



# Functionalized Gold NanoRods

## Sample Tech Spec Sheets

### *Methoxy, Carboxylic Acid, and Amine*

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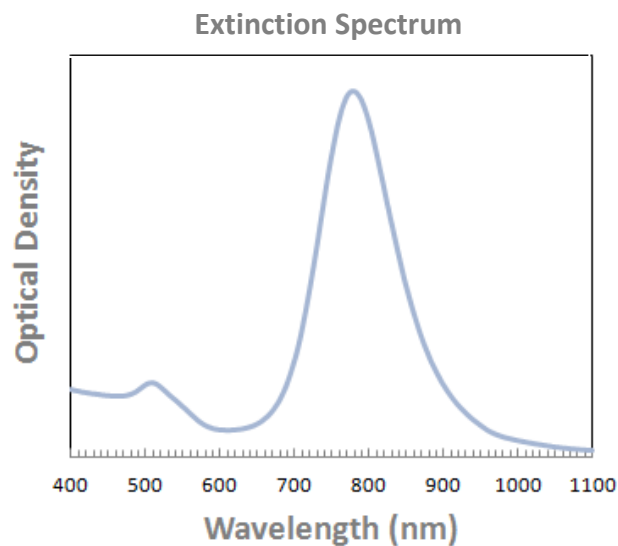
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## Gold NanoRods

### PEGylated Gold NanoRods, LSPR 780 nm: Methoxy Termination

	Product Specs	Lot-specific
LSPR peak	770 - 790 nm	776 nm
NanoRod Diameter	9.5 – 11.5 nm	10.3 ± 1.7 nm
NanoRod Length	35 – 45 nm	38.1 ± 2.1 nm
Aspect Ratio	3.7 – 3.9	3.7
LSPR/TSPR Ratio	> 3.7	4.1
LSPR Width at 80% Max	< 75 nm	67 nm
Particle concentration (per mL) for OD = 1	7.8 – 8.2 x 10 <sup>11</sup>	7.9 x 10 <sup>11</sup>
Mass concentration (Au) mg/mL for OD = 1	0.04 – 0.05	0.049
Particle Molar Concentration for OD = 1	1.2 – 1.4 x 10 <sup>-9</sup>	1.32 x 10 <sup>-9</sup>
Zeta potential	0 ± 10 mV	1.2 mV
pH	6 – 8	7.4
Particle surface	Methoxy-PEG	
Solvent	DIUF Water	



PEG = Polyethylene glycol (10 kDa)

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 pathlength cuvette)

## Product Numbers

	Standard OD	Standard Volumes	Product #
Methoxy	OD = 1, 100	1 – 100 mL	78124

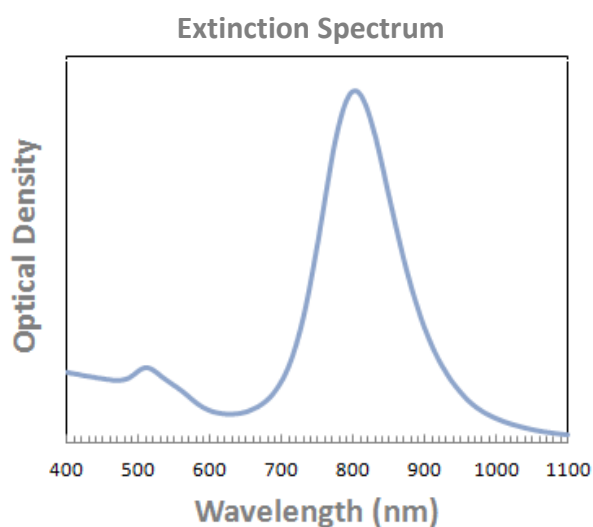
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## Gold NanoRods

### PEGylated Gold NanoRods, LSPR 808 nm: Methoxy Termination

	Product Specs	Lot-specific
LSPR peak	798 - 818 nm	798 nm
NanoRod Diameter	9.5 – 11.5 nm	10.3 ± 1.1 nm
NanoRod Length	38 – 48 nm	42.2 ± 2.2 nm
Aspect Ratio	4.0 – 4.3	4.1
LSPR/TSPR Ratio	> 3.7	3.9
LSPR Width at 80% Max	< 80 nm	68 nm
Particle concentration (per mL) for OD = 1	7.0 – 7.5 x 10 <sup>11</sup>	7.24 x 10 <sup>11</sup>
Mass concentration (Au) mg/mL for OD = 1	0.04 – 0.05	0.049
Particle Molar Concentration for OD = 1	1.1 – 1.3 x 10 <sup>-9</sup>	1.20 x 10 <sup>-9</sup>
Zeta potential	0 ± 10 mV	3 mV
pH	6 – 8	7.1
Particle surface	Methoxy-PEG	
Solvent	DIUF Water	



