



Experts of nanoparticles

HONGWU ENTERPRISE GROUP

Company value

- *Quality and customers first***
- *Honest and trustworthy***
- *First-class service***

Company Introduction



HONGWU INTERNATIONAL GROUP LTD GUANGZHOU HONGWU MATERIAL TECHNOLOGY CO.,LTD XUZHOU HONGWU MATERIAL TECHNOLOGY CO.,LTD

History:

Since 2002, one of China's earliest nanoparticles manufacturer, nearly 20 years experience in nanoparticles material industry, experts of nanoparticles.

Location:

Sales office locates in Guangzhou, Gaungdong; Production base locates in Xuzhou, Jiangsu.

Scope of Business:

Different series of nanoparticles material, size range 10nm-20um

Element Nanoparticles

Oxide Nanoparticles

Carbon Family Nanoparticles

Compound Nanoparticles

Nanowires and whiskers

Dispersions

R&D projects and Customize service for nanoparticles material

Advantages:

Quality: ISO certificated, mature process of production and quality control, assures stable and good quality.

Product: Full product ranges, one-stop purchase of the nano powder materials you need.

Price: Factory direct offer, with fast delivery and best price.

Service: Professional export service and technician support.

R&D and customize ability:

Experienced technician team, total number of 35, including 9 PhD. With their endless efforts, together with support of our collaborated universities (like Tsinghua University, Zhejiang University, etc) and government study centers, Hongwu keeps optimize production process, and is able to operate R&D products and customize items to meet new needs of market and customers.

Dispersions are available, any R&D needs or customize needs welcome to contact us!

Aluminum nanoparticles (Al):

40nm, 70nm, 100nm; 200nm, 800nm, 99.9%; 1-3um, 99%

Boron nanoparticles (B):

100-200nm, 99%; 1-3um, 99%

Copper nanoparticles (Cu):

Nano grade: 20nm, 99%; 40nm, 70nm, 100nm, 200nm, 99.9%

Sub-micron grade: 0.3um, 0.5um, 0.8um, 99%

Micron grade: 1-2um, 5-8um, 10-20um, 99%

Bismuth nanoparticles (Bi):

80-100nm, 99.5%

Cobalt nanoparticles (Co):

50nm, 100-200nm; 1-3um, 99.9%

Iron nanoparticles (Fe):

20nm, 99%; 40nm, 70nm, 100nm, 99.9%

Germanium nanoparticles (Ge):

50nm, 100-300nm, 99.9%

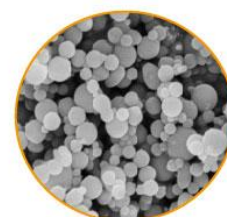
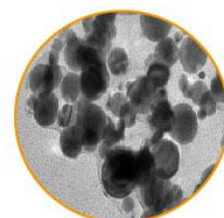
300-500nm, 500-1000nm, 1-2um, 99.9%

Molybdenum nanoparticles (Mo):

40nm, 70nm, 100nm, 200nm; 1-2um, 99.9%

Niobium nanoparticles (Nb)

40- 60nm, 60-80nm, 80-100nm, 99.9%



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Nickle nanoparticles (Ni):

20nm, 99%; 40nm, 70nm, 100nm, 99.9%

Tin nanoparticles (Sn):

70nm, 100nm, 150nm, 99.9%

Indium nanoparticles (In): 100-300nm, 99.9%

Silicon nanoparticles (Si):

Spherical: 30-50nm, 50-80nm, 80-100nm, 100-200nm, 99.9%

Irregular: 100-300nm, 300-500nm, 99.9%;

1-2um, 8-10um, 99.9%

Stainless steel 316L nanoparticles:

100nm, 150nm, 99.9%

Stainless steel 430 nanoparticles:

100nm, 99.9%

Titanium nanoparticles (Ti):

70nm, 100nm, 150nm, 99.9%; 1-3um, 10um, 99.9%

Tungsten nanoparticles (W):

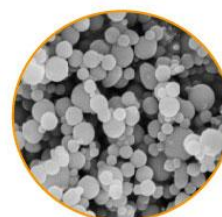
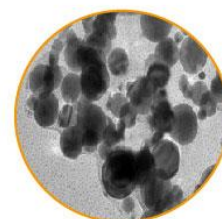
40nm, 70nm, 100nm, 150nm, 99.9%

Zinc nanoparticles (Zn):

40nm, 70nm, 100nm, 150nm, 99.9%

Zirconium nanoparticles (Zr):

1-3um, 4-5um, 99.5%



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Nano Silver Powder:

20nm, 30-50nm, 80-100nm, 99.99%

Sub-micron Silver Powder:

200nm, 500nm, 99.99%, spherical

Micron Near Spherical Silver Powder:

1-3um, 5um, 99.99%, spherical

Micron Flake Silver Powder:

