FOREIGN EXPERIENCE

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THE LATEST FOREIGN ACHIEVEMENTS IN THE AREA OF NANOTECHNOLOGIES AND NANOMATERIALS. Part 1

This is a brief review of the latest world nanotechnological developments, which considerably improve quality of materials, products and structures (growth of carbon nanotubes using ambient air without toxic ammonia; nanocrystals for the development of new materials with a wide range of application; lightweight construction materials of highest stability).

Key words: carbon nanotubes, nanocrystals, microstructured lightweight construction materials.

Researchers grow carbon nanofibers using ambient air, without toxic ammonia

Materials science researchers have demonstrated [1] that vertically aligned carbon nanofibers can be manufactured using ambient air, making the manufacturing process safer and less expensive. Vertically aligned carbon nanofibers hold promise for use in gene-delivery tools, sensors, batteries and other technologies.

Cellulose nanocrystals possible «green» wonder material

The same tiny cellulose crystals that give trees and plants their high strength, light weight and resilience, have now been shown to have the stiffness of steel [2]. The nanocrystals might be used to create a new class of biomaterials with wide-ranging applications, such as strengthening construction materials and automotive components.

Lightweight construction materials of highest stability

Researchers have developed microstructured lightweight construction materials of highest stability. Although their density is below that of water, their stability relative to their weight exceeds that of massive materials, such as high-performance steel or aluminum. The lightweight construction materials are inspired by the framework structure of bones and the shell structure of the bees' honeycombs.

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