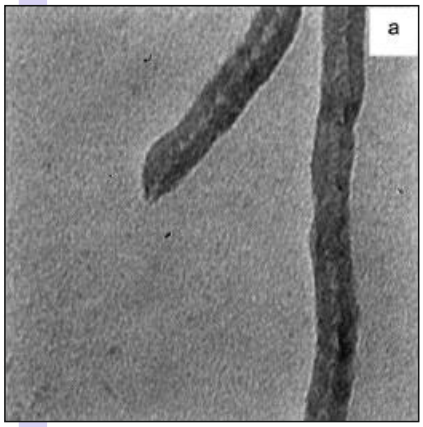
Carbon Structure Nanotechnology Co.

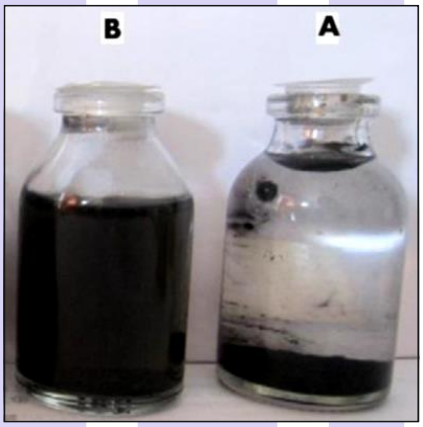
Amine-functionalized Carbon Nanotubes

Properties:

Function type	*Amine (NH_2)*
Material state	*Powder / Suspension in water*
Purity	*≤95%*



Almost intact structure of CNTs after amine functionalization (our product)



(a) Pristine CNTs (b) Amine-functionalized CNTs in water (our products)

Applications:

Polymer composites with electrical conductivity and enhanced mechanical properties:

Dispersion of amine-functionalized CNTs in the polymer matrix could result in a significant enhancement in electrical conductivity and mechanical strength.

Reduced flammability of the polymers:

The high thermal conductivity of CNTs could hinder evolving hot spots and consequently reduce the flammability of the polymers, provided that the CNTs has been dispersed uniformly in the polymer matrix via amine groups.

Electrostatic painting of polymers:

Dispersion of CNT in the polymers could increase the electrical conductivity which is essential for uniform electrostatic painting of polymers.

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More inexpensive and more effective nano drugs:
Very high aspect ratio of the CNTs could assist in preferably entrance in cancer cells which is essential for a desired drug delivery.

Nano fluids capable of the rapid heat transfer:
The amine-functionalized CNTs in the water provide the water with the ability of rapid capture and release of heat from and to the intended surfaces.

Bio and chemo sensors with higher sensitivity:
Very high aspect ratio, electrical conductivity and surface area of the CNTs could cause an increase in the signal to noise ratio, provided that the CNTs has been dispersed uniformly in the sensor's tissue.

Recoverable scavengers:
Although the amine-functionalized CNTs can be disperse uniformly in the water, but they can't pass the many common filters. So, they can be utilized for successive absorption of some desired materials from a certain reaction or biological medium.

Increasing the strength and biocompatibility of the cell tissues:
Perhaps the most important issue in the tissue engineering (and also prosthetic organs implants) is the lack of necessary mechanical strength. CNTs can help in reinforcing them in some different procedures.

Increasing the strength and the ion mobility across the proton exchange membranes e.g. fuel cell:
The CNTs' internal and external surfaces are the ideal channels for the fast moving of the protons and some special gases. Furthermore, the CNTs can increase the membrane's mechanical strength.

Higher capacity and charge rate in the fuel cells and batteries:
High surface area and electrical conductivity of CNTs, have made them candidate and ideal for diverse electrochemical applications, instead of traditional carbon black.

Inexpensive conductive concrete:
The addition of just few percent of dispersible CNTs in the concrete, could make them almost conductive. The conductive concrete has some well-known applications in the earthing systems and snow melting.

Cost effective artificial muscles:
The high surface area and electrical conductivity of CNTs can be used for fabricating the artificial muscle, which is usually made of expensive platinum nanoparticles.

Water disinfection filters:

