



**Particular**  
customized material



## **INTRODUCTORY CATALOGUE AND PRICE LIST**

November 1, 2010

- **customized nanoparticles**
- **high purity**
- **in aqueous and organic solvents**
- **for marking, coating, embedding**

### SELECT YOUR MATERIAL:

- Ag (silver), Au (gold)
- Pt (platinum), Pd (palladium)
- Cu (copper), Fe (iron), Ti (titanium)
- other metals, alloys, advanced ceramics\*

### SELECT YOUR DISPERSANT:

- water (pure or with stabilizing citrate)
- acetone
- ethanol
- other solvents on demand

### PRODUCT CATEGORY M:

Mean hydrodynamic particle diameter 40-80 nm, in the following concentrations:

M-10: 10-15 mg/l

M-100: 100-140 mg/l

M-1000: 1000-1300 mg/l

### PRODUCT CATEGORY S:

Mean hydrodynamic particle diameter 5-15 nm, in the following concentrations:

S-10: 10-15 mg/l

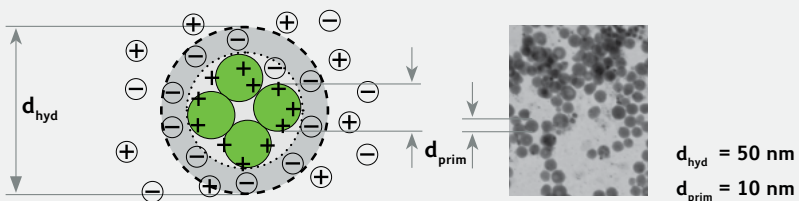
S-100: 100-140 mg/l

Other particle sizes and concentrations available on demand.

\* For other materials, customer is asked to provide target material (small bulk plates, foils or powders that are not dangerous in handling) if not available to Particular.

Please note: Nanoparticle dispersions are subject to deterioration due to material- and environment-related influences. They react sensitive to salts, e.g. from fingerprints.

## PARTICULAR PRODUCT CATEGORIES Soft Agglomerates and Fragmented Colloids



### Example

- Ag colloid, Particular product category M:
- Hydrodynamic diameter  $d_{\text{hyd}}$  is about 50 nm.
  - Feret diameter  $d_{\text{prim}}$  is often much smaller (10 nm).
  - Both size distributions are monomodal.

### Particular product category M

Small nanoparticles dispersed in liquid (so-called 'colloid') may be hydrodynamically associated to a bigger particulate entity (or contain bigger primary particles).

### Particular product category S

Such agglomerates and bigger primary particles can be laser-fragmented or size-quenched by Particular if desired.



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## Gold (Au):

M-10:	100 ml / 90 EUR	500 ml / 290 EUR
M-100:	100 ml / 290 EUR	500 ml / 1260 EUR
M-1000:	25 ml / 590 EUR	100 ml / 2250 EUR
S-10:	25 ml / 170 EUR	100 ml / 290 EUR
S-100:	25 ml / 330 EUR	100 ml / 950 EUR

## Silver (Ag):

M-10:	100 ml / 45 EUR	500 ml / 145 EUR
M-100:	100 ml / 150 EUR	500 ml / 630 EUR
M-1000:	25 ml / 300 EUR	100 ml / 1150 EUR
S-10:	25 ml / 100 EUR	100 ml / 170 EUR
S-100:	25 ml / 190 EUR	100 ml / 550 EUR

## Platinum (Pt), Palladium (Pd):

M-10:	100 ml / 175 EUR	500 ml / 540 EUR
M-100:	100 ml / 280 EUR	500 ml / 1070 EUR
M-1000:	100 ml / 850 EUR *	500 ml / 3850 EUR *
S-100:	25 ml / 630 EUR	100 ml / 1330 EUR
S-500: **	25 ml / 970 EUR *	100 ml / 2700 EUR *

## Copper (Cu), Iron (Fe), Titanium (Ti):

M-10:	100 ml / 90 EUR	500 ml / 290 EUR
M-100:	100 ml / 290 EUR	500 ml / 1260 EUR
M-1000:	25 ml / 590 EUR	100 ml / 2250 EUR
S-10:	25 ml / 190 EUR	100 ml / 340 EUR
S-100:	25 ml / 380 EUR	100 ml / 1100 EUR

## Customer-defined materials: \*\*\*

M-10:	100 ml / 110 EUR	500 ml / 360 EUR
M-100:	100 ml / 360 EUR	500 ml / 1580 EUR
M-1000:	25 ml / 730 EUR	100 ml / 2800 EUR
S-10:	25 ml / 210 EUR	100 ml / 360 EUR
S-100:	25 ml / 410 EUR	100 ml / 1200 EUR

\* Introductory special price.

\*\* Special offer for Pt & Pd:  
Small particles (5-15 nm)  
at high concentration  
(500-700 mg/l).

\*\*\* For customer-defined  
materials, customer is  
asked to provide target  
material, if not available  
to Particular.

## PARTICULAR'S ADVANTAGES

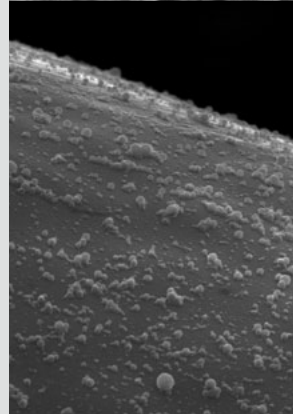
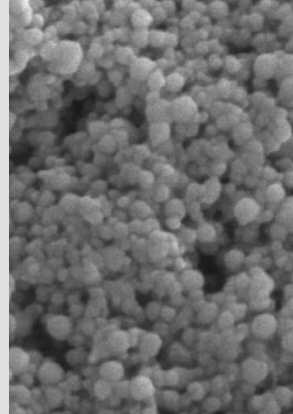
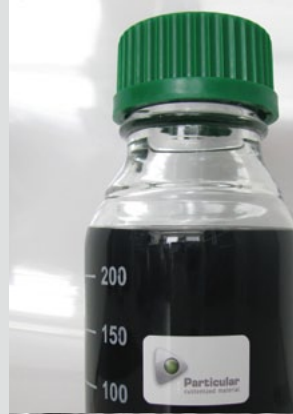
Due to its physical approach, laser ablation in liquids is generally different from chemical syntheses. Avoiding chemical precursors is useful for nanotechnology, as high purity is often required – for example in biological or medical applications or when a polymer is to be filled with nanoparticles without impurifying the matrix.

### Nanoparticles from Particular offer the following advantages:

- **high purity** of the colloids without left over precursors or byproducts,
- **economic production** especially of nanoparticles from pure metals and alloys,
- **long durability** due to electrostatic and optionally sterical stabilization,
- **organic solvents** as possible direct dispersants without medium transfer.

### Examples of unique applications enabled by Particular's method:

- **gold nanomarkers** that are lasting and biocompatible (instead of bleaching fluorophores or toxic quantum dots),
- **nano-coatings from the same material** as the workpiece to avoid additional material qualifications during product approvals,
- **volume embedding** of metal nanoparticles in polymers for longer effectiveness than that of coatings (ion release capacities up to several years),
- **nanoparticle mixtures** for coatings and volume embedding with adjustable function combinations.



## INFORMATION AND CONTACT

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