1-3um, 3-5um, 5-10um, 99.99%, flake

Silver Nanowires:

D:<30nm, L:>20um, 99.9%

D:<50nm, L:>20um, 99.9%

D:<100nm, L:>10um, 99.9%

Silver Nanorod: D: about 100nm, L: 1-3um, 99.9%

Silver Coated Copper Powder:

Size:1-3um, 5-10um

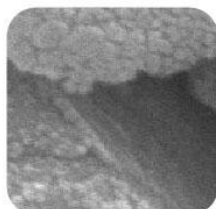
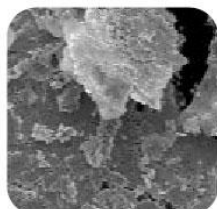
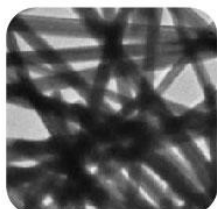
Morphology: Flake, spherical, dendritic

Silver content: 3-35%

Silver water solutions:

Colored type: 300ppm-10000ppm

Transparent type: 300ppm-50000ppm



Precious Metal Nanoparticles Nanowires and Nanotubes

Dispersions are available, any R&D needs or customize needs welcome to contact us!

Copper Nanowires (Cu):

D: 300-600nm, L: >5um, 99.9%

Silver Nanowires (Ag):

D: <30nm, L: >20um, 99.9%;

D: <50nm, L: >20um, 99.9%;

D: <100nm, L: >10um, 99.9%

Silver Nanorods (Ag): D: about 100nm, L: 1-3um, 99.9%

Silicon Carbide Nanowires: D: 100-500nm, L: 50-100um, beta, 99%

Silicon Carbide Whiskers: D: 0.1-2.5um, L: 10-50um, beta, 99%

D: 0.1-1um, L: 5-30um, beta, 99%

Silicon Nanowires (Si): D: 100-200nm, L: >10um, 99%

Zinc Oxide Nanowires (ZnO): D: ≤100nm, L: >5um, 99.9%

Zinc Oxide Nanorods (ZnO): D: 100-150nm, L: about 1um, 99.9%

Titanium Oxide Nanotubes (TiO₂):

Inner diameter: 3-5nm, outer diameter 10-15nm, length >1um,

Gold (Au): 20nm, 100nm, 99.95%

Silver (Ag):

20nm, 30-50nm, 80-100nm, 200nm, 500nm,

1-3um, 3-5um, 5-10um, 99.99%

Platinum (Pt): 20nm, 99.95%

Palladium (Pd): 20nm, 99.95%

Ruthenium (Ru): 20nm, 99.95%

Rhodium (Rh): 20nm, 99.95%

Iridium (Ir): 20nm, 99.95%

All precious metal 20nm-1um customize OK!



**ISO
9001**

Dispersions

Nano Au Water Dispersions
 $\leq 20\text{nm}$, $\leq 100\text{nm}$, $\leq 1\mu\text{m}$, etc
300-20000ppm



Nano Ag Water Dispersions
 $\leq 20\text{nm}$, $\leq 100\text{nm}$, etc,
300-10000ppm

Transparent Ag Dispersions
300-50000ppm



$\leq 20\text{nm}$,
1000-10000ppm dispersions
Pt, Pd, Ru, Rh, Ir

ISO
9001

Customize service and R&D projects are available, any needs welcome to inquiry!

Catalog of Carbon Family Nanoparticles

Dispersions are available, any R&D needs or customize needs welcome to contact us!

Carbon nanobutes (CNT):

SWCNT: D: 2nm, L: 1-2um / 5-20um, 91% / 95% / 99%

DWCNT, D: 2-5nm, L: 1-2um / 5-20um, 91% / 95% / 99%

MWCNT: D: 10-30nm / 30-60nm / 60-100nm, L: 1-2um / 5-20um, 99%

Functioned CNT: -COOH / -OH / Ni coated / Nitrogen doped

Graphene Nanoparticles:

Single layer: Thickness: 0.6-1.2nm, Length: 0.8-2um, 99%

Multi Layer: Thickness: 1.5-3.0nm, Length: 5-10um, 99%

Nanoplatelets: Particle size:1-20um,Thickness:5-25nm,99.5%

Graphene Oxide Nanoparticles:

Single layer: Thickness: 0.6-1.2nm, Length: 0.8-2um, 99%

Multi Layer: Thickness: 1.5-3.0nm, Length: 5-10um, 99%

Diamond Nanoparticles:

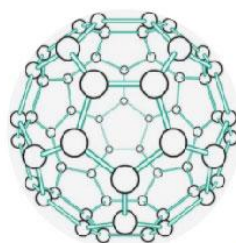
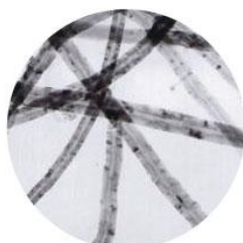
< 10nm, 10-20nm, 99%

