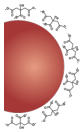
CYTODIAGNOSTICS

PRODUCT DATA SHEET

Non-Functionalized Standard Gold Nanoparticles, >99% Reactant Free



Citrate Capped

Catalog Numbers: GRF-5-XX, GRF-10-XX, GRF-15-XX, GRF-20-XX, GRF-30-XX, GRF-40-XX, GRF-50-XX, GRF-60-XX, GRF-70-XX, GRF-80-XX, GRF-90-XX, GRF-100-XX, GRF-150-XX, GRF-200-XX, GRF-250-XX, GRF-300-XX, GRF-400-XX

Description

Cytodiagnostics Non-Functionalized Reactant Free Gold Nanoparticles have been optimized for, cellular studies and high protein binding efficiency.

Our gold nanoparticles are available in 17 different sizes ranging from 5-400nm, are more than 95% spherical and have uniform size distribution (CV <12%).

For custom sizes, formulations or bulk quantities please contact our customer service department.

Features

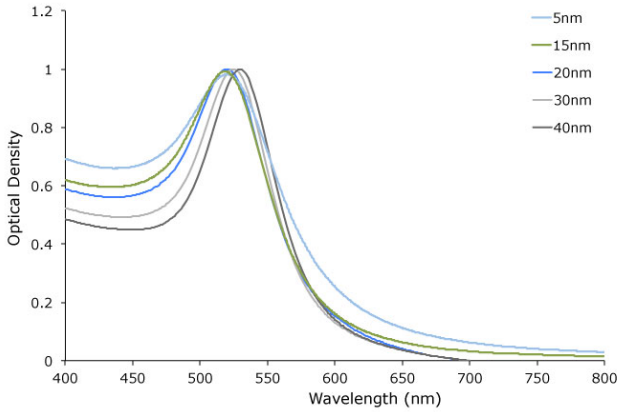
• Superior size distribution compared to the leading competitor; available from 5nm to 400nm.
• Exceptional protein binding characteristics
• Our reactant free gold nanoparticles are ideal for sensitive applications requiring a minimum amount of contaminating reactants remaining from the manufacturing process. (Purity >99%)
• Also available with multiple surface functionalities to suit all your needs. (Please see Cytodiagnostics PEGylated and Functionalized Gold Nanoparticles)

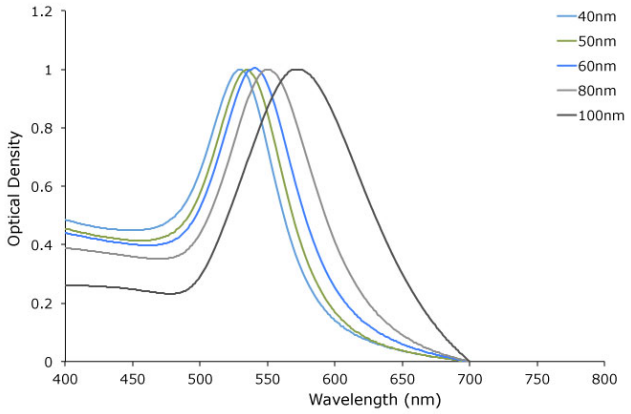
Applications

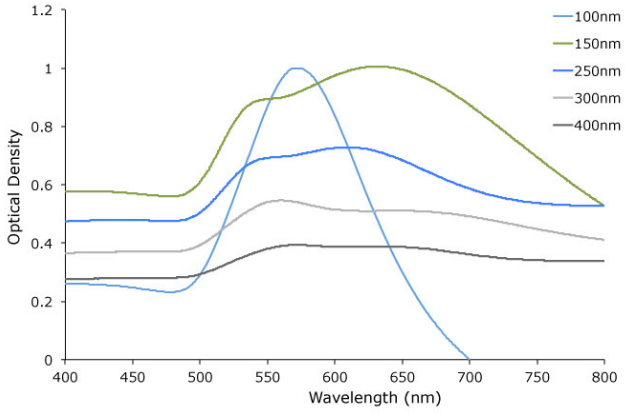
• Ideal for development of peptide and protein gold conjugates for use in applications such as blotting, lateral flow assays, microscopy and transmission electron microscopy (TEM).
• Ideal for cellular and cellular toxicity studies.