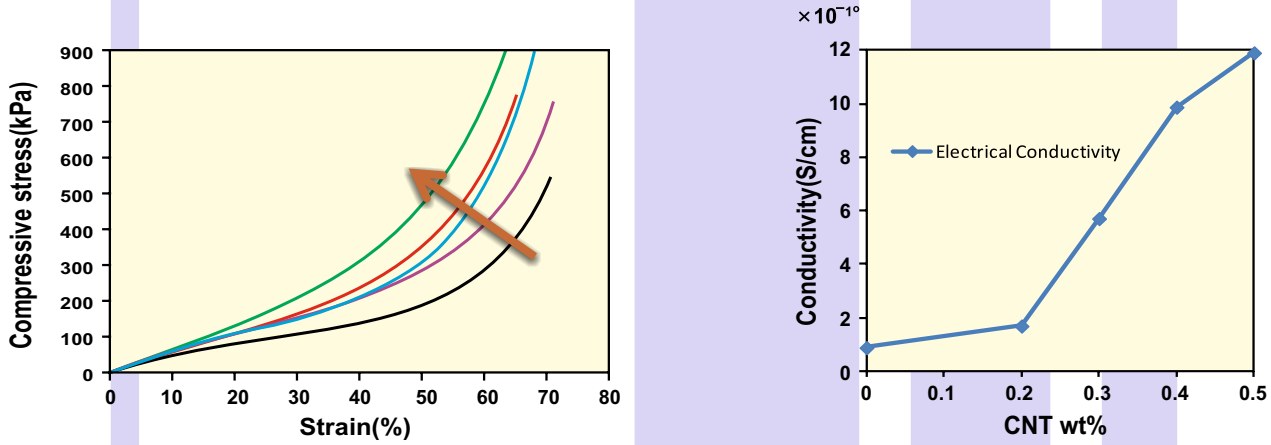
The CNTs have a good ability to adsorb water and aerobic bacteria on their surfaces.

Strong and conductive textile yarns:

High electrical conductivity, strength and aspect ratio of CNTs could assist in fabricating strong, conductive and flexible textile yarns. These yarns may be used in the heating blankets and wearable electronics (smart clothes).

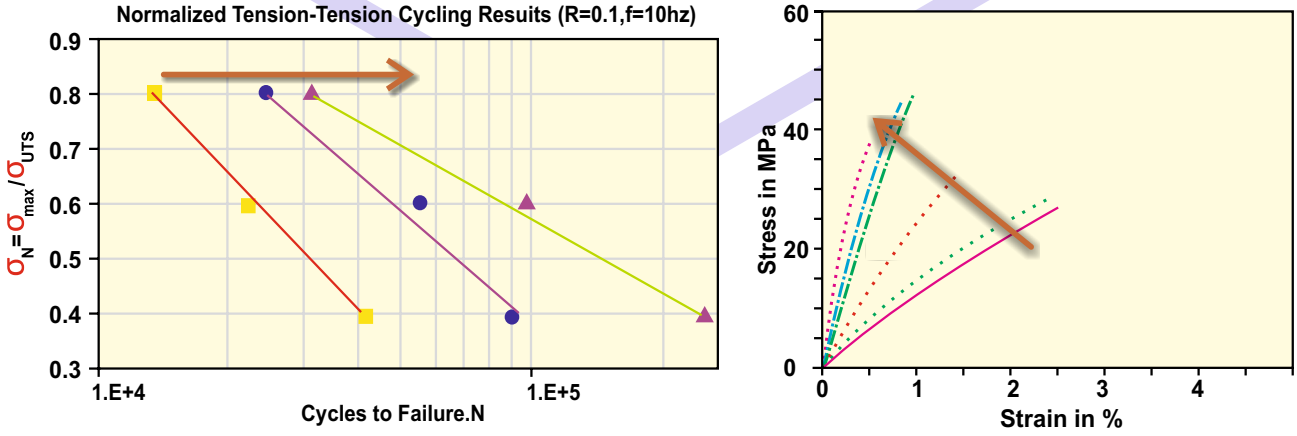
Some demonstration of our products

The electrical conductivity and compressive strength of foams:



The electrical conductivity and compressive strength of the CNT/PU nanocomposite foam increasing in the wt.% of functionalized CNTs (our product)

Polymer matrix nanocomposites (strength and the fatigue life)



The tensile strength and the fatigue life of polymer nanocomposite Increasing in the wt.% of functionalized CNTs (our product)

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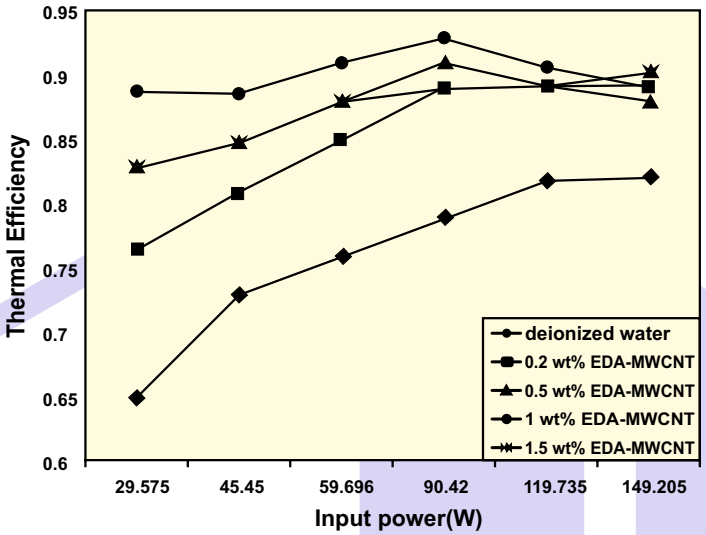
Nano fluids



The thermal efficiency of the Heat transfer of nano fluids Increasing in the wt.% of functionalized CNTs (our product)

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