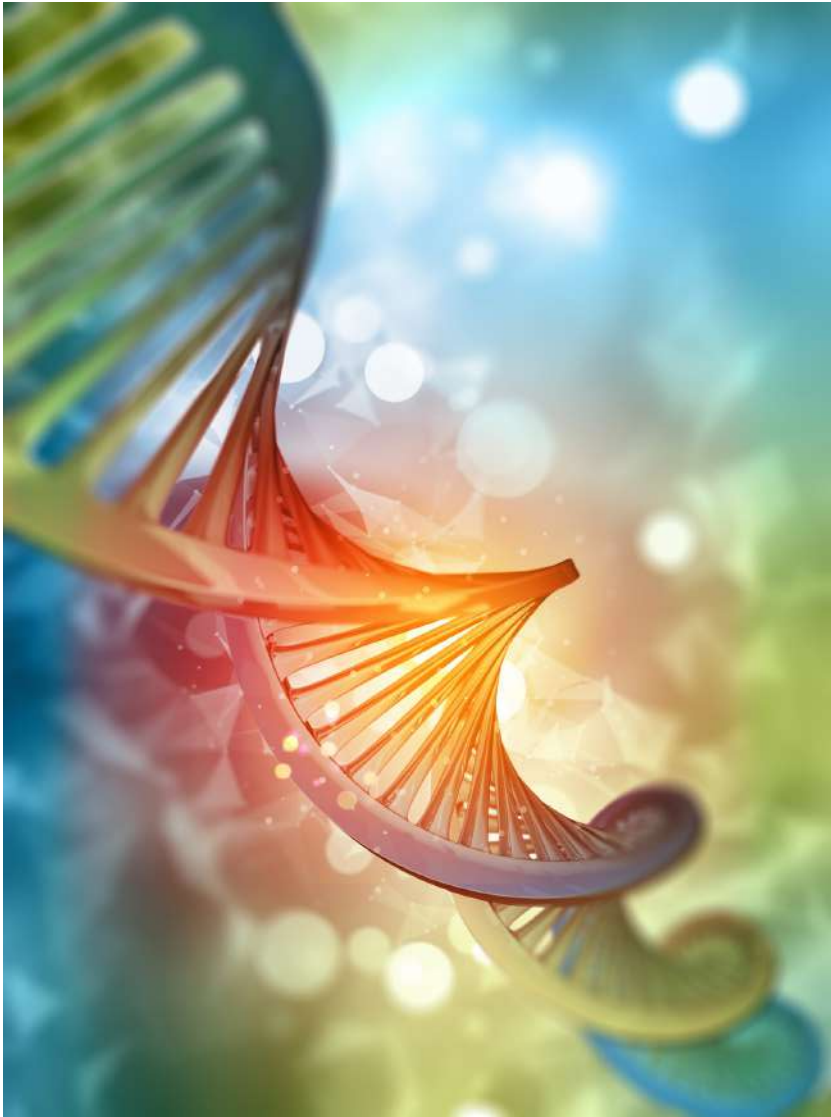
ecosapient™

Nano Materials Synthesis



Nanotechnology is not simply working at ever-smaller dimensions; rather, working at the nanoscale enables scientists to understand and utilize the unique physical, chemical, mechanical, and optical properties of materials that occur at this scale.

It is helping to considerably improve, even revolutionize, many technology and industry sectors: information technology, homeland security, medicine, transportation, energy, food safety, and environmental science, among many others.

We are specialists dealing with the biological synthesis of nano particles. This makes them safe, sustainable, stable and economical for use across industries.

A bank of nano particles is readily available for end use. Custom synthesis is also possible. You dream it and we can do it!

No.	Nano Particle	Size (nm)	Healthcare	Agriculture	Environment	Energy	Water
	Metals						
1	Gold (Au)	5-20	Y	Y	-	-	-
2	Silver (Ag)	5-30	Y	Y	Y	-	Y
3	Platinum (Pt)	10-30	Y	-	-	Y	Y
4	Palladium (Pd)	10-30	Y	-	-	Y	-
5	Selenium (Se)	5-40	Y	Y	-	-	-
	Non-Metals						
6	Sulfur (S)	20-25	-	Y	-	-	-
	Alloys						
7	Gold-Silver Alloy (Au-Ag)	8-20	Y	-	-	Y	-
8	Gold-Silver core shell (Au-Ag)	8-25	Y	-	-	Y	-
	Bi-Metals						
9	Gold selenide (AuSe)	30-50	Y	-	-	-	-
10	Silver selenide (AgSe)	24-50	Y	-	-	-	-
	Metal Oxide / Quantum Dots						
11	Zirconium dioxide (ZrO_2)	25	Y	Y	Y	Y	-
12	Iron Oxide (Fe_3O_4)	25-50	Y	Y	Y	-	Y

