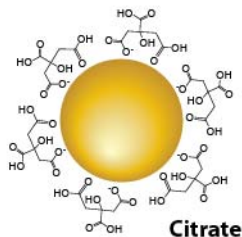


PRODUCT DATA SHEET

Gold Nanoparticles – Citrate Coated



Features

- A range of available sizes: 4 to 200 nm diameter.
- High monodispersity (PDI < 0.1) and circularity (> 0.9).
- Stable in mild salt conditions at neutral or acidic pH.
- Surface fully accessible for functionalization.
- Can readily react with thiol-containing molecules.

General Information

Citrate-coated gold nanoparticles are optimal for functionalization with thiol-containing molecules, such as polyethylene glycol, nucleic acids, or peptides.

Citrate acts as a stabilizing surfactant while keeping the gold surface fully accessible for subsequent functionalization.

Applications

- Oligo-conjugated spherical nucleic acids for *in vitro* diagnostics, intracellular imaging and nucleic acid delivery
- Polyethylene glycol coated particles for *in vitro* and *in vivo* studies
- Protein or peptide coated particles for immunoassays

Specifications

Core Diameter: 4 nm – 200 nm

Polydispersity Index (PDI): < 0.1

Absorbance peak: 520 – 850 nm

Shelf life: > 1 year (4°C storage)

Supplied as liquid suspension in water with 0.05% (w/v)

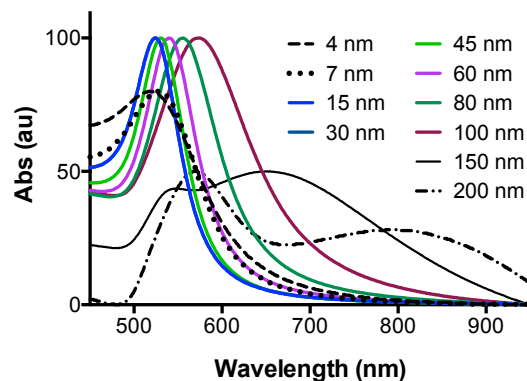
Tween-20

Storage and Handling

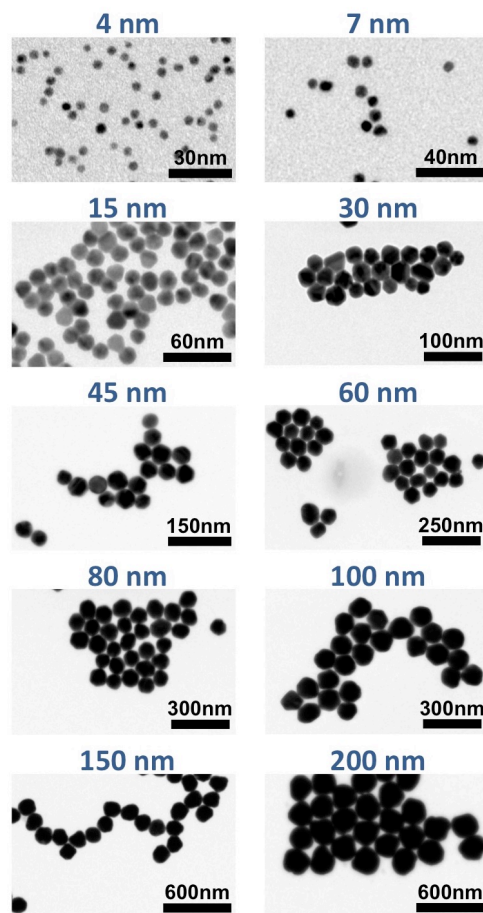
For long-term storage (>1 month), store the product at 4°C. For shorter periods (<1 week) product can be stored at room temperature. **DO NOT FREEZE:** freezing will cause nanoparticles to aggregate.

Vortex briefly prior to use to resuspend nanoparticles.

