Reactant Free Gold NanoUrchins Introduction Kit
PRODUCT DATA SHEET

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Description

Gold NanoUrchins have unique optical properties compared to spherical gold nanoparticles of the same core diameter. The spiky uneven surface causes a red shift in the surface plasmon peak and a larger enhancement of electromagnetic fields at the tips of the Gold NanoUrchin spikes compared to that of a spherical particles. As an example, 100 nm spherical gold nanoparticles have an SPR peak at 570 nm while 100 nm Gold NanoUrchins have a SPR peak at around 680 nm.

In addition, binding of ligands such as proteins to the Gold NanoUrchin surface causes a larger shift in the surface plasmon peak compared to standard spherical gold nanoparticles. The citrate-covered surface of our Gold NanoUrchins allows for efficient adsorption of primary antibodies and other proteins. In addition, Gold NanoUrchins can be further modified and functionalized through ligand-exchange with e.g. thiol-containing ligands such as PEG and oligonucleotides.

Abvigen Reactant Free Gold NanoUrchins are supplied in 0.1 mM phosphate buffered saline (PBS) and are extensively purified to be 99% free of residual reactants from manufacturing. These particles have the same high protein binding efficiency as our standard gold nanoparticle preparations for use in applications such as conjugate development, lateral flow and Surface Enhanced Raman Spectroscopy (SERS) with the added benefit of being reactant free for more sensitive applications such as cell work and nanotoxicology studies. Our Gold NanoUrchins are available in 6 different sizes and have uniform size distribution (CV < 12%).

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

Website: www.abvigen.com Phone: +1 929-202-3014 Email: info@abvigenus.com

Characteristics

Composition: Citric acid stabilized Gold NanoUrchins

Sizes: 50 nm, 60 nm, 80 nm and 100 nm Reactant Free Gold NanoUrchins

Quantity: 20 ml of each size

Purity: > 99%

Formulation: Supplied in 0.1 mM Phosphate-Buffered Saline (0.01X PBS)

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Four sizes of reactant free Gold NanoUrchins combined in a convenient kit for testing optimal size, suitability and stability during your protocol development.

Features

Enhanced optical properties

Citrate surface allows for easy ligand-exchange for further functionalization

Narrow size distribution (CV of less than 8%) and exceptional protein adsorption properties. Low batch to batch variability (+/- 2 nm).

Applications

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

For OD 1 of Reactant Free Gold NanoUrchins

Diameter /nm	Conc. mg/ml	Particles/mg	Particles/ml	Diameter /nm	Conc. mg/ml	Particles/mg	Particles/ml
50	0.05	7.91E+11	3.95E+10	80	0.05	1.93E+11	9.65E+09
60	0.05	4.58E+11	2.29E+10	90	0.05	1.36E+11	6.78E+09
70	0.05	2.88E+11	1.44E+10	100	0.05	9.89E+10	4.94E+09

Storage

Store product away from direct sunlight at 4-25°C. Lower temperature prolongs the shelf life of the product.

DO NOT FREEZE. Freezing causes irreversible aggregation of the Gold NanoUrchins.

If stored unopened and as specified, Abvigen gold nanourchins are stable for at least 6 months.

Handling

When stored for a long period of time gold nanourchins 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.

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Washing Gold Nanoparticles

Although it is not generally necessary to wash the gold nanourchins 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 nanourchins and should be adjusted according to Table I for optimal performance.

Note I: Since non-functionalized gold nanourchins 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.

Procedure

1. Place 1 ml aliquot of gold nanourchins in a 1.5 ml micro centrifuge tube.
2. Centrifuge the gold nanourchins for 30 min 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 particles.

Table I. Appropriate G forces for centrifugation of gold nanourchins. Note that recommended conditions are for a volume of 1ml and centrifugation using a microcentrifuge.

Size (nm)	Speed (g)	Time (min)
50	2000	30
60	1125	30
80	600	30
100	400	30

Notes

This product is for R&D use only, not for drug, household, or other uses.

Ordering Information

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