PEG = Polyethylene glycol (10 kDa)

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 pathlength cuvette)

## Product Numbers

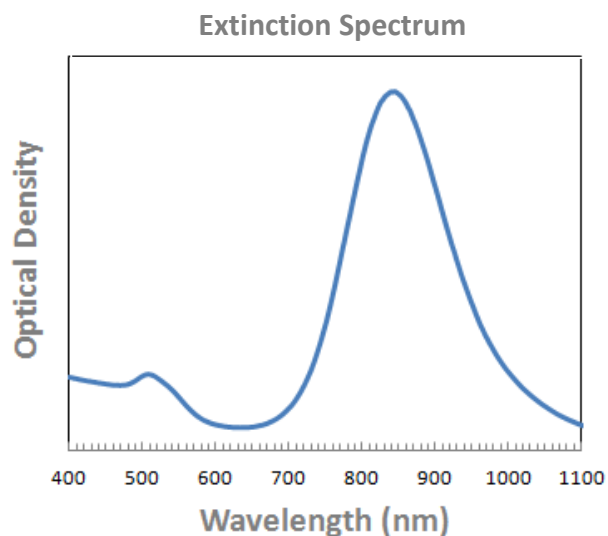
	Standard OD	Standard Volumes	Product #
Methoxy	OD = 1, 100	1 – 100 mL	68630

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## Gold NanoRods

### PEGylated Gold NanoRods, LSPR 850 nm: Methoxy Termination

	Product Specs	Lot-specific
LSPR peak	840 - 860 nm	849 nm
NanoRod Diameter	9.5 – 11.5 nm	10.3 ± 1.3 nm
NanoRod Length	42 – 52 nm	45.2 ± 2.2 nm
Aspect Ratio	4.4 – 4.7	4.4
LSPR/TSPR Ratio	> 3.7	4.1
LSPR Width at 80% Max	< 95 nm	83 nm
Particle concentration (per mL) for OD = 1	6.2 – 6.7 × 10 <sup>11</sup>	6.4 × 10 <sup>11</sup>
Mass concentration (Au) mg/mL for OD = 1	0.04 – 0.05	0.047
Particle Molar Concentration for OD = 1	0.9 – 1.2 × 10 <sup>-9</sup>	1.06 × 10 <sup>-9</sup>
Zeta potential	0 ± 10 mV	3 mV
pH	6 – 8	7.6
Particle surface	Methoxy-PEG	
Solvent	DIUF Water	



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

OD = Optical Density (using a 1 cm pathlength cuvette)

## Product Numbers

	Standard OD	Standard Volumes	Product #
Methoxy	OD = 1, 100	1 – 100 mL	90228

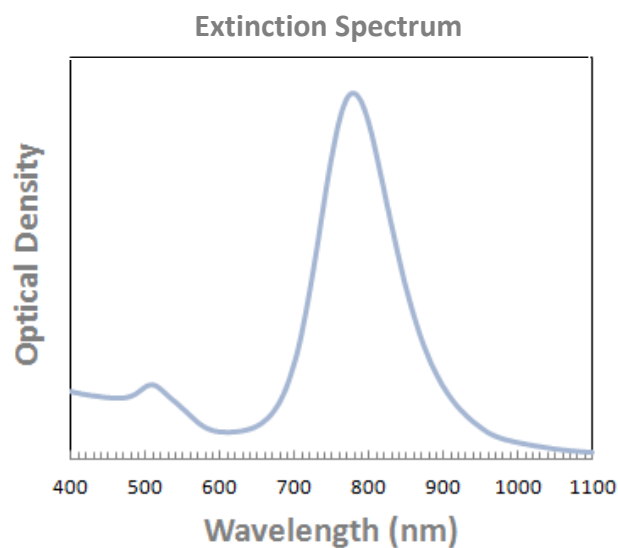
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## Gold NanoRods

