

NANOPARTz™

The gold nanoparticle for nanotechnology

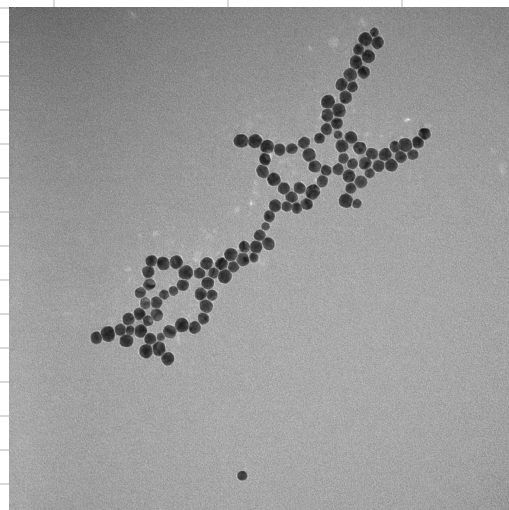
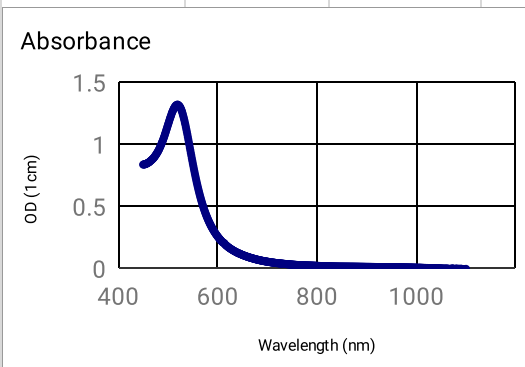
Certificate of Analysis

| | |
|----------------|---------------------------------------|
| Product Family | Accurate Spherical Gold Nanoparticles |
| Product Number | A11-15-CIT-DIH-1-10 |
| Lot # | SPEC |
| Form | Gold Colloid |
| Capping Agent | Citrate |
| Solution | 18MEG DI Water |
| Source | 11H80 |

| | | | | |
|----------------|-------------|------------------|------------|----------|
| Diameter | nm | measured average | TEM, UVVIS | 15 |
| SPR Abs | OD | measured | UV/VIS | 1.2 |
| PDI | stddev/size | measured | TEM | 10% |
| SPR Peak | nm | measured | UV/VIS | 518 |
| pH | | measured | Orion | 7 |
| Zeta Potential | mV | measured | DLS | -32 |
| Concentration | nps/mL | calc | | 1.76E+12 |
| Wt. conc. | mg/mL | calc | | 0.06 |
| ppm | | calc | | 60 |
| Wt. % | % | calc | | 0.0060% |
| Molarity | uM | calc | | 2.94E-03 |
| Molar Ext. | M-1cm-1 | calc | | 4.08E+08 |
| Citrate | mM | measured | | 3 |
| Volume | mL | measured | | 10 |

Date 10/4/2019
Exp Date 4/1/2020

Alex Schoen, Manager
Quality Control



11880_399
- Cal: 0.952485 nm/pix
2:01:58 PM 1/12/2018

100 nm
HV=100.0kV
Direct Mag: 180000x
AFM Camera System