

納米材料及納米應用產品
Nanomaterials and nano enabled products

Nanotechnology in Energy and Environmental
納米技術 - 能量和環境

Energy 能量

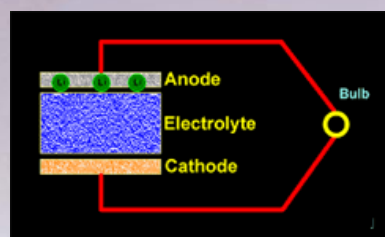
Energy Storage Devices 能量儲存器

Buckytubes by Carbon Nanotechnologies Inc. are polymers of pure carbon. They have high surface area (~1000m²/g), good electrical conductivity and their linear geometry makes their surface highly accessible to the electrolyte. Their modular perfection endows them to be the desired materials used as electrodes in batteries and capacitors.

Carbon Nanotechnologies Inc. 製造之 Buckytubes 為碳聚合物，擁有巨大的表面面積(~1000m²/g)和良好導電性，其線狀幾何使它的表面更易接觸電解質，是作為電池和電容器內電極之理想材料。



Lithium-ion Batteries
Source: Panasonic Corp.

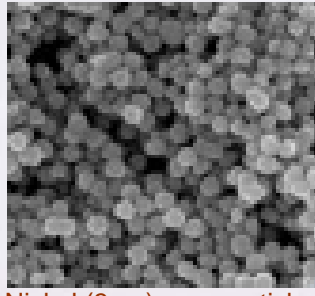


QuantumSphere Inc. manufactures metallic nanopowders, which is used to make anode materials for power supplies and automotive batteries. Small particles increase the rate capability of the anode, resulting in faster energy charge and discharge.

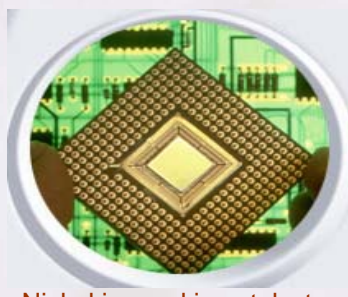
QuantumSphere Inc. 生產納米金屬粉作為供電器和汽車電池中電極的材料。納米粉末增加了電極運作的性能，加快充電和放電效率。



QSI-Nano™ Nickel



Nickel (3nm) nanoparticles
Source: QSI



Nickel is used in catalysts, batteries, fuel cells, and capacitors
Source: QSI



Batteries for portable electronic devices
Source: Toshiba Corp.

Solar Photovoltaics 太陽電池板

Semiconductor nanocrystals are produced by combining conductive polymers to create ultra high performance solar cells.

半導體納米的結晶體與導電聚合物結合產生 高性能的太陽能電池。



Solar (PV) Panel
Source: SolarCentury

Environmental 環境

Air treatment 空氣處理

Poor air quality could lead to several health problems such as:

惡劣的空氣質量會導致不同健康問題例如:

- Chronic allergenic effect 慢性疾病
- Sick building syndrome 病態樓宇綜合症



Application of nanocatalyst in air treatment

1. Platinum nanoparticles enhances catalytic reactivity of catalytic converters in automobiles.
白金納米粉末增加汽車內催化器的性能。

2. A thin silicon organic compounds made film reduces greenhouse gases on a nanoporous alumina substrate filters.
空氣淨化器內的過濾器上加一層含有矽的有機化合物的薄膜，可以減低溫室氣體之含量。



Source: Berkeley Lab

Water and Wastewater Treatment 水和污水處理

Iron treatment walls

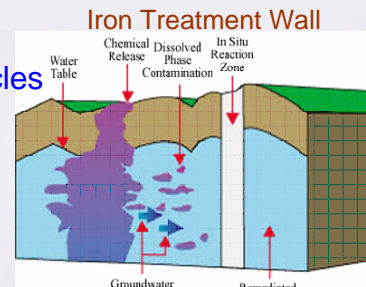
經過納米處理鐵牆

- Metal oxide nanoparticles utilize sunlight to break down organic pollutants in groundwater treatment.
納米氧化金屬粉末利用陽光以作分解地下水中的有機污染物。

Gold and palladium nanoparticles

金和鈀的納米粉末

- Remediate with organic pollutants in ground water.
利用金和鈀的納米粉末分解地下水中的有機污染物。



Source: U.S. Environmental Protection Agency.

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納米科技推動可持續發展的知識型經濟 NanoTech: for a knowledge-based sustainable economy