### PEGylated Gold NanoRods, LSPR 780 nm: Carboxylic Acid Termination

	Product Specs	Lot-specific
LSPR peak	770 - 790 nm	776 nm
NanoRod Diameter	9.5 – 11.5 nm	10.3 ± 1.7 nm
NanoRod Length	35 – 45 nm	38.1 ± 2.1 nm
Aspect Ratio	3.7 – 3.9	3.7
LSPR/TSPR Ratio	> 3.7	4.1
LSPR Width at 80% Max	< 75 nm	67 nm
Particle concentration (per mL) for OD = 1	7.8 – 8.2 x 10 <sup>11</sup>	7.9 x 10 <sup>11</sup>
Mass concentration (Au) mg/mL for OD = 1	0.04 – 0.05	0.049
Particle Molar Concentration for OD = 1	1.2 – 1.4 x 10 <sup>-9</sup>	1.32 x 10 <sup>-9</sup>
Zeta potential	-15 ± 15 mV	-14.3 mV
pH	5 – 7	6.1
Particle surface	Carboxylic Acid (COOH)	
Solvent	DIUF Water	



PEG = Polyethylene glycol (10 kDa)

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 pathlength cuvette)

## Product Numbers

	Standard OD	Standard Volumes	Product #
Carboxylic Acid	OD = 1, 100	1 – 100 mL	47557

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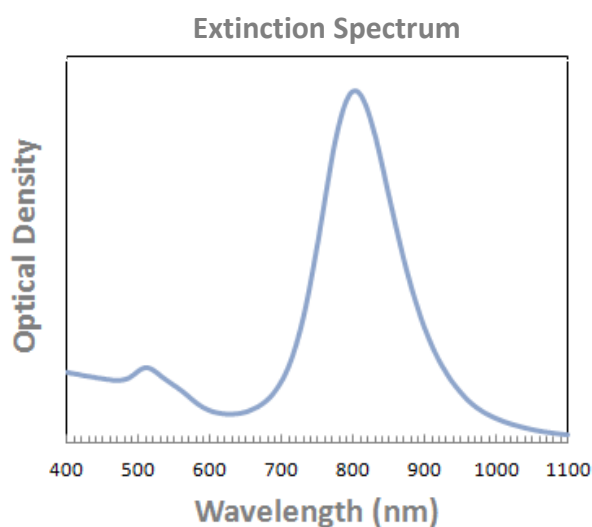
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## Gold NanoRods

### PEGylated Gold NanoRods, LSPR 808 nm: Carboxylic Acid Termination

	Product Specs	Lot-specific
LSPR peak	798 - 818 nm	798 nm
NanoRod Diameter	9.5 – 11.5 nm	10.3 ± 1.1 nm
NanoRod Length	38 – 48 nm	42.2 ± 2.2 nm
Aspect Ratio	4.0 – 4.3	4.1
LSPR/TSPR Ratio	> 3.7	3.9
LSPR Width at 80% Max	< 80 nm	68 nm
Particle concentration (per mL) for OD = 1	7.0 – 7.5 x 10 <sup>11</sup>	7.24 x 10 <sup>11</sup>
Mass concentration (Au) mg/mL for OD = 1	0.04 – 0.05	0.049
Particle Molar Concentration for OD = 1	1.1 – 1.3 x 10 <sup>-9</sup>	1.20 x 10 <sup>-9</sup>
Zeta potential	-15 ± 15 mV	-12.8 mV
pH	5 – 7	6.2
Particle surface	Carboxylic Acid (COOH)	
Solvent	DIUF Water	



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

OD = Optical Density (using a 1 cm pathlength cuvette)

## Product Numbers

	Standard OD	Standard Volumes	Product #
Carboxylic Acid	OD = 1, 100	1 – 100 mL	68896

