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Editorial

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Impacts on Energy Transmission using Nanotechnology

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Editorial Note

Nanoscale materials (or nanomaterials) are materials that contain nanoparticles or are made with nanotechnology. Materials with at least one dimension of less than 100 nm are generally referred to as nanoparticles. Nanoparticles may be categorized based on their origin They can occur naturally (e.g., as a result of volcanic eruptions) or as a result of other processes. Carbon atoms can also join together to form spherical nanostructures that can be coated or filled with atoms; these "buckyball" fullerenes are used in mechanical and semiconductor applications. Nanodots, also known as quantum dots, are nanoscale semiconductor crystals with electrical and optical properties that could boost lighting and solar collection performance. The "armchair" CNT is one form of CNT that has the potential to have a major effect on electrical conductivity and transmission. Armchair carbon nanotubes are 30 to 100 times stronger than steel, conduct heat better than diamond, and conduct electricity better than any other molecule discovered to date CNTs have been compared to modern miracle polymers by some researchers. Nobel Laureate Richard Smalley, who discovered fullerenes in 1985, described the potential of the armchair nanotube as In the same way as a photon of light travels down a single-mode optic fiber, electrons fly down this tube as a coherent quantum particle. A single armchair tube can hold up to 20 microamps of current. This can not seem like much when you consider that the diameter of this tiny molecular wire is just 1 nanometer. A half-inch-thick cable made of these tubes aligned parallel to one another along the length of the track will be capable of carrying 100 million amps of current. Fabricating such a cable — we call it the "armchair quantum" — is a challenging process. “wire” — is a primary aim of our work. Nanoparticles and nanomanufacturing techniques can have a long-term effect on the production and usage of energy transmission systems. Nanotechnologies, for example, could improve the efficiency of transportation fuels, potentially slowing the rise in demand for long-distance liquid fuel transportation. Energy-related technologies in which nanotechnology may play a role include

Lighting

Nanocrystals, also known as quantum dots, are best known for their ability to emit various wavelengths of light depending on the size of the individual crystals. In 2005, Vanderbilt University researchers coated an LED with a thin layer of quantum dots, resulting in a hybrid LED that emitted soft, white light similar to an incandescent lamp. The result has consequences for developing nanotechnology to generate light for residential, commercial, and industrial applications without the heat that leads to the incandescent light bulb's low energy efficiency.

Heating

Nanotechnology can speed up the production of energy-efficient central heating systems. CNTs disperse into a nanofluid when combined with water. Using carbon nanotubes, researchers created nanofluids with four times the rate of forced convective heat transfer than the standard. Nanofluids applied to a home's commercial water boiler could improve the central heating system's efficiency by 10%.

Power Chips

Numerous nanotechnology applications are expected to emerge over the next 20 years, but one example shows the possible effect of nanotechnology on energy generation and, as a result, the future need for energy ROWs. Power Chips are nanotechnology devices that transform heat directly into electricity using thermionics

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