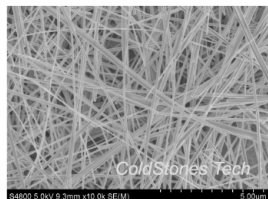


Silver Nanowires

Product No: CST-NW-S40/70/90/120/250/400nm + Customized

Technical Data Sheet

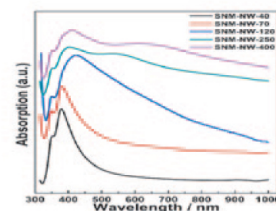
Product Description



Silver nanowire is a kind of grayish powder and can be dispersed in different solvents (such as water, ethanol, isopropanol) to generate colloidal suspensions. The diameters are controllable at nanometer scale, typically from about ten to several hundred nanometers and lengths up to tens of microns depending on the preparation conditions.

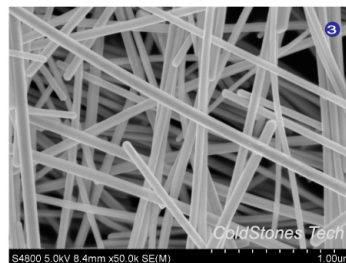
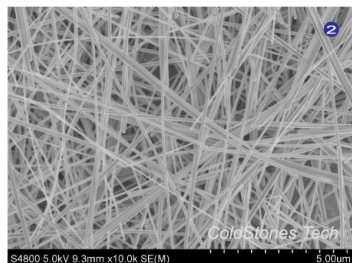
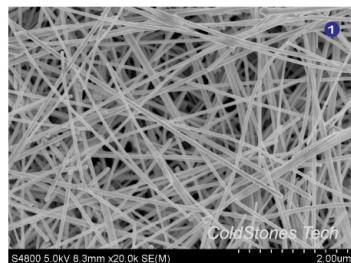
Optical Property

Silver nanowires possess specific optical properties in near ultraviolet to near infrared region. Due to their unique quasi-one-dimensional nanostructure, silver nanowires possess a characteristic shoulder-peak around 350 nm. And as the diameter increases, there is slightly red-shift for the main absorption peak.



Specification

Properties	Unit	Value	Method of Measurement
CST-NW-S40			
Diameter	nm	40±10	SEM / TEM
Average Diameter	nm	40	
Length	µm	35±5	SEM / TEM
Purity		>99.5%	Elemental Analysis
Molecular Weight		108	
Appearance		Gray suspension	Dispersed in solvent
CST-NW-S70			
Diameter	nm	70±10	SEM / TEM
Average Diameter	nm	70	
Length	µm	40±5	SEM / TEM
Purity		>99.5%	Elemental Analysis
Molecular Weight		108	
Appearance		Gray suspension	Dispersed in solvent
CST-NW-S90			
Diameter	nm	90±10	SEM / TEM
Average Diameter	nm	90	
Length	µm	40±5	SEM / TEM
Purity		>99.5%	Elemental Analysis
Molecular Weight		108	
Appearance		Gray suspension	Dispersed in solvent
CST-NW-S120			
Diameter	nm	120±20	SEM / TEM
Average Diameter	nm	120	
Length	µm	80±10	SEM / TEM
Purity		>99.5%	Elemental Analysis
Molecular Weight		108	
Appearance		Gray suspension	Dispersed in solvent
CST-NW-S250			
Diameter	nm	250±50	SEM / TEM
Average Diameter	nm	250	
Length	µm	120±10	SEM / TEM
Purity		>99.5%	Elemental Analysis
Molecular Weight		108	
Appearance		Gray suspension	Dispersed in solvent
CST-NW-S400			
Diameter	nm	400±100	SEM / TEM
Average Diameter	nm	400	
Length	µm	150±10	SEM / TEM
Purity		>99.5%	Elemental Analysis
Molecular Weight		108	
Appearance		Gray suspension	Dispersed in solvent



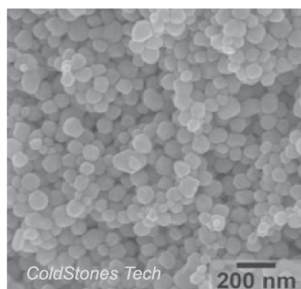
- 1 SEM image of CST-NW-S40
- 2 SEM image of CST-NW-S120
- 3 SEM image of CST-NW-S70

Silver Nanoparticles

Product No: CST-NP-S2/4/7/10/20/50/80/100/150/200nm+ Customized

Technical Data Sheet

Product Description



Silver nanoparticles appear in various kinds of color powders depending on their morphology and sizes, and they can be dispersed in different solvents (such as water, ethanol, isopropanol) to generate colloidal suspensions. Their sizes are controllable at relative wide range in nanometer scale, typically from about 2 nm to several hundred nanometers.