No.	Nano Particle	Size (nm)	Healthcare	Agriculture	Environment	Energy	Water
	Metal Oxide / Quantum Dots						
13	Titanium dioxide (TiO_2)	10-50	Y	Y	Y	Y	Y
14	Silica dioxide (SiO_2)	8-24	Y	Y	Y	Y	Y
15	Barium titanate ($BaTiO_3$)	10	-	-	Y	Y	-
16	Cerium oxide (CeO_2)	8-20	Y	Y	Y	Y	-
17	Gadolinium oxide (Gd_2O_3)	20-40	Y	Y	-	-	-
18	Chromium oxide (CrO_2)	5-20	-	-	Y	-	-
19	Manganese oxide (Mn_5O_8)	12-25	Y	Y	Y	Y	-
20	Aluminum oxide (Al_2O_3)	10-30	Y	Y	Y	Y	-
21	Ruthenium oxide (RuO_2)	3-4	Y	Y	Y	Y	-
22	Cobalt oxide (Co_3O_4)	5-20	Y	Y	Y	Y	-
23	Silver Oxide (Ag_2O)	5-10	Y	Y	Y	Y	Y
24	Zinc oxide (ZnO)	5-10	Y	Y	Y	Y	Y
	Metal Sulphides						
25	Cadmium sulfide (CdS)	25-40	Y	Y	-	Y	-
26	Zinc sulfide (ZnS)	10-20	Y	Y	Y	Y	Y
27	Nickel sulfide (NiS)	6-18	Y	Y	Y	Y	-
28	Manganese sulfide (MnS)	5-20	Y	Y	Y	Y	-
29	Lead sulfide (PbS)	8-16	-	Y	-	-	-
30	Bismuth sulfide (Bi_2S_3)	5-20	Y	Y	Y	Y	-

No.	Nano Particle	Size (nm)	Healthcare	Agriculture	Environment	Energy	Water
	Metal Sulphides						
31	Gold sulfide (Au_2S)	5-20	Y	Y	Y	Y	Y
32	Silver sulfide (Ag_2S)	5-10	Y	Y	Y	Y	Y
33	Copper sulfide (Cu_2S)	4-12	Y	Y	Y	Y	Y
34	Cadmium telluride (CdTe)	20-30	Y	Y	Y	Y	-
35	Cadmium selenide (CdSe)	4-20	-	-	Y	Y	-
	Biominerals						
36	Calcium Carbonate ($CaCO_3$)	10-30	Y	-	-	-	-
37	Strontium Carbonate ($SrCO_3$)	5-20	Y	-	-	-	-
38	Barium Carbonate ($BaCO_3$)	8-25	Y	-	-	-	-
39	Lead Carbonate ($PbCO_3$)	20-40	-	-	Y	-	-
40	Cadmium Carbonate ($CdCO_3$)	10-30	-	-	Y	-	-
	Carbon Nanomaterials						
41	Graphene	2	Y	Y	Y	Y	Y
42	Graphene Oxide	2-4	Y	Y	Y	Y	-
43	Porous Graphene	2-4	Y	Y	Y	Y	Y
44	Graphene Quantum Dots	2-4	Y	Y	Y	Y	Y
45	Porous Carbon	2-4	-	Y	Y	Y	Y

Healthcare: These biosynthesized nanoformulations may find applications as antibiotics, antifungals, antiviral and anti-cancer agents, cosmetics, wound healers, as a treatment against Diabetes, Malaria, Alzheimer's disease, Parkinson's disease, and in Imaging and Diagnostics (Theranostics).

Water : Desalination of water, filtration, removing toxic materials.

Energy conversion: Fuel cells, solar cells, water splitting for Hydrogen generation (green source of energy), dye-sensitized solar cells.

Energy storage: Supercapacitors, batteries. Porous Carbon has tremendous applications in Hydrogen and CO_2 storage.

Environment: Heavy metal remediation, anti-algal (defouling agent).

Agriculture: Plant growth promoters, branching enhancers, enhanced seed production, anti-nematode, anti-insect, anti-pest, with drought tolerance.