Characteristics

Core diameter: 5-400nm (Coefficient of Variance < 12%)
Polydispersity Index (PDI): < 0.20
Concentration: OD=1 (~ 0.05 mg/ml)
Absorbance (λmax): 510-570nm
Supplied in 0.1mM Phosphate-Buffered Saline (0.01X PBS)







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Protein Conjugation

A recommended starting protocol for conjugation of proteins to Cytodiagnostics gold nanoparticles can be found online in the Technical Reference Section.

Diameter (nm)	Peak SPR Wavelength (nm)	NPS/ml	Wt. Conc. (mg/ml)	Molar Ext ($M^{-1}cm^{-1}$)	Size Dispersity (+/-nm)	Particle Volume (nm^3)	Surface Area (nm^2)	Surface/ Volume Ratio	Particle Mass (g)	Molar Mass (g/mol)	Molar Conc.
5	515-520	5.47E+13	6.94E-02	1.10E+07	<15%	6.54E+01	7.85E+01	1.2	1.27E-18	7.64E+05	9.08E-08
10	515-520	5.98E+12	6.07E-02	1.01E+08	<15%	5.24E+02	3.14E+02	0.6	1.02E-17	6.11E+06	9.93E-09
15	520	1.64E+12	5.61E-02	3.67E+08	<12%	1.77E+03	7.07E+02	0.4	3.43E-17	2.06E+07	2.72E-09
20	524	6.54E+11	5.31E-02	9.21E+08	<12%	4.19E+03	1.26E+03	0.3	8.12E-17	4.89E+07	1.09E-09
30	526	1.79E+11	4.91E-02	3.36E+09	<12%	1.41E+04	2.83E+03	0.2	2.74E-16	1.65E+08	2.98E-10
40	530	7.15E+10	4.65E-02	8.42E+09	<12%	3.35E+04	5.03E+03	0.15	6.50E-16	3.91E+08	1.19E-10
50	535	3.51E+10	4.45E-02	1.72E+10	<10%	6.54E+04	7.85E+03	0.12	1.27E-15	7.64E+08	5.83E-11
60	540	1.96E+10	4.30E-02	3.07E+10	<10%	1.13E+05	1.13E+04	0.1	2.19E-15	1.32E+09	3.25E-11
70	548	1.20E+10	4.17E-02	5.03E+10	<10%	1.80E+05	1.54E+04	0.086	3.48E-15	2.10E+09	1.99E-11
80	553	7.82E+09	4.06E-02	7.70E+10	<10%	2.68E+05	2.01E+04	0.075	5.20E-15	3.13E+09	1.30E-11
90	564	5.37E+09	3.97E-02	1.12E+11	<8%	3.82E+05	2.54E+04	0.067	7.40E-15	4.46E+09	8.92E-12
100	572	3.84E+09	3.89E-02	1.57E+11	<8%	5.24E+05	3.14E+04	0.06	1.02E-14	6.11E+09	6.37E-12
150		3.60E+09	1.20E-01		<8%	1.77E+06	7.07E+04	0.04	3.43E-14	2.06E+10	5.98E-12
200		1.91E+09	1.55E-01		<8%	4.19E+06	1.26E+05	0.03	8.12E-14	4.89E+10	3.17E-12
250		7.08E+08	1.13E-01		<8%	8.18E+06	1.96E+05	0.024	1.59E-13	9.55E+10	1.18E-12
300		4.50E+08	1.24E-01		<8%	1.41E+07	2.83E+05	0.02	2.74E-13	1.65E+11	7.48E-13
400		1.88E+08	1.22E-01		<8%	3.35E+07	5.03E+05	0.015	6.50E-13	3.91E+11	3.12E-13

Storage

This product should be stored at 4°C. DO NOT FREEZE. If stored unopened and as specified, Cytodiagnostics gold nanoparticles are stable for at least 6 months.

Handling

When stored for a long period of time gold nanoparticles may sediment at the bottom of the flask, which is especially true for larger particle sizes. Prior to use, re-suspend the sedimented particles by swirling until a homogenous solution is obtained.

To maintain optimal performance, and stability of the colloidal gold, care should be taken to use clean storage containers if using other than supplied with the product.

