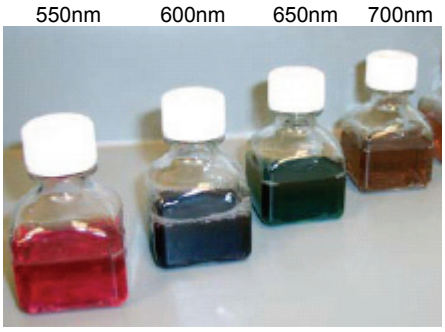
Gold Nanorods

metals · inorganics · organometallics · catalysts · ligands · custom synthesis · cGMP facilities · nanomaterials

96-1530
Gold Nanorods Kit
(Axial Diameter-25nm, wavelength 550-700nm)

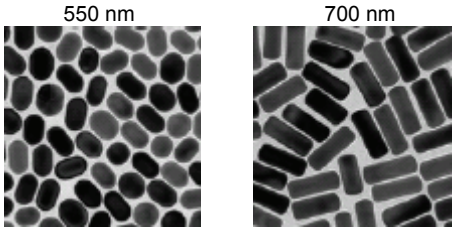


Contains 25ml of each of the following:

79-6000	Gold Nanorods (Axial Diameter-25nm) (Wavelength 550nm)
79-6005	Gold Nanorods (Axial Diameter-25nm) (Wavelength 600nm)
79-6010	Gold Nanorods (Axial Diameter-25nm) (Wavelength 650nm)
79-6015	Gold Nanorods (Axial Diameter-25nm) (Wavelength 700nm)

Additional sizes can be supplied. Please inquire.

Gold nanorods are shipped in 18MΩ DI water with < 0.1% ascorbic acid and < 0.1% CTAB surfactant capping agent.



Representative TEMS

Storage Instructions

Store at 4°C. Do not freeze. CTAB, may cause a cloudy appearance at low temperatures. Before use, warm to room temperature to resuspend excess CTAB. Particularly for the larger nanorods, make sure to homogenize bottles after long storage periods to resuspend any sedimentation.

Shelf life 6 months.

Typical Characteristics (Specifications)

Axial diameter = 25 nm
Axial peak SSRP = 530 nm

Part #	Longitudinal Size (nm)	Peak LSPR Wavelength (nm)	Wt. Conc (ug/ml)	LSPR Molar Ext. (M-1cm-1)	SSPR Molar Ext. (M-1cm-1)
79-6000	34	550	170.5	9.15E+08	5.72E+08
79-6005	47	600	235.1	1.03E+09	5.72E+08
79-6010	60	650	149.8	2.29E+09	1.14E+09
79-6015	73	700	91.1	4.58E+09	2.29E+09

SPR = Surface plasmon resonance
LSPR = Longitudinal SPR peak
SSPR = Axial SPR peak
Shape monodispersity (% rods) > 95%
Size variation +/-10% (both dimensions)
Aspect ratio variation = Peak LSPR accuracy/96
All specs typical. May vary batch to batch.

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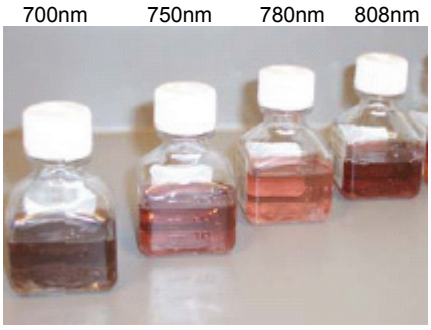
Gold Nanorods

metals · inorganics · organometallics · catalysts · ligands · custom synthesis · cGMP facilities · nanomaterials

96-1535
Gold Nanorods Kit
(Axial Diameter - 10nm, wavelength 700-808nm)

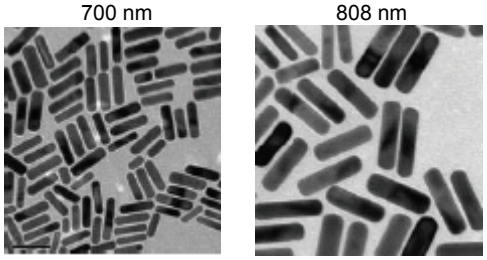


Contains 25ml of each of the following:

79-6020	Gold Nanorods (Axial Diameter - 10nm) (Wavelength 700nm)
79-6025	Gold Nanorods (Axial Diameter - 10nm) (Wavelength 750nm)
79-6030	Gold Nanorods (Axial Diameter - 10nm) (Wavelength 780nm)
79-6035	Gold Nanorods (Axial Diameter - 10nm) (Wavelength 808nm)

Additional sizes can be supplied. Please inquire.

