



Silica-coated Gold NanoRods

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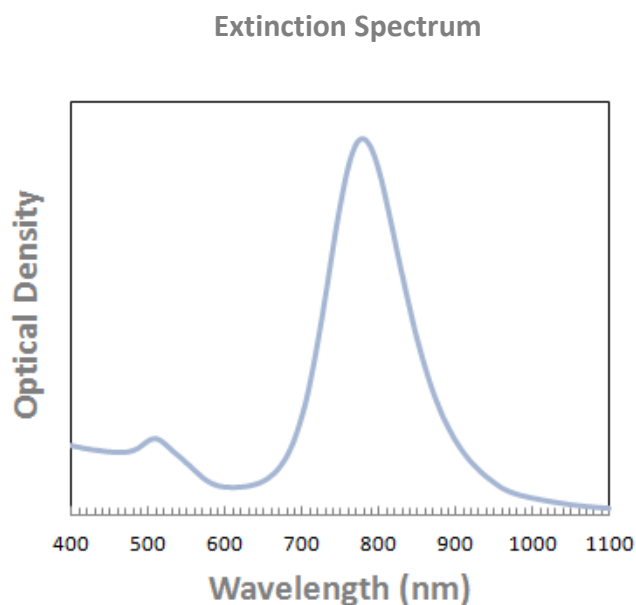
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Silica-coated Gold NanoRods

Gold NanoRods, Silica coating, LSPR 780 nm

	Product Specs	Lot-specific
LSPR peak	770 - 790 nm	775 nm
NanoRod Diameter	9.5 – 11.5 nm	11.3 ± 1.3 nm
NanoRod Length	35 – 45 nm	42.6 ± 4.2 nm
Aspect Ratio	3.7 – 3.9	3.8
LSPR/TSPR Ratio	> 3.8	4.0
LSPR Width at 80% Max	< 75 nm	69 nm
Particle concentration (per mL) for OD = 1	7.8 – 8.2 × 10 ¹¹	8.0 × 10 ¹¹
Mass concentration - Au (mg/mL) for OD = 1	0.04 – 0.05	0.045
Particle Molar Concentration (M) for OD = 1	1.2 – 1.4 × 10 ⁻⁹	1.3 × 10 ⁻⁹
Silica Thickness	18 – 22 nm	20.4 ± 1.4 nm
Zeta potential	< -15 mV	-41.2
pH	8.0 – 9.0	8.2
Particle Surface	Silica	
Solvent	DIUF Water	



LSPR = Longitudinal Surface Plasmon Resonance, TSPR= Transverse Surface Plasmon Resonance

Hydroxyl= Bare silica surface, hydroxyl termination

DIUF = Deionized and ultrafiltrated water (18.1 MΩ-cm)

OD = Optical Density (using a 1 cm path length cuvette)

Product Numbers

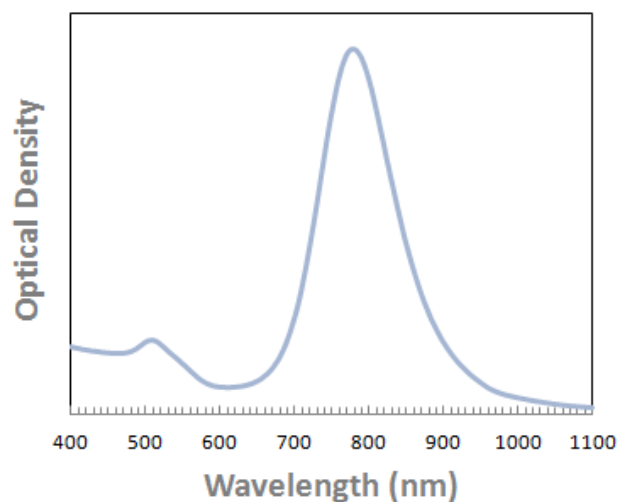
Coating	Termination	OD	Volume	LSPR 780 nm
Silica	Silica (Hydroxyl)	OD = 1	10 mL	46400-L010ML
			2.5 mL	46400-L2.5ML
		OD = 100	1 mL	46400-H001ML
			250 µL	46400-H250UL

Silica-coated Gold NanoRods

Gold NanoRods, Silica + PEG coating, LSPR 780 nm

	Product Specs	Lot-specific
LSPR peak	770 - 790 nm	778 nm
NanoRod Diameter	9.5 – 11.5 nm	11.1 ± 0.9 nm
NanoRod Length	35 – 45 nm	43.1 ± 3.9 nm
Aspect Ratio	3.7 – 3.9	3.8
LSPR/TSPR Ratio	> 3.8	4.1
LSPR Width at 80% Max	< 75 nm	64 nm
Particle concentration (per mL) for OD = 1	7.8 – 8.2 × 10 ¹¹	8.0 × 10 ¹¹
Mass concentration - Au (mg/mL) for OD = 1	0.04 – 0.05	0.045
Particle Molar Concentration (M) for OD = 1	1.2 – 1.4 × 10 ⁻⁹	1.3 × 10 ⁻⁹
Silica Thickness	18 – 22 nm	19.6 ± 1.1 nm
Zeta potential	- 5 ± 5 mV	2.7 mV
pH	6 – 8	7.4
Particle surface	PEG	
Solvent	DIUF Water	

