SILVER PLATES

Product Number: 202SP

Description: **Description:** Halide modified aqueous solution of silver plates with hexagonal and triangular morphologies have large light absorption and scattering cross sections and broadband plasmonic peaks. These particles have average thicknesses of only 5nm and with plasmonic peaks that, depending on the size of the particles, span the visible to IR regions of spectrum. These particles are suitable for bio-molecular detection, surface enhance Raman spectroscopy and photo-thermal cancer therapies.

Properties:

Appearance	Colorful (yellow to violet)
Particle Shape :	2D Triangular plates
Plasmonic Peaks	400 – 900 nm
Particle Size, TEM	30-100 nm, 5 nm thickness
Size distribution	Broad
Concentration	0.1 mM of Ag
Absorption	2 OD/cm

Example particle images:

Variouse particle sizes can be manufacted. To ensure consistency and accuracy of the provided materials, each manufacted batch is characterized independently.

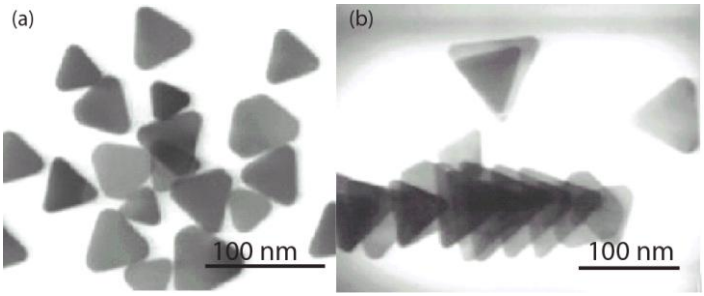

Figure 1. Scanning electron or Transmission electron microscopy micrographs of silver plates with average size of (a) 40±10 nm, (b) 50±10 nm.

Plasmonic Properties

Due to small angles presented on these particles, they posses broad plasmonic fields and offer large field enhancement near the tip. Depending on the particle size, the plasmonic peak can shift.

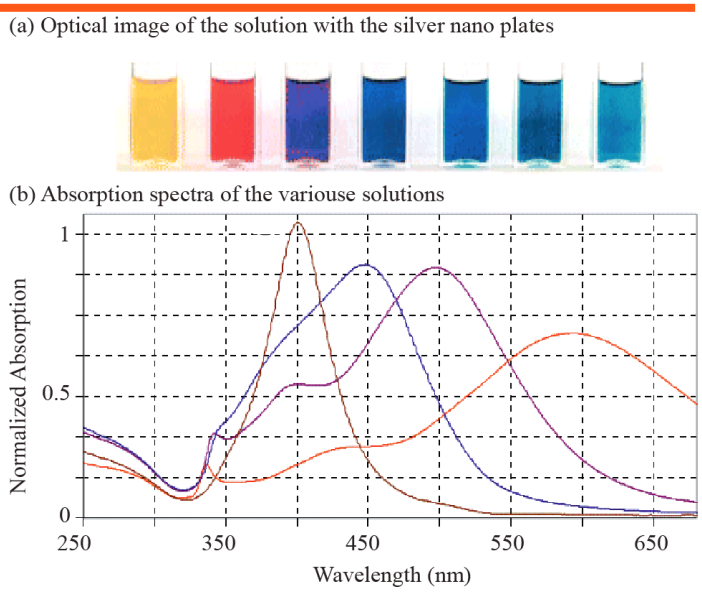

Figure 2. a) Optical images and the b) normalized absorption spectra of pentagonal silver nano-rods of various sizes.

SERS Measurements: To achieve high SERS enhancement factors, decahedral shaped silver nanoparticles must first be drop casted or spin coated on the desired surface. The surfaces should then be treated with oxygen or air plasma to remove the surface protecting groups. Our experiments have shown that the plasma standard oxygen and air plasma recopies do not modify the silver properties and only enhance the SERS signal.

Particle Stability: The silver decahedra are stable provided they are kept in their native solution containing citrate and PVP. Both their morphology and optical properties remain un-changed for at least several months.

Caution: For increased shelf-life, store between 4-22^{O}C; do not freeze.