

Nanopartz™ Gold Nanorodz™

Nanopartz™ is the first and only company to provide gold nanorods. The benefits of shaped particles like gold nanorods over other nanoparticles are well known, particularly for in-vivo applications. Nanopartz patent pending manufacturing methods result in nanorods that are highly monodisperse in size, shape, and batch to batch uniformity. Available in standard CTAB coating, these nanorods are suitable for many development projects including in-vivo and in-vitro therapeutics, imaging, diagnostics; and non life-science applications such as solar cells, liquid crystals, and optical data storage to name a few.



Features

- ❖ Highly accurate and monodisperse in size, shape, and batch to batch uniformity.
- ❖ Wavelength accuracy better than 10 nm in many cases
- ❖ Size monodispersity better than 10% CV
- ❖ Greater than 95% rods, less than 5% other shapes
- ❖ Available in aspect ratios from 1.67 to 4.5, resulting in extinctions from 550 to 850 nm.
- ❖ CTAB coating is reduced to < 0.1% without adverse effects to the nanorods.
- ❖ Extremely stable. Shelf life is greater than one year.
- ❖ High anisotropy.
- ❖ High non-linear coefficients. Extremely efficient for frequency conversion.
- ❖ Near IR absorptions four orders of magnitude larger than quantum dots in the visible. Photothermal cross sections that leads to highly efficient optical to heat conversion.
- ❖ Relative absorption to scattering contribution may be tuned by change in dimensions.
- ❖ Positively charged and extremely small (compared to other nanoparticles).
- ❖ Facile synthesis. Gold chemistry is well known.
- ❖ Low cytotoxicity. Gold is FDA approved for rheumatoid arthritis. (Cytotoxicity is based on CTAB capping agent concentration and not on the gold itself).
- ❖ Nanorod to sphere shape changing on high energy pulsed lasers.

Benefits

- ❖ Monodisperse shapes and sizes in production volumes satisfies high volume applications.
- ❖ Tunable scattering/absorptions from the VIS to NIR create colored gold good for multi-label diagnostics and imaging.
- ❖ NIR absorptions are advantageous for in-vivo applications at the peak transmission window of skin and tissue.
- ❖ High photothermal conversion is advantageous for killing tumors and viruses in-vivo.
- ❖ Being positively charged and small lends to better intercellular uptake.
- ❖ Changing shape upon laser incidences combined with facile synthesis creates a great drug delivery vehicle.

- ❖ Low cytotoxicity means great in-vitro and in-vivo vehicles.
- ❖ High non-linear coefficients means great frequency doubling and quadrupling materials.
- ❖ High anisotropy leads to highly efficient flexible polarizers.
- ❖ Small size and high anisotropy is terrific for improving optical data storage.

Applications

Life Sciences

In-Vivo
Imaging
 Photoacoustic Imaging
 Optical Coherence Tomography
 Two photon fluorescence
 SERS
Therapeutics
 Photothermal
 Cancer
 Viral
Drug Delivery

In-Vitro
Imaging
 Dark Field Microscopy
Diagnostics
 Heterogeneous
 SERS
 Dark Field Microscopy
 Lateral Flow
 Homogeneous
 Fluorescence Quenching
 SPR

Non Life Science Applications

Sensors
Solar Cells
Optical Polarizers and Filters (Flexible)
Nonlinear Optics
Optical Data Storage
Negative refractive index materials
Liquid Crystals
Standards
 Microscopy
 UV VIS
Catalysis
Remediation
Security anti-forgery materials
Covert tagging

Product Number and Price List

| Product | Product Number/Wavelength | | | | | | | | Notes |
|--|---------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-------|
| | 550 nm | 600 nm | 650 nm | 700 nm | 750 nm | 780 nm | 808 nm | 850 nm | |
| Nanorodz™ 25 nm gold nanorods | 30-25-550 | 30-25-600 | 30-25-650 | 30-25-700 | 30-25-750 | | | | [1] |
| Nanorodz™ 10 nm gold nanorods | | | | 30-10-700 | 30-10-750 | 30-10-780 | 30-10-808 | 30-10-850 | [1] |
| Nanorodz™ NIR Intro Kit 30-10-000 | | | | | * | * | * | * | [2] |
| Nanorodz™ VIS Intro Kit 30-25-000 | * | * | * | * | | | | | [3] |

Notes:

- [1] Nanorodz™ are OD 1
- [2] 25 ml of each 10-750, 10-780, 10-808, 10-850
- [3] 25 ml of each 25-550, 25-600, 25-650, 25-700