Extinction Spectrum



PEG = Polyethylene glycol (5 kDa), grafted to the silica surface

LSPR = Longitudinal Surface Plasmon Resonance, TSPR= Transverse Surface Plasmon Resonance

DIUF = Deionized and ultrafiltrated water (18.1 MΩ-cm)

OD = Optical Density (using a 1 cm path length cuvette)

Product Numbers

Coating	Termination	OD	Volume	LSPR 780 nm
Silica + PEG	PEG	OD = 1	10 mL	27333-L010ML
			2.5 mL	27333-L2.5ML
		OD = 100	1 mL	27333-H001ML
			250 µL	27333-H250UL

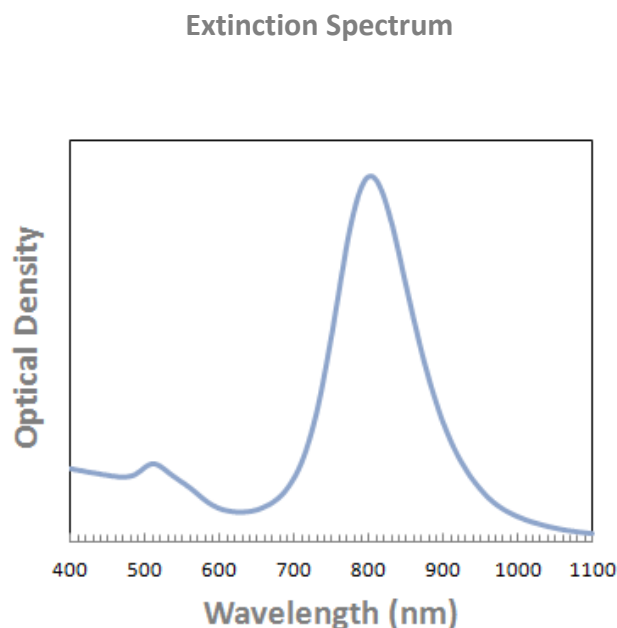
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Silica-coated Gold NanoRods

Gold NanoRods, Silica coating, LSPR 808 nm

	Product Specs	Lot-specific
LSPR peak	798 - 818 nm	810 nm
NanoRod Diameter	9.5 – 11.5 nm	11.0 ± 1.4 nm
NanoRod Length	38 – 48 nm	44.8 ± 4.7 nm
Aspect Ratio	4.0 – 4.3	4.1
LSPR/TSPR Ratio	> 3.8	4.4
LSPR Width at 80% Max	< 80 nm	75 nm
Particle concentration (per mL) for OD = 1	7.0 – 7.5 × 10 ¹¹	7.3 × 10 ¹¹
Mass concentration - Au (mg/mL) for OD = 1	0.04 – 0.05	0.045
Particle Molar Concentration (M) for OD = 1	1.1 – 1.3 × 10 ⁻⁹	1.2 × 10 ⁻⁹
Silica Thickness	18 – 22 nm	20.3 ± 1.8 nm
Zeta potential	< -15 mV	-37.8 mV
pH	8.0 – 9.0	8.3
Particle Surface	Silica	
Solvent	DIUF Water	



LSPR = Longitudinal Surface Plasmon Resonance, TSPR= Transverse Surface Plasmon Resonance

Hydroxyl= Bare silica surface, hydroxyl termination

DIUF = Deionized and ultrafiltrated water (18.1 MΩ-cm)

OD = Optical Density (using a 1 cm path length cuvette)

Product Numbers

Coating	Termination	OD	Volume	LSPR 808 nm
Silica	Silica (Hydroxyl)	OD = 1	10 mL	14649-L010ML
			2.5 mL	14649-L2.5ML
		OD = 100	1 mL	14649-H001ML
			250 µL	14649-H250UL

