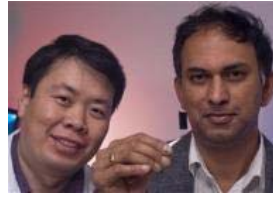


New material pushes the boundary of blackness

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THREE-FOLD BLACKNESS

The researchers are seeking a world's darkest material designation by