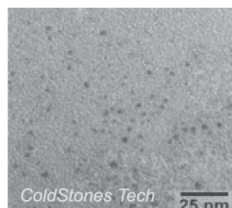
Silver is a metallic chemical element with the chemical symbol Ag (Latin: argentum) and atomic number 47. A soft, white, lustrous transition metal, Ag has the highest electrical conductivity and the highest thermal conductivity of any metal. The metal occurs naturally in its pure, free form (native silver), or as an alloy with gold and other metals, or in minerals such as argentite and chlorargyrite.

Coldstones is backed by a large group of experts in the field of nanoscale science and technology. Its most advanced nano-manufacturing and nano-fabrication technologies ensure the highest quality products in this field. The provided silver nanoparticles are highly monodispersed in size, shape, with superior batch to batch uniformity. We are also proud to offer customized services to address client-specific needs.

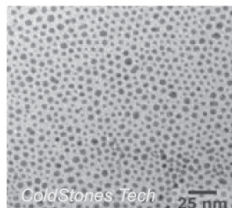
Specification

Properties	Unit	Value	Method of Measurement
CST-NP-S2			
Diameter	nm	2±0.5	SEM / TEM
Average Diameter	nm	2	
Purity		>99.5%	Elemental Analysis
Molecular Weight		108	
Appearance		Light yellow suspension	Dispersed in solvent
CST-NP-S4			
Diameter	nm	4±1	SEM / TEM
Average Diameter	nm	4	
Purity		>99.5%	Elemental Analysis
Molecular Weight		108	
Appearance		Light yellow suspension	Dispersed in solvent
CST-NP-S7			
Diameter	nm	7±2	SEM / TEM
Average Diameter	nm	7	
Purity		>99.5%	Elemental Analysis
Molecular Weight		108	
Appearance		Light yellow suspension	Dispersed in solvent
CST-NP-S10			
Diameter	nm	10±2	SEM / TEM
Average Diameter	nm	10	
Purity		>99.5%	Elemental Analysis
Molecular Weight		108	
Appearance		Light yellow suspension	Dispersed in solvent
CST-NP-S20			
Diameter	nm	20±3	SEM / TEM
Average Diameter	nm	20	
Purity		>99.5%	Elemental Analysis
Molecular Weight		108	
Appearance		Light yellow suspension	Dispersed in solvent
CST-NP-S50			
Diameter	nm	50±5	SEM / TEM
Average Diameter	nm	50	
Purity		>99.5%	Elemental Analysis
Molecular Weight		108	
Appearance		Yellow suspension	Dispersed in solvent

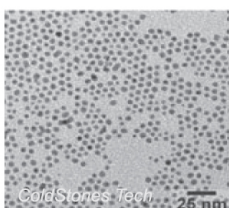
CST-NP-S100			
Diameter	nm	100±10	SEM / TEM
Average Diameter	nm	100	
Purity		>99.5%	Elemental Analysis
Molecular Weight		108	
Appearance		Grayish yellow suspension	Dispersed in solvent
CST-NP-S150			
Diameter	nm	150±10	SEM / TEM
Average Diameter	nm	150	
Purity		>99.5%	Elemental Analysis
Molecular Weight		108	
Appearance		Grayish yellow suspension	Dispersed in solvent



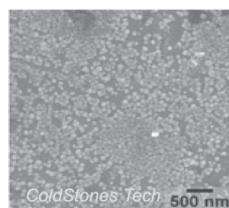
TEM image of CST-NP-S2



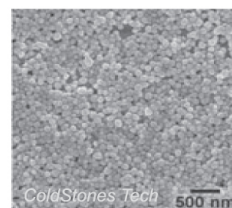
TEM image of CST-NP-S4



TEM image of CST-NP-S7



TEM image of CST-NP-S50



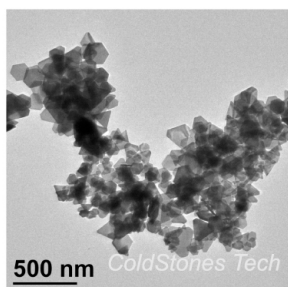
SEM image of CST-NP-S100

Silver Nanoflakes

Product No: CST-NF-S20/40/80/100/150/400nm + Customized

Technical Data Sheet

Product Description



Silver nanoflakes possess a series of appear as a kind of grayish powder and can be dispersed in different solvents (such as water, ethanol, isopropanol) to generate colloidal suspensions. Their edge length is controllable at nanometer scale, typically from about 20 nm to several micrometers. Their thickness can reach 10 to 80 nm depending on the preparation conditions.

