Electronic Supplementary Material (ESI) for RSC Advances.

Seed Geometry and Hydrogen Bonding Dependent Plasmonic Tuning of Silver Nanocrystals in Citrate-Hydrazine Matrix and SERS Spectroscopic Detection of Chromium

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Supplementary Information

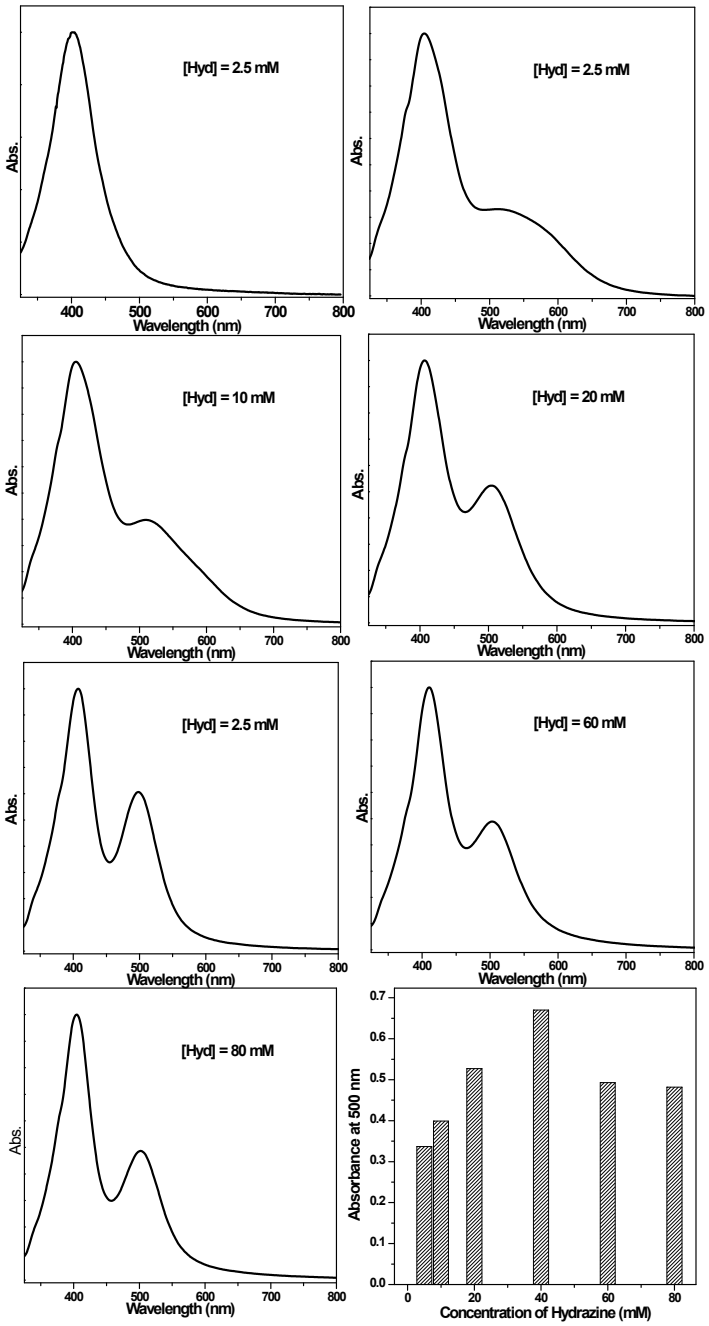

Figure S1. UV-visible absorption spectra of different seed silver NCs synthesized by using varying concentration of hydrazine hydrate [Hyd].