Washing Gold Nanoparticles

Although it is not generally necessary to wash the gold nanoparticles prior to use, some applications may require additional washing procedures. The easiest way to remove possible contaminants in the nanoparticles solution is by centrifugation. Centrifugation force is dependent on size of the gold nanoparticles and should be adjusted according to Table I for optimal performance.

Note I: Since non-functionalized gold nanoparticles are sensitive to salt containing buffers, re-suspension should always be performed in ultra-pure water to prevent irreversible aggregation. Irreversible aggregation is characterized by a clear to bluish solution upon the addition of salt.

Note II: Please note that centrifugation can induce aggregation. To prevent aggregation, it may be necessary to add Tween 20 at a concentration of 0.025% w/v.

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Procedure

1. Place 1ml aliquot of colloidal gold in a 1.5ml micro centrifuge tube.
2. Centrifuge the gold nanoparticles for 30 minutes using the appropriate G force determined by referencing Table I.
3. Remove the supernatant and re-suspend in an appropriate volume of ultra-pure water.
4. Vortex to re-disperse the particle

Table I. Appropriate G forces for centrifugation of gold nanoparticles. Note that recommended conditions are for a volume of 1ml and centrifugation using a microcentrifuge, except for 5nm gold nanoparticles that requires an ultracentrifuge.

Size (nm)	Speed (*g*)	Time (min)
5	100,000	30
10	17,000	60 (~50% recovery)
15	17,000	30
20	6,500	30
30	4,500	30
40	2,500	30
50	2,000	30
60	1,125	30
80	600	30
100	400	30
150	180	30
200	100	30

Product Safety and Handling

This product is for R&D use only, not for drug, household, or other uses. Please review the material safety datasheet (MSDS) available online for proper safety and handling procedures.

Ordering Information

For ordering call 866-344-3954 or visit us online.

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Catalogue Number	Description	Sizes
GRF-5-XX*-YY**	5nm Reactant Free Gold Nanoparticles	20ml, 100ml, 500ml or 1000ml
GRF-10-XX*-YY**	10nm Reactant Free Gold Nanoparticles	20ml, 100ml, 500ml or 1000ml
GRF-15-XX*-YY**	15nm Reactant Free Gold Nanoparticles	20ml, 100ml, 500ml or 1000ml
GRF-20-XX*-YY**	20nm Reactant Free Gold Nanoparticles	20ml, 100ml, 500ml or 1000ml
GRF-30-XX*-YY**	30nm Reactant Free Gold Nanoparticles	20ml, 100ml, 500ml or 1000ml
GRF-40-XX*-YY**	40nm Reactant Free Gold Nanoparticles	20ml, 100ml, 500ml or 1000ml
GRF-50-XX*-YY**	50nm Reactant Free Gold Nanoparticles	20ml, 100ml, 500ml or 1000ml
GRF-60-XX*-YY**	60nm Reactant Free Gold Nanoparticles	20ml, 100ml, 500ml or 1000ml
GRF-70-XX*-YY**	70nm Reactant Free Gold Nanoparticles	20ml, 100ml, 500ml or 1000ml
GRF-80-XX*-YY**	80nm Reactant Free Gold Nanoparticles	20ml, 100ml, 500ml or 1000ml
GRF-90-XX*-YY**	90nm Reactant Free Gold Nanoparticles	20ml, 100ml, 500ml or 1000ml
GRF-100-XX*-YY**	100nm Reactant Free Gold Nanoparticles	20ml, 100ml, 500ml or 1000ml
GRF-150-XX*-YY**	150nm Reactant Free Gold Nanoparticles	20ml, 100ml, or 500ml
GRF-200-XX*-YY**	200nm Reactant Free Gold Nanoparticles	20ml, 100ml, or 500ml
GRF-250-XX*-YY**	250nm Reactant Free Gold Nanoparticles	20ml, 100ml, or 500ml
GRF-300-XX*-YY**	300nm Reactant Free Gold Nanoparticles	20ml, 100ml, or 500ml
GRF-400-XX*-YY**	400nm Reactant Free Gold Nanoparticles	20ml, 100ml, or 500ml

*Indicates quantity, e.g. GRF-5-20 for 20ml of 5nm Standard Gold Nanoparticles
** Indicates Optical Density (OD), either 1 OD, or -10 for 10 OD.

For custom sizes (up to 400nm available), bulk quantities, and custom gold nanoparticle surface chemistry, please contact our customer service department.

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