

NS6130-12-000158

Silicon nanowire On Silicon Wafer Substrate

Quick Facts

Stock No	:	NS6130-12-000158
CAS	:	7440-21-3
Molecular Formula	:	Si
Diameter	:	40-50nm
Length	:	80µm

Purity
>99.9%

Silicon nanowires, also referred to as SiNWs, are a type of semiconductor nanowire most often formed from a silicon precursor by etching of a solid or through catalyzed growth from a vapor or liquid phase. Such nanowires have promising applications in lithium ion batteries, thermoelectrics and sensors..

SiNWs have unique properties that are not seen in bulk (three-dimensional) silicon materials. These properties arise from an unusual quasi one-dimensional electronic structure and are the subject of research across numerous disciplines and applications. The reason that SiNWs are considered one of the most important one-dimensional materials is they could have a function as building blocks for nanoscale electronics assembled without the need for complex and costly fabrication facilities. SiNWs are frequently studied towards applications including photovoltaics, nanowire batteries, thermoelectrics and non-volatile memory

Applications:

- Owing to their unique physical and chemical properties, silicon nanowires are a promising candidate for a wide range of applications that draw on their unique physico-chemical characteristics, which differ from those of bulk silicon material.
- SiNWs exhibit charge trapping behavior which renders such systems of value in applications necessitating electron hole separation such as photovoltaics, and photocatalysts. Recent experiment on nanowire solar cells has led to a remarkable improvement of the power conversion efficiency of SiNW solar cells from <1% to >17% in the last few years.
- Charge trapping behaviour and tuneable surface governed transport properties of SiNWs render this category of nanostructures of interest towards use as metal insulator semiconductors and field effect transistors,[6] with further applications as nanoelectronic storage devices, in flash memory, logic devices as well as chemical and biological sensors



Si



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