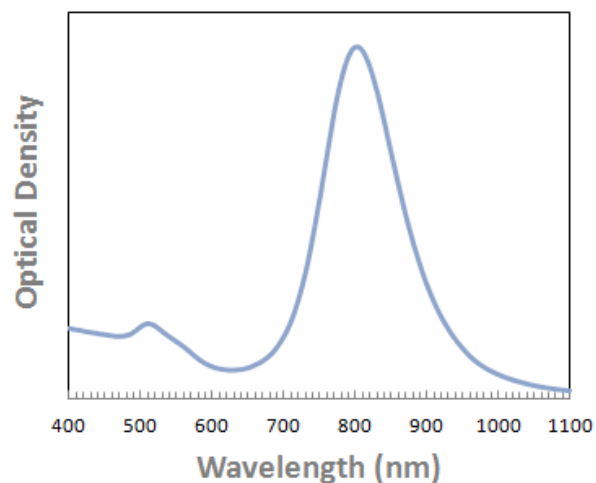
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Silica-coated Gold NanoRods

Gold NanoRods, Silica + PEG coating, LSPR 808 nm

	Product Specs	Lot-specific
LSPR peak	798 - 818 nm	810 nm
NanoRod Diameter	9.5 – 11.5 nm	9.7 ± 1.2 nm
NanoRod Length	38 – 48 nm	42.2 ± 3.1 nm
Aspect Ratio	4.0 – 4.3	4.3
LSPR/TSPR Ratio	> 3.8	4.0
LSPR Width at 80% Max	< 80 nm	68 nm
Particle concentration (per mL) for OD = 1	7.0 – 7.5 x 10 ¹¹	7.3 x 10 ¹¹
Mass concentration - Au (mg/mL) for OD = 1	0.04 – 0.05	0.045
Particle Molar Concentration (M) for OD = 1	1.1 – 1.3 x 10 ⁻⁹	1.2 x 10 ⁻⁹
Silica Thickness	18 – 22 nm	19.3 ± 1.2 nm
Zeta potential	- 5 ± 5 mV	4.8 mV
pH	6 – 8	7.2
Particle surface	PEG	
Solvent	DIUF Water	

Extinction Spectrum



PEG = Polyethylene glycol (5 kDa), grafted to the silica surface

LSPR = Longitudinal Surface Plasmon Resonance, TSPR= Transverse Surface Plasmon Resonance

DIUF = Deionized and ultrafiltrated water (18.1 MΩ-cm)

OD = Optical Density (using a 1 cm path length cuvette)

Product Numbers

Coating	Termination	OD	Volume	LSPR 808 nm
Silica + PEG	PEG	OD = 1	10 mL	79327-L010ML
			2.5 mL	79327-L2.5ML
		OD = 100	1 mL	79327-H001ML
			250 µL	79327-H250UL

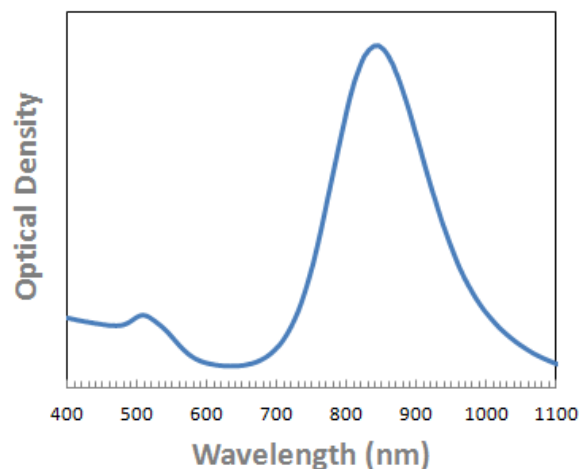
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Silica-coated Gold NanoRods

Gold NanoRods, Silica coating, LSPR 850 nm

	Product Specs	Lot-specific
LSPR peak	840 - 860 nm	857 nm
NanoRod Diameter	9.5 – 11.5 nm	10.9 ± 1.0 nm
NanoRod Length	42 – 52 nm	48.8 ± 4.7 nm
Aspect Ratio	4.4 – 4.7	4.5
LSPR/TSPR Ratio	> 3.8	4.0
LSPR Width at 80% Max	< 90 nm	81 nm
Particle concentration (per mL) for OD = 1	6.2 – 6.7 × 10 ¹¹	6.5 × 10 ¹¹
Mass concentration - Au (mg/mL) for OD = 1	0.04 – 0.05	0.045
Particle Molar Concentration (M) for OD = 1	0.9 – 1.2 × 10 ⁻⁹	1.06 × 10 ⁻⁹
Silica Thickness	18 – 22 nm	18.2 ± 1.1 nm
Zeta potential	< -15 mV	-25.9 mV
pH	8.0 – 9.0	8.2
Particle Surface	Silica	
Solvent	DIUF Water	

Extinction Spectrum



LSPR = Longitudinal Surface Plasmon Resonance, TSPR= Transverse Surface Plasmon Resonance

Hydroxyl= Bare silica surface, hydroxyl termination

DIUF = Deionized and ultrafiltrated water (18.1 MΩ-cm)

