

Optical Density (OD), Concentration (Particles/mL), Mass (mg/mL), and Molarity (M) Conversion Table

Standard Gold NanoSphere Products (OD = 1)

Diameter	Peak Absorbance Wavelength (nm)	Concentration (Particles/mL)	Mass of Gold (µg/mL)	Molarity (M)
5 nm	510-520	6.6×10^{13}	83	1.10×10^{-7}
10 nm	510-520	6.5×10^{12}	63	1.08×10^{-8}
20 nm	510-520	6.4×10^{11}	52	1.06×10^{-9}
40 nm	523	6.0×10^{10}	39	9.96×10^{-11}
60 nm	533	1.7×10^{10}	38	2.82×10^{-11}
80 nm	549	6.8×10^9	35	1.13×10^{-11}
100 nm	570	3.9×10^9	40	6.48×10^{-12}
120 nm	595	2.9×10^9	50	4.82×10^{-12}

Standard Gold NanoRod Products (OD = 1)

LSPR*	Diameter × Length (nm)	Concentration (Particles/mL)	Mass of Gold (µg/mL)	Molarity (M)
780 nm	10.5 × 40	8.0×10^{11}	45	1.30×10^{-9}
808 nm	10.5 × 43	7.25×10^{11}	45	1.20×10^{-9}
850 nm	10.5 × 47	6.45×10^{11}	45	1.10×10^{-9}
1064 nm	10.5 × 69	3.95×10^{11}	40	0.70×10^{-9}

*LSPR = Longitudinal Surface Plasmon Resonance, the peak absorbance wavelength.

*All of the conversions are for Optical Density (OD) = 1, as measured with a spectrophotometer using a 1 cm pathlength cuvette.
A product at OD = 100 has a concentration 100x that of a product with OD = 1.*