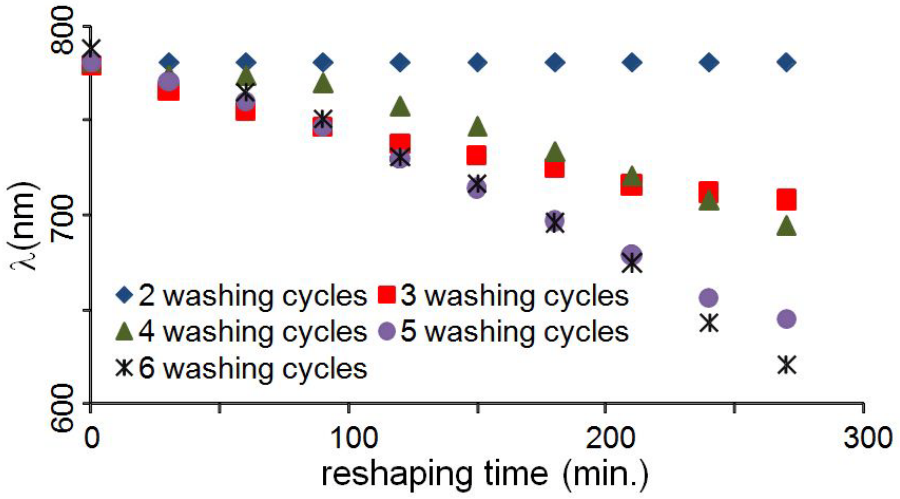

Figure S2. Plots of the observed position of the tip plasmon band as a function of reshaping time and washing cycles.