OD = Optical Density (using a 1 cm path length cuvette)

Product Numbers

Coating	Termination	OD	Volume	LSPR 850 nm
Silica	Silica (Hydroxyl)	OD = 1	10 mL	83741-L010ML
			2.5 mL	83741-L2.5ML
		OD = 100	1 mL	83741-H001ML
			250 µL	83741-H250UL

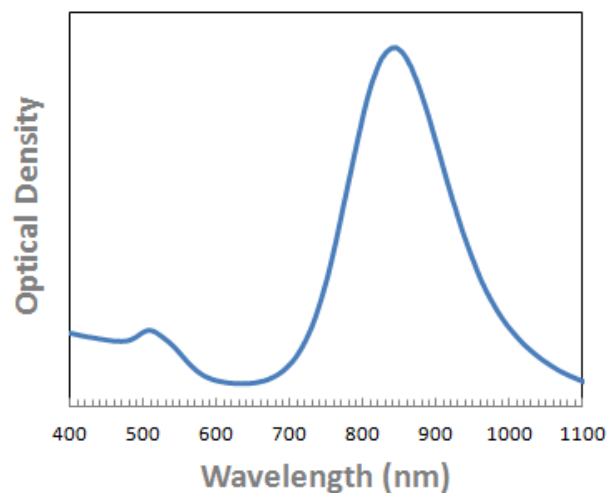
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Silica-coated Gold NanoRods

Gold NanoRods, Silica + PEG coating, LSPR 850 nm

	Product Specs	Lot-specific
LSPR peak	840 - 860 nm	857 nm
NanoRod Diameter	9.5 – 11.5 nm	10.9 ± 1.3 nm
NanoRod Length	42 – 52 nm	48 ± 6.1 nm
Aspect Ratio	4.4 – 4.7	4.4
LSPR/TSPR Ratio	> 3.8	4.0
LSPR Width at 80% Max	< 90 nm	82 nm
Particle concentration (per mL) for OD = 1	6.2 – 6.7 x 10 ¹¹	6.4 x 10 ¹¹
Mass concentration - Au (mg/mL) for OD = 1	0.04 – 0.05	0.043
Particle Molar Concentration (M) for OD = 1	0.9 – 1.2 x 10 ⁻⁹	1.1 x 10 ⁻⁹
Silica Thickness	18 – 22 nm	21.5 ± 1.2 nm
Zeta potential	- 5 ± 5 mV	1.8 mV
pH	6 – 8	7.3
Particle surface	PEG	
Solvent	DIUF Water	

Extinction Spectrum



PEG = Polyethylene glycol (5 kDa), grafted to the silica surface

LSPR = Longitudinal Surface Plasmon Resonance, TSPR= Transverse Surface Plasmon Resonance

DIUF = Deionized and ultrafiltrated water (18.1 MΩ-cm)

OD = Optical Density (using a 1 cm path length cuvette)

Product Numbers

Coating	Termination	OD	Volume	LSPR 850 nm
Silica + PEG	PEG	OD = 1	10 mL	43325-L010ML
			2.5 mL	43325-L2.5ML
		OD = 100	1 mL	43325-H001ML
			250 µL	43325-H250UL

Silica-coated Gold NanoRods

Storage and Handling Procedures

Store at 2-8 °C away from light. Storage at low temperature increases shelf life and stability of the nanoparticles, preventing changes in shape and/or size. Short term exposure to light and room temperature is acceptable.

DO NOT FREEZE. Freezing will induce irreversible aggregation of particles and destroy the product.

Store bare silica-coated particles at elevated pH to prevent aggregation. The hydroxyl-terminated surface is more stable at higher pH. Refer to the chart below for dispersion stability. When switching pH or media, filter the new dispersion with a $\leq 0.45 \mu\text{m}$ filter to remove aggregates. Measure the extinction spectrum on a spectrophotometer to determine the new optical density (OD).

Medium	pH Required for > 60% Dispersal	pH Required for > 90% Dispersal
Water	> 6.8 pH	> 8.2 pH
HEPES	> 6.5 pH	> 7.8 pH
PBS	> 8.3 pH	> 9.4 pH

Bring to room temperature and shake well before each use. Particles may settle to the bottom over time. Shake vigorously for 30 seconds to ensure particles are fully dispersed before use. Visually inspect to ensure all product has redispersed. If particulates or plating remain, sonicate for 15 seconds, shake, and repeat as necessary. Do not sonicate for periods longer than 15 seconds.

Quality Control. If there are visible particulates or a change in the color or intensity of the dispersion, the nanoparticles may have aggregated. Filter the solution using a $\leq 0.45 \mu\text{m}$ filter polyvinylidene fluoride and save the filtered product. Check quality with spectrophotometry and electron microscopy.