Absorbance Spectra



Electron Microscopy



This product is for R&D uses only. MSDS documentation is available at www.lunanano.com

Physicochemical properties

| Diameter (nm) | Size Dispersity (+/- nm) | Peak SPR Wavelength (nm) | OD | Molar Extinction ($M^{-1} cm^{-1}$) | Conc. (M) | Surface Area (nm^2) | Particle Volume (nm^3) | Atoms / Particle | MW (g/mol) | Weight Conc. (mg/mL) | Particles per mL (#) |
|---------------|--------------------------|--------------------------|----|---------------------------------------|-----------|-------------------------|----------------------------|------------------|------------|----------------------|----------------------|
| 4 | 0.8 | 518 | 50 | 2.15E+06 | 2.33E-05 | 5.03E+01 | 3.35E+01 | 1.99E+03 | 3.91E+05 | 9.10 | 1.40E+16 |
| 7 | 1.2 | 528 | 50 | 1.10E+07 | 4.55E-06 | 1.54E+02 | 1.80E+02 | 1.06E+04 | 2.10E+06 | 9.53 | 2.74E+15 |
| 15 | 2.5 | 520 | 50 | 3.67E+08 | 1.36E-07 | 7.07E+02 | 1.77E+03 | 1.05E+05 | 2.06E+07 | 2.81 | 8.20E+13 |
| 30 | 4.7 | 525 | 50 | 3.36E+09 | 1.49E-08 | 2.83E+03 | 1.41E+04 | 8.38E+05 | 1.65E+08 | 2.46 | 8.96E+12 |
| 45 | 5.8 | 530 | 50 | 1.23E+10 | 4.07E-09 | 6.36E+03 | 4.77E+04 | 2.83E+06 | 5.57E+08 | 2.26 | 2.45E+12 |
| 60 | 6.5 | 540 | 50 | 3.07E+10 | 1.63E-09 | 1.13E+04 | 1.13E+05 | 6.70E+06 | 1.32E+09 | 2.15 | 9.80E+11 |
| 80 | 7.2 | 555 | 50 | 7.70E+10 | 6.49E-10 | 2.01E+04 | 2.68E+05 | 1.59E+07 | 3.13E+09 | 2.03 | 3.91E+11 |
| 100 | 8.5 | 574 | 50 | 1.57E+11 | 3.18E-10 | 3.14E+04 | 5.24E+05 | 3.10E+07 | 6.11E+09 | 1.95 | 1.92E+11 |
| 150 | 11 | 550 / 665 | 50 | 2.48E+11 | 2.02E-10 | 7.07E+04 | 1.77E+06 | 1.05E+08 | 2.06E+10 | 4.16 | 1.21E+11 |
| 200 | 18 | 575 / 790 | 50 | 4.35E+11 | 1.15E-10 | 1.26E+05 | 4.19E+06 | 2.48E+08 | 4.89E+10 | 5.62 | 6.92E+10 |

Ordering Information

- Order through our website at www.lunanano.com, by calling 1-800-474-4055, or by e-mail at sales@lunanano.com.
- Please contact us for custom quantities, nanoparticle sizes, or surface modifications.
- More information is available at www.lunanano.com.

| Catalog Number | Product Description | Conc. | Scale |
|----------------------|--|-------|--------------------|
| GNP-CIT-4-Y | 4 nm Citrate-Coated Gold Nanoparticles | 50 OD | 0.4 mL, 1 mL, 3 mL |
| GNP-CIT-7-Y | 7 nm Citrate-Coated Gold Nanoparticles | 50 OD | 0.4 mL, 1 mL, 3 mL |
| GNP-CIT-15-Y | 15 nm Citrate-Coated Gold Nanoparticles | 50 OD | 0.4 mL, 1 mL, 3 mL |
| GNP-CIT-30-Y | 30 nm Citrate-Coated Gold Nanoparticles | 50 OD | 0.4 mL, 1 mL, 3 mL |
| GNP-CIT-45-Y | 45 nm Citrate-Coated Gold Nanoparticles | 50 OD | 0.4 mL, 1 mL, 3 mL |
| GNP-CIT-60-Y | 60 nm Citrate-Coated Gold Nanoparticles | 50 OD | 0.4 mL, 1 mL, 3 mL |
| GNP-CIT-80-Y | 80 nm Citrate-Coated Gold Nanoparticles | 50 OD | 0.4 mL, 1 mL, 3 mL |
| GNP-CIT-100-Y | 100 nm Citrate-Coated Gold Nanoparticles | 50 OD | 0.4 mL, 1 mL, 3 mL |
| GNP-CIT-150-Y | 150 nm Citrate-Coated Gold Nanoparticles | 50 OD | 0.4 mL, 1 mL, 3 mL |
| GNP-CIT-200-Y | 200 nm Citrate-Coated Gold Nanoparticles | 50 OD | 0.4 mL, 1 mL, 3 mL |

Y = 04, 1 or 3 corresponding to the order volume of 0.4 mL, 1 mL, or 3 mL.