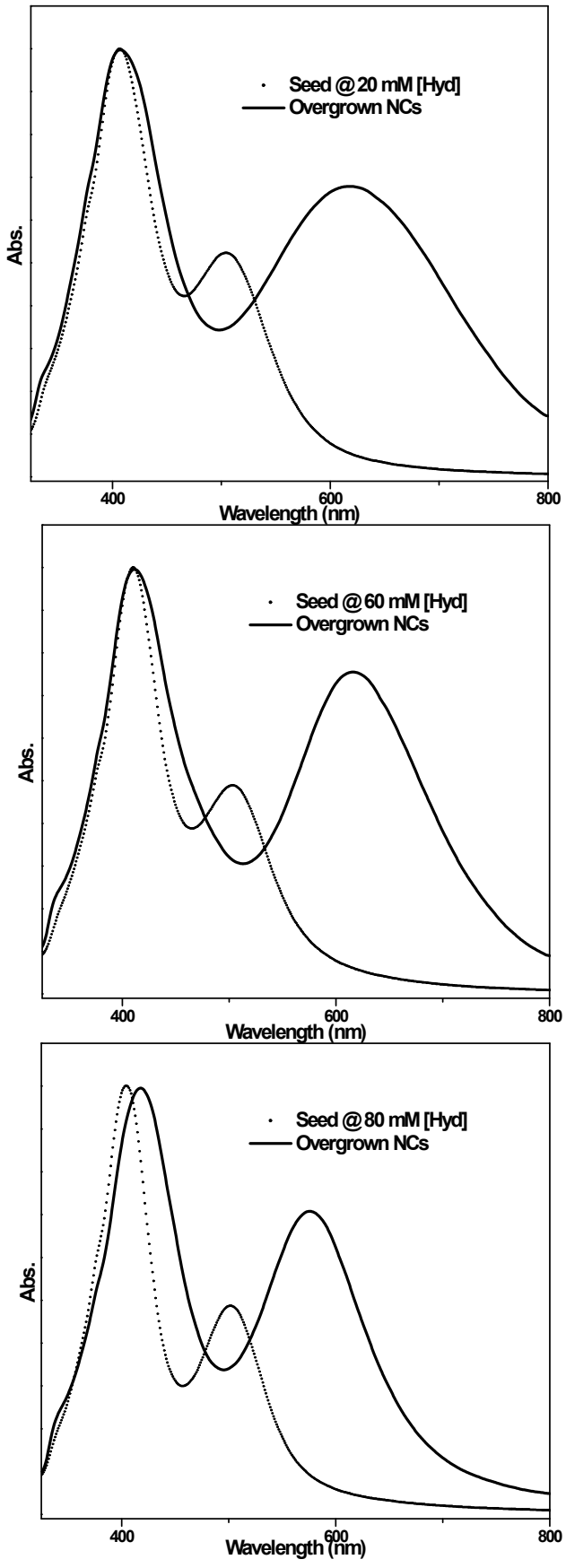

Figure S2. UV-visible absorption of different seed NCs (dotted line) synthesized at varying [Hyd] and their respective overgrown NCs (solid line) by using same amount of Ag^{+}-Citrate.

TEM images and size distribution

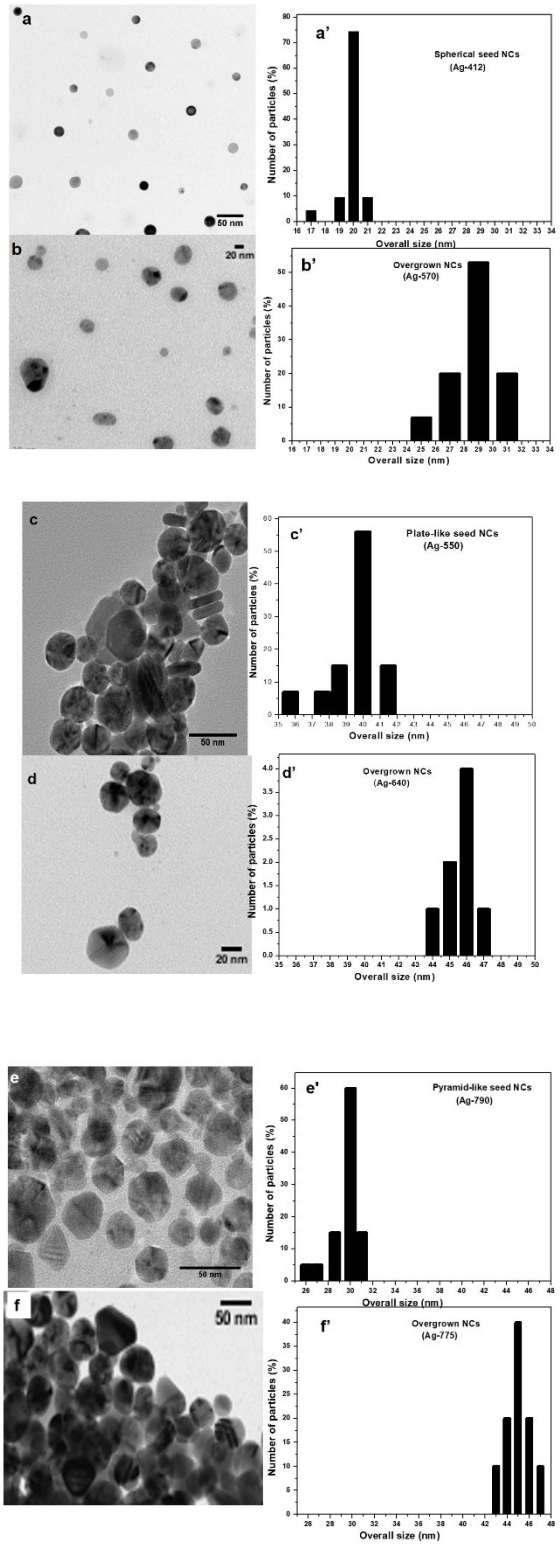

Figure S3. TEM images showing size distribution and corresponding histograms
a,a' Spherical seed NCs (Ag-412) and b, b' overgrown NCs (Ag-570)
c,c' Plate-like seed NCs (Ag-550) and d, d' overgrown NCs (Ag-640)
e,e' Pyramid-like seed NCs (Ag-790) and f, f' overgrown NCs (Ag-775)