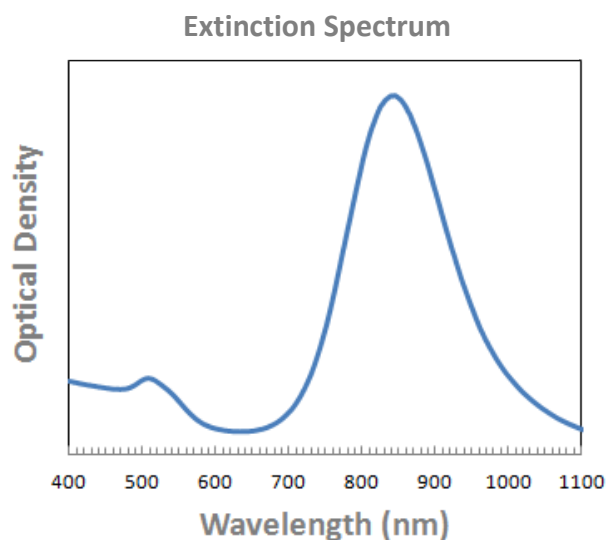
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## Gold NanoRods

### PEGylated Gold NanoRods, LSPR 850 nm: Carboxylic Acid Termination

	Product Specs	Lot-specific
LSPR peak	840 - 860 nm	849 nm
NanoRod Diameter	9.5 – 11.5 nm	10.3 ± 1.3 nm
NanoRod Length	42 – 52 nm	45.2 ± 2.2 nm
Aspect Ratio	4.4 – 4.7	4.4
LSPR/TSPR Ratio	> 3.7	4.1
LSPR Width at 80% Max	< 95 nm	83 nm
Particle concentration (per mL) for OD = 1	6.2 – 6.7 x 10 <sup>11</sup>	6.4 x 10 <sup>11</sup>
Mass concentration (Au) mg/mL for OD = 1	0.04 – 0.05	0.047
Particle Molar Concentration for OD = 1	0.9 – 1.2 x 10 <sup>-9</sup>	1.06 x 10 <sup>-9</sup>
Zeta potential	-15 ± 15 mV	-17.8 mV
pH	5 – 7	6.0
Particle surface	Carboxylic Acid (COOH)	
Solvent	DIUF Water	



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OD = Optical Density (using a 1 cm pathlength cuvette)

## Product Numbers

	Standard OD	Standard Volumes	Product #
Carboxylic Acid	OD = 1, 100	1 – 100 mL	52385

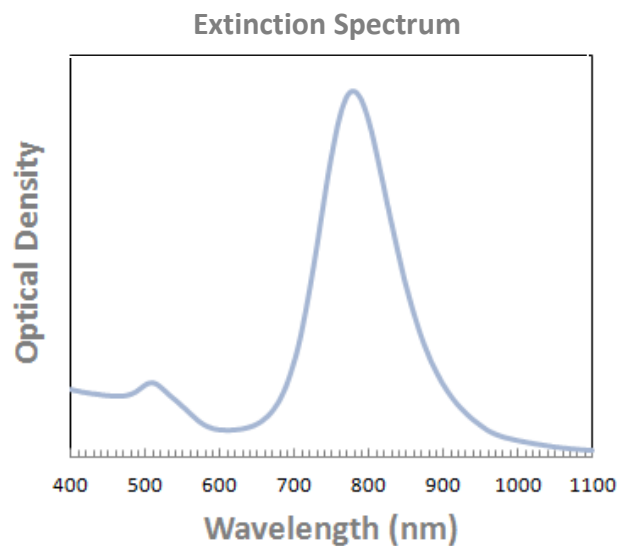
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## Gold NanoRods

### PEGylated Gold NanoRods, LSPR 780 nm: Amine Termination

	Product Specs	Lot-specific
LSPR peak	770 - 790 nm	776 nm
NanoRod Diameter	9.5 – 11.5 nm	10.3 ± 1.7 nm
NanoRod Length	35 – 45 nm	38.1 ± 2.1 nm
Aspect Ratio	3.7 – 3.9	3.7
LSPR/TSPR Ratio	> 3.7	4.1
LSPR Width at 80% Max	< 75 nm	67 nm
Particle concentration (per mL) for OD = 1	7.8 – 8.2 x 10 <sup>11</sup>	7.9 x 10 <sup>11</sup>
Mass concentration (Au) mg/mL for OD = 1	0.04 – 0.05	0.049
Particle Molar Concentration for OD = 1	1.2 – 1.4 x 10 <sup>-9</sup>	1.32 x 10 <sup>-9</sup>
Zeta potential	> 0 mV	11.4 mV
pH	6 – 8	7.4
Particle surface	Amine (NH <sub>2</sub> )	
Solvent	DIUF Water	



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OD = Optical Density (using a 1 cm pathlength cuvette)