Graphite Powder:

Flake, thickness: 40-50nm, 100-200nm, 1-2um, 99.95%

Fullerene (C60):

D:0.7nm, L:1.1nm, 99.5%



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Tin Oxide (SnO_2): 10-20nm, 30-50nm 99.99%

Silicon Dioxide (SiO_2):

10-20nm, 20-30nm, 99.8%, hydrophilic or hydrophobic

Aluminum Oxide (Al_2O_3):

Alpha: 200-300nm, 500nm, 1 μm , 99%; Gamma: 20-30nm, 99.99%

Cuprous Oxide (Cu_2O): 30-50nm, 99%

Copper Oxide (CuO): 30-50nm, 99%

Zinc Oxide (ZnO): 20-30nm, 99.8%

Ferric Oxide (Fe_2O_3): 20-30nm, 100-200nm, 99%

Ferroferric Oxide (Fe_3O_4): 30-50nm, 100-200nm, 99%

Magnesium Oxide (MgO): 30-50nm, 99.9%

Nickel Oxide (Ni_2O_3): 20-30nm, 99.9%

Antimony Doped Tin Oxide (ATO):

$\text{SnO}_2:\text{Sb}_2\text{O}_3=90:10$, $\leq 10\text{nm}$, 20-40nm, $< 100\text{nm}$, 99.9%

Titanium Dioxide (TiO_2):

Anatase: 10nm, 30-50nm, 99%;

Rutile: 10nm, 30-50nm, 100-200nm, 99%

Vanadium Oxide (VO_2): 100-200nm, 99.9%

Tungsten doped VO_2 : 5-6 μm , 1%, 1.5%, 2% W , 99.9%



Catalog of Oxide Nanoparticles

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Cesium Tungsten Bronze ($\text{Cs}_0.33\text{WO}_3$): 100-200nm, 99.9%



Tungsten Oxide:

WO_3 , 50nm, 99.9%, yellow;

$\text{WO}_{2.9}$ 80-100nm, 99.9%, blue; $\text{WO}_{2.72}$ 80-100nm, 99.9%, purple

Zirconium Oxide (ZrO_2): 80-100nm, 0.3-0.5 μm , 99.9%

Yttria Stabilized Zirconium Oxide:

ZrO_2 -3Y, 80-100nm, 94.7%;

ZrO_2 -5Y, 80-100nm, 91.5%;

ZrO_2 -8Y, 80-100nm, 86.5%

Cobalt Oxide (Co_3O_4): 100-200nm, 99%

Indium Tin Oxide (ITO):

In_2O_3 : SnO_2 =9:1, 50nm, 99.99%, yellow / blue

Aluminum Doped Zinc Oxide (AZO):

30nm, 99.9%, ZnO : Al_2O_3 =99:1

Indium Oxide (In_2O_3): 50nm, 99.99%

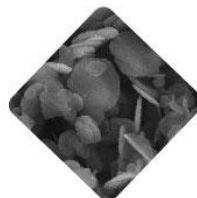
Antimony Trioxide (Sb_2O_3): 20-30nm, 99.5%

Bismuth Oxide (Bi_2O_3): 30-50nm, 99.9%

Yttrium Oxide (Y_2O_3): 30-50nm, 99.9%

Tantalum Oxide (Ta_2O_5): 100-200nm, 99.9%





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Catalog of Compound Nanoparticles

Tungsten Carbide (WC): 100-200nm, 1um, 99.9%

Tungsten Carbide Cobalt (WC-Co):

Co content 6% / 10% / 12% /17% etc, 80-100nm, 99.9%

Boron Carbide (B₄C): 500nm, 1-3um, 99%

Boron Nitride (BN):

100-200nm, 99.8%; 0.8um, 99%; 1-2um, 5um, 99%

Silicon Nitride (Si₃N₄):

100nm, 0.3-0.5um, 0.6-0.8um, 0.8-1um, 2um, 99.9%

Titanium Nitride (TiN): 30-50nm, 100-200nm, 99.5%

Barium Titanate (BaTiO₃):

Cubic: 50nm, 100nm, 99.9%; Tetragonal: 300-400nm, 99.9%

Titanium Diboride (TiB₂): 100-300nm, 1-3um, 3-8um, 99.9%

Zirconium Diboride (ZrB₂): 100-200nm, 5-6um, 99.9%

Titanium Carbide (TiC):

40-60nm, 100-200nm, 300-500nm, 99%; 1-3um, 99.5%

Aluminum Nitride (AlN):

100nm-200nm, 1-2um, 5-10um, 99.5%

Silicon Carbide (SiC-β):

50nm, 99%; 200-300nm, 0.5um, 99%;

1-3um, 5-15um, 99%

