Supporting Information for:

Anisotropic Etching of Silver Nanoparticles for Plasmonic Structures Capable of Single Particle SERS

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Table S1: Half reactions relevant to redox etching of silver.

Reaction	E^{o} Volts
$Ag(s) \rightleftharpoons Ag^{+} + e^{-}$	-0.799
$H_2O_2 + 2H^{+}\ 2e^{-} \rightleftharpoons 2H_2O$	1.763
$NH_3OH^{+} + 2H^{+} + 2e^{-} \rightleftharpoons NH_4^{+} + H_2O$	1.33
$NO_3^{-} + 3H^{+} + 2e^{-} \rightleftharpoons HNO_2 + H_2O$	0.940
$S_2O_8^{2-} + 2e^{-} \rightleftharpoons 2SO_4^{2-}$	2.01

Figure S1: Electron diffraction of a single octapod structure sitting on the three-fold symmetric axis as shown in the SEM inset (scale bar represents 100 nm). This Condensed Beam Electron Diffraction (CBED) pattern shows distinct HOLZ lines and HOLZ disks which reflect the six-fold symmetry of the fcc silver lattice. These single particle diffraction patterns are possible because of our larger (>100 nm) nanoparticle size.

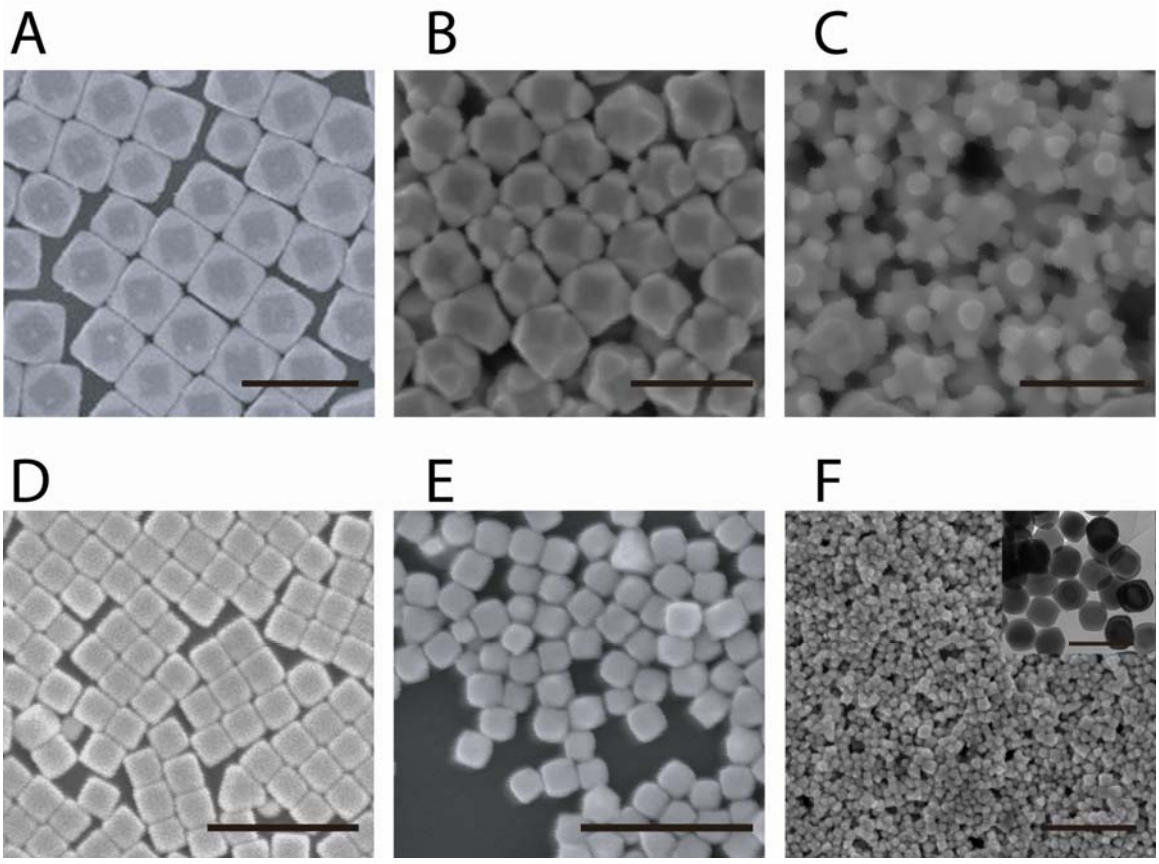

Figure S2: SEM images following the etching progress for silver cube-octahedra and cubes. (A-C) Cube-octahedra shaped starting material (A) then exposed to a low concentration of etching solution (B) and finally a higher concentration of etching solution to give octapod structures (C). (D-F) Cube shaped starting material (D) then exposed to a low concentration of etching solution (E) and finally a higher concentration of etching solution (F) Inset shows a TEM image of the cubic particles after being exposed to the higher concentration of etchant. The cubes retain there general shape while rounding at the edges and corners. All Scale bars shown represent 1 μm, except the TEM inset where the scale bar represents 100 nm.

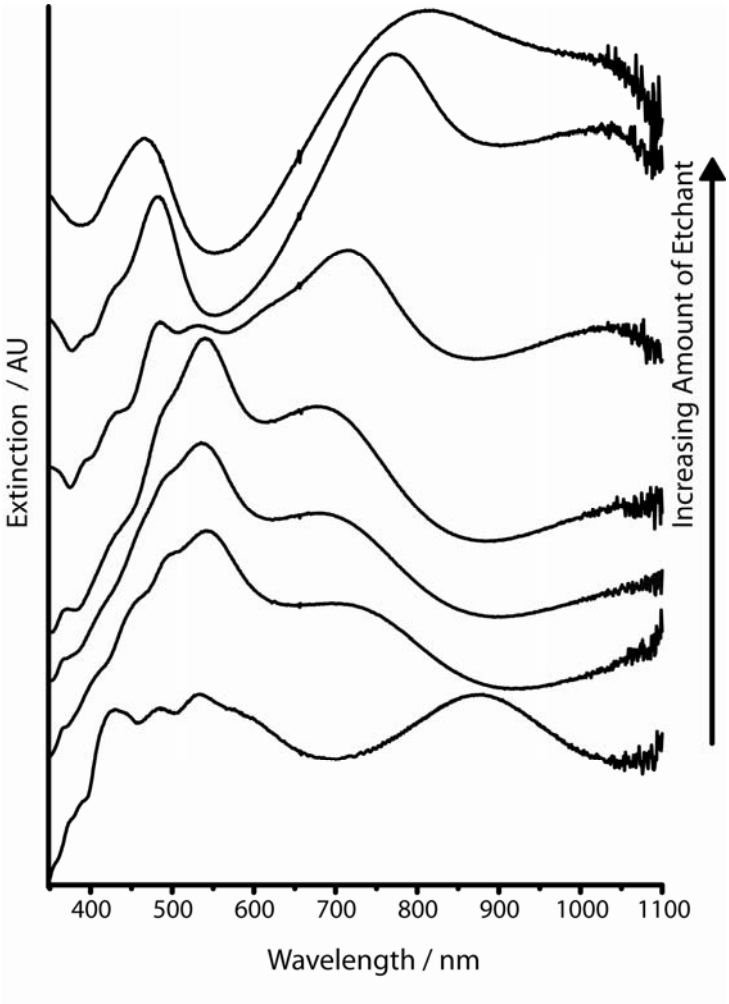

Figure S3: Extinction spectra of the silver particles as a function of the amount of etchant added to the reaction.