Second Derivative FTIR analysis for hydrogen bonded network

Table S1: The position and area of the deconvoluted FTIR peaks of mixed solution of citrate (pH 5) and hydrazine in the region of 1512-1739 cm^{-1}

Sample	**Deconvoluted Peaks** Position in cm^{-1} (% contribution to the total integrated intensity)			
	1,1'	2,2'	4,4'	5,5'
Cit	1577 (65%)	.....	.....	1651 (35%)
Cit+hyd (2.5 mM)	1580 (42%)	1602 (14%)	1660 (23%)	1673 (21%)
Cit+hyd (5 mM)	1581 (38%)	1602 (16%)	1660 (24%)	1674 (22%)
Cit+hyd (10 mM)	1581 (40%)	1604 (20%)	1657 (24%)	1676 (16%)
Cit+hyd (30 mM)	1575 (36%)	1599 (24%)	1655 (22%)	1671 (18%)
Cit+hyd (40 mM)	1577 (32%)	1600 (30%)	1655 (24%)	1673 (14%)

Deconvolutions of SPR peaks for the Ag-NCs formed with varying Ag+ concentration

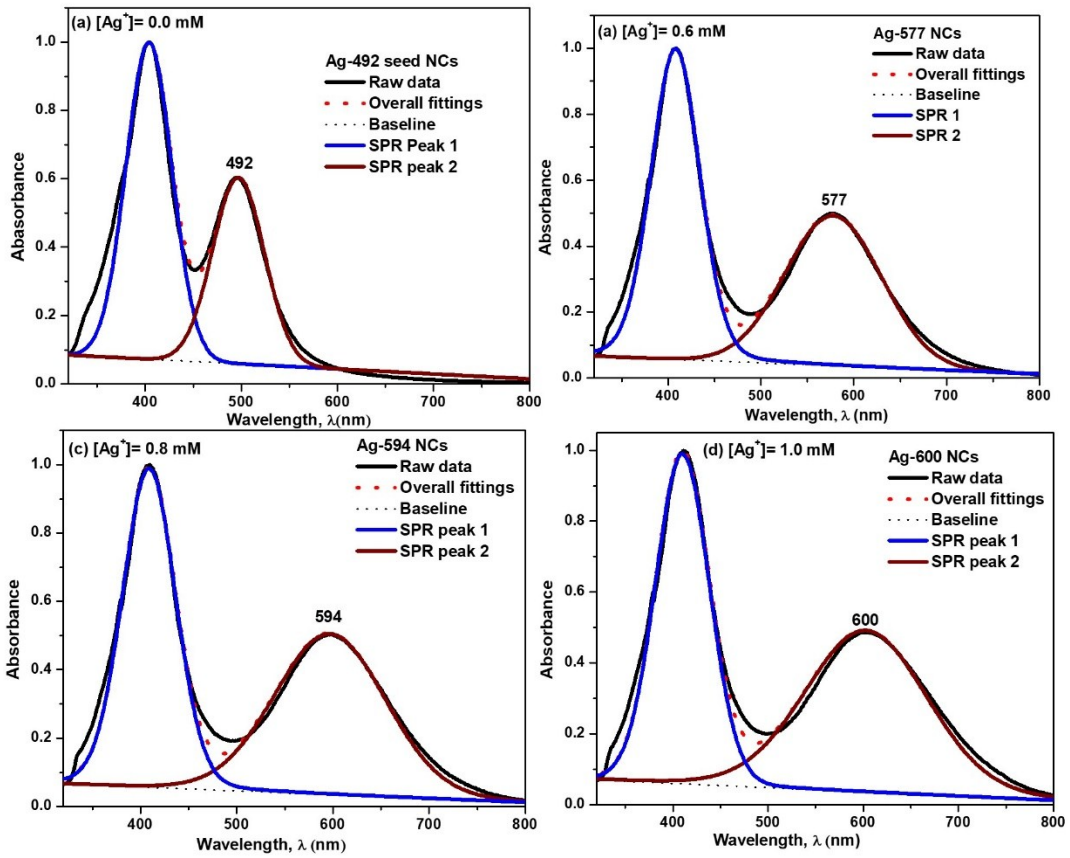

Figure S4. Deconvolutions of SPR spectra of Ag-490 seed NCs and the subsequent overgrown NCs, Ag-577, Ag-594 and Ag-600 NCs formed by adding Ag^{+} solutions of different concentrations, 0.6 mM, 0.8 mM and 1.0 mM, respectively