## Product Numbers

	Standard OD	Standard Volumes	Product #
Amine	OD = 1, 100	1 – 100 mL	18005

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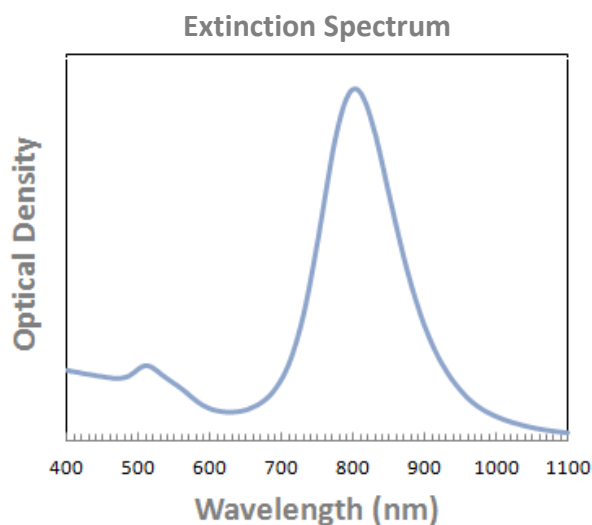
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Mass concentration (Au) mg/mL for OD = 1	0.04 – 0.05	0.049
Particle Molar Concentration for OD = 1	1.1 – 1.3 x 10 <sup>-9</sup>	1.20 x 10 <sup>-9</sup>
Zeta potential	> 0 mV	14.1 mV
pH	6 – 8	7.1
Particle surface	Amine (NH <sub>2</sub> )	
Solvent	DIUF Water	



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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 pathlength cuvette)

## Product Numbers

	Standard OD	Standard Volumes	Product #
Amine	OD = 1, 100	1 – 100 mL	98739

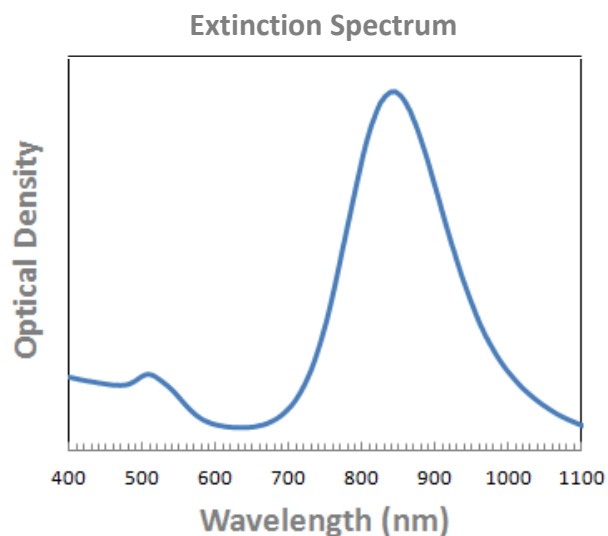
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## Gold NanoRods

### PEGylated Gold NanoRods, LSPR 850 nm: Amine Termination

	Product Specs	Lot-specific
LSPR peak	840 - 860 nm	849 nm
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NanoRod Length	42 – 52 nm	45.2 ± 2.2 nm
Aspect Ratio	4.4 – 4.7	4.4
LSPR/TSPR Ratio	> 3.7	4.1
LSPR Width at 80% Max	< 95 nm	83 nm
Particle concentration (per mL) for OD = 1	6.2 – 6.7 × 10 <sup>11</sup>	6.4 × 10 <sup>11</sup>
Mass concentration (Au) mg/mL for OD = 1	0.04 – 0.05	0.047
Particle Molar Concentration for OD = 1	0.9 – 1.2 × 10 <sup>-9</sup>	1.06 × 10 <sup>-9</sup>
Zeta potential	> 0 mV	13.7 mV
pH	6 – 8	7.6
Particle surface	Amine (NH <sub>2</sub> )	
Solvent	DIUF Water	



PEG = Polyethylene glycol (10 kDa)

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 pathlength cuvette)

## Product Numbers

	Standard OD	Standard Volumes	Product #
Amine	OD = 1, 100	1 – 100 mL	88381

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## 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.

**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  $\leq 0.45 \mu\text{m}$  polyvinylidene fluoride filter and save the filtered product. Check quality with spectrophotometry and electron microscopy.