Gold nanorods are shipped in 18MΩ DI water with < 0.1% ascorbic acid and < 0.1% CTAB surfactant capping agent.



Representative TEMS

Storage Instructions

Store at 4°C. Do not freeze. CTAB, may cause a cloudy appearance at low temperatures. Before use, warm to room temperature to resuspend excess CTAB. Particularly for the larger nanorods, make sure to homogenize bottles after long storage periods to resuspend any sedimentation.

Shelf life 6 months.

Typical Characteristics (Specifications)

Axial diameter = 10 nm
Axial peak SSRP = 512 nm

Part #	Longitudinal Size (nm)	Peak LSPR Wavelength (nm)	Wt. Conc (ug/ml)	LSPR Molar Ext. (M-1cm-1)	SSPR Molar Ext. (M-1cm-1)
79-6020	29	700	29.7	8.99E+08	2.25E+08
79-6025	35	750	33.4	9.40E+08	2.35E+08
79-6030	38	780	34.9	9.81E+08	2.45E+08
79-6035	41	808	36.1	1.02E+09	2.55E+08

SPR = Surface plasmon resonance
LSPR = Longitudinal SPR peak
SSPR = Axial SPR peak
Shape monodispersity (% rods) > 95%
Size variation +/-10% (both dimensions)
Aspect ratio variation = Peak LSPR accuracy/96
All specs typical. May vary batch to batch.

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Applications of Gold Nanorods – See Strem Gold Nanorods Kits 96-1530 and 96-1535

Gold nanorods (GNRs) exhibit transverse and longitudinal surface plasmon resonances (SPR) that correspond to electron oscillations perpendicular and parallel to the rod length direction, respectively. Their longitudinal surface plasmon wavelengths (LSPWs) are tunable from the visible to infrared regions. Their absorption cross sections are at least five orders larger than those of conventional dyes, and the light scattering by Au nanorods is several orders larger than the light emission from strongly fluorescent dyes.[1–3] The tunability in the LSPW, together with strongly enhanced scattering and absorption at the LSPW, makes GNRs useful for the formation of many functional composite materials, for example, with hydrogel,[4,5] polymers,[6,7] silica,[8] and bacteria.[9] GNRs also have an axial surface plasmon resonance (SSPR), though one-third that of the LSPR, is still many orders of magnitude greater than quantum dots and nanoshells. GNRs also offer advantages of good biocompatibility, facile preparation, and conjugation with a variety of biomolecular ligands, antibodies, and other targeting moieties.[10] They have therefore found wide applications in biochemical sensing,[11] biological imaging, medical diagnostics, and therapeutics.[12–16] Further, GNRs have found application in materials and optics, including polarizers, filters, and to improve the storage density in compact disks.

The effectiveness of GNRs as scattering-based biomedical imaging contrast agents and as photothermal therapeutic agents is strongly dependent on their scattering and absorption cross sections. In general, high scattering cross sections are favorable for cellular and biological imaging based on darkfield microscopy, while large absorption cross sections with small scattering losses allow for photothermal therapy with a minimal laser dosage. In addition, the LSPWs of GNRs are strongly desired to be in the spectral range of 650–900 nm). Light irradiation in this region can penetrate deeper in tissues and cause less photodamage than UV–visible irradiation. [17] Therefore, the ability to tailor both scattering and absorption of GNRs with different LSPWs is of ultimate importance for practical *in vivo* biomedical imaging and therapeutic applications.[18–20]

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