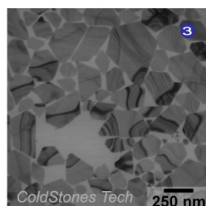
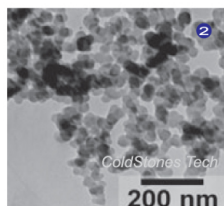
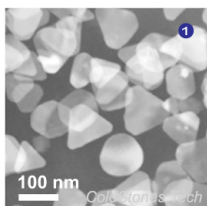
Silver is a metallic chemical element with the chemical symbol Ag (Latin: argentum) and atomic number 47. A soft, white, lustrous transition metal, Ag has the highest electrical conductivity and the highest thermal conductivity of any metal. The metal occurs naturally in its pure, free form (native silver), or as an alloy with gold and other metals, or in minerals such as argentite and chlorargyrite.

Coldstones is backed by a large group of experts in the field of nanoscale science and technology. Its most advanced nano-manufacturing and nano-fabrication technologies ensure the highest quality products in this field. The provided silver nanoflakes are highly monodispersed in size, shape, with superior batch to batch uniformity. We are also proud to offer customized services to address client-specific needs.

Specification

Properties	Unit	Value	Method of Measurement
CST-NF-S20			
Edge length	nm	20±5	SEM / TEM
Average Edge length	nm	20	
Purity		>99.5%	Elemental Analysis
Molecular Weight		108	
Appearance		Light blue suspension	Dispersed in solvent
CST-NF-S40			
Edge length	nm	40±10	SEM / TEM
Average Edge length	nm	40	
Purity		>99.5%	Elemental Analysis
Molecular Weight		108	
Appearance		Green suspension	Dispersed in solvent
CST-NF-S80			
Edge length	nm	80±10	SEM / TEM
Average Edge length	nm	80	
Purity		>99.5%	Elemental Analysis
Molecular Weight		108	
Appearance		Aubergine suspension	Dispersed in solvent

CST-NF-S150			
Edge length	nm	150±10	SEM / TEM
Average Edge length	nm	150	
Purity		>99.5%	Elemental Analysis
Molecular Weight		108	
Appearance		Reddish suspension	Dispersed in solvent
CST-NF-S400			
Edge length	nm	400±100	SEM / TEM
Average Edge length	nm	400	
Purity		>99.5%	Elemental Analysis
Molecular Weight		108	
Appearance		Blue suspension	Dispersed in solvent



- ① SEM image of CST-NF-S150
- ② TEM image of CST-NF-S40
- ③ TEM image of CST-NF-S400

■ Product Application

Optical Applications
Solar cells (crystalline silicon, thin film on glass & PET)
Medical imaging
Optical limiters
Surface plasmonic devices
Surface enhanced spectroscopy
Conductive Applications
High-intensity LEDs
Conductive adhesives,Conductive ink
Touch screens (Transparent conductive film)
LCDs
Anti-microbial Applications
Air & water purification
Films
Food preservation
Chemical & Thermal Applications
Catalysts
Chemical vapor sensors

■ Packaging

Generally nano-silver products are dispersed in solution (water, ethanol, isopropanol, etc.). They can also be provided as dry powders. The package is available in bottles with different sizes according to the request of the customers.

■ Transportation

All orders come with a data sheet describing the quality of the specific batch, as well as those key information required by the customers. Standard sizes are in stock. Special order sizes will be shipped in two weeks or less. All shipments are sent via express delivery (Fedex, UPS, EMS, et al.).

■ Precautions

As our products are made for professional users, who should be aware of the chemical or biological states of the products, and the use conditions for specific purposes. Customers are advised to refer to MSDS and/or discuss with our customer service for proper handling.

■ Storage

Stable storage at 4~45°C. Long time storage may cause slight aggregation and precipitation of the nanowires. Ultrasound vibration can effectively re-suspend the possible sedimentation back to a homogenized state. Please refer to the Safety Data Sheet for further information on the safety storage , use and handling of the products. This information should be thoroughly reviewed prior to acceptance of the products.



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