The **Total Diameter** of the nanoparticle for core-shell particles is equal to the **Core Diameter** + 2 × **Shell Thickness**, and are measured from Transmission Electron Microscope (TEM) images. Values are reported as the Mean ± Standard Deviation (μ ± σ) of the size distribution. The contribution of the capping agent to the total size is not included in this measurement.

The **Coefficient of Variation** (CV) is equal to 100% × σ/m.

The **Surface Area** is calculated from TEM measurements of the nanoparticle size distribution. For conversion, 1 $m^2/g = 10^{15}$ $nm^2/mg$.

The **Particle Number Concentration** ($n_{np}$) is calculated using the measured nanoparticle **Mass Concentration** ($\rho_{np}$) and the average nanoparticle mass ($m_{np}$), which is equal to the product of the bulk material density ($\rho$) and the volume per particle ($V_{np}$). For a spherical particle with diameter $d_{np}$, for example:

$n_{np} = \rho_{np}/m_{np} = \rho_{np}/\rho \cdot V_{np} = \rho_{np}/\rho(4/3)\pi(d_{np}/2)^3$

The particle number concentration can be converted to a molar concentration ($c_{np}$) using Avogadro's constant ($N_A$) and converting appropriately between volume units (i.e., mL to L):

$c_{np} = n_{np}/N_A$

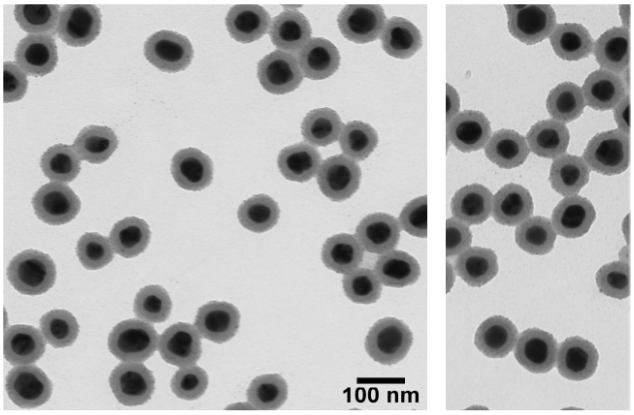
The nanoparticle **Size Distribution** is determined by measuring the **Total Diameter** of at least 100 nanoparticles, imaged using TEM.

nanoComposix

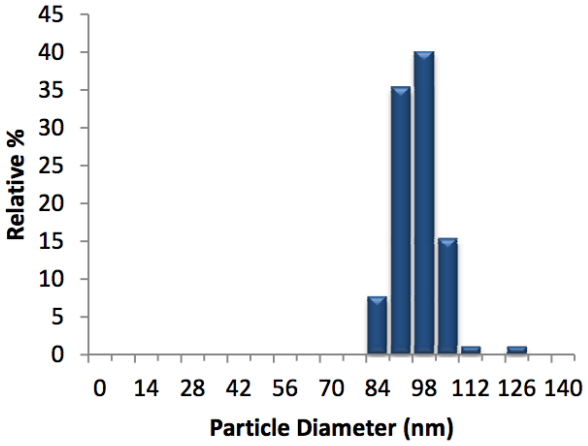
# Silica Shelled 50 n

**Lot Numb**

| | | |
|---|---|---|
| **Total Diameter (TEM):** | 92.3 | nm |
| **Coefficient of Variation:** | 6.9 | % |
| **Core Diameter (TEM):** | 51.0 | nm |
| **Shell Thickness (TEM):** | 20.6 | nm |
| **Surface Area (TEM):** | 6.13 | $m^2/g$ |
| **Particle Concentration:** | 1.4E+12 | particles/mL |




## Size Distribution




## Characterizati

**Diameter and Size Statistics:**
**Mass Concentration:**
**Spectral Properties:**
**Hydrodynamic Diameter/Zeta Potential:**

Storage and Handling: 4 °C a

nanoComposix, Inc
4878 Ronson Ct. Suite K
San Diego, CA 92111

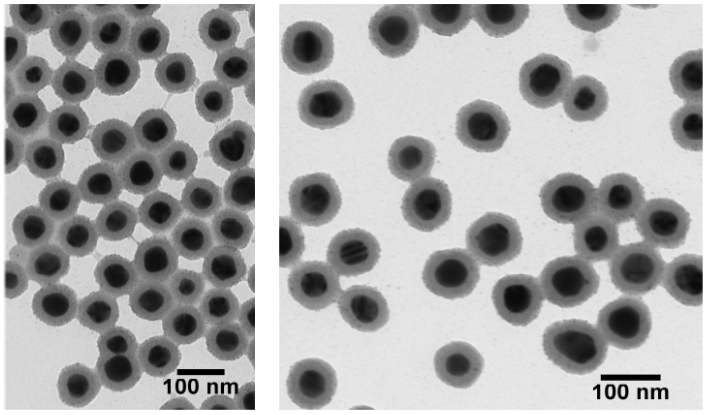
For more information vis

Silica Shelled 50 nm NanoXact™ Silver Nanoparticles
Lot#: MGM2228

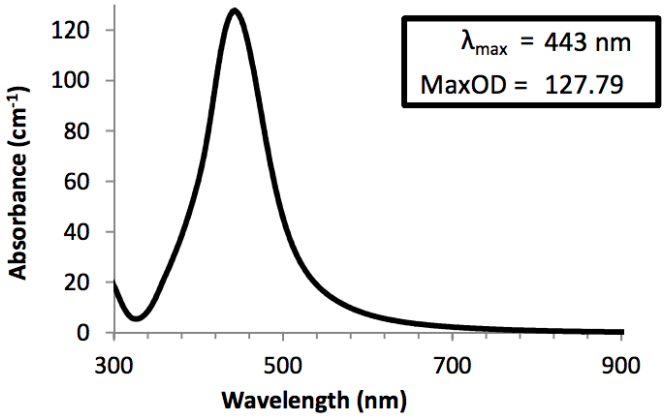
# nm NanoXact™ Silver

ber: MGM2228

| | |
|---|---|
| **Mass Concentration (Ag):** | 0.99 mg/mL |
| **Hydrodynamic Diameter:** | 111.0 nm |
| **Zeta Potential:** | -38.0 mV |
| **pH of Solution:** | 9.9 |
| **Particle Surface:** | Silanol |
| **Solvent:** | Isopropyl Alcohol |




## Optical Properties




## ion Instrumentation

JEOL 1010 Transmission Electron Microscope
Thermo Fisher X Series 2 ICP-MS
Agilent 8453 UV-Visible Spectrometer
Malvern Zetasizer Nano ZS.

away from light. DO NOT FREEZE.


visit: www.nanocomposix.com

support@nanocomposix.com
Phone: (858) 565-4227
Fax: (619) 330-2556


The **Mass Concentration** of metal nanoparticles is measured using Inductively Coupled Plasma Mass Spectroscopy (ICP-MS). Our colloidal silica particles are measured gravimetrically to determine the mass.

For dried nanopowders, the **Mass Concentration** of the nanoparticle and excipient are expressed as a percentage of the total mass of the powder.

The **Hydrodynamic Diameter** is measured using Dynamic Light Scattering (DLS) , and is the diameter of a hypothetical nonporous sphere that diffuses at the same rate as the particles being characterized.

**Zeta Potential** is a measure of the surface charge of the particle, and will vary depending on the solvent and pH conditions used for measurement. In some cases, to obtain more reliable results, the particle Zeta and DLS data will be performed in a solvent other than that used for shipping.

The **pH of Solution** is measured for particles delivered in an aqueous solution or buffer.

The **Particle Surface** describes the capping agent or surface termination chemistry of the nanoparticle. information on calculations for non-spherical particles and composite particles.

The extinction spectrum (the total contribution of particle scattering and absorption) for the nanoparticles at the **Mass Concentration** shown above. The particles are measured using dilute conditions, and the spectrum is scaled using the dilution factor. For particles with a peak in their spectrum, the wavelength of the peak ($\lambda_{max}$) and the optical density (**MaxOD**) at the peak are indicated. For particles without a peak, the OD is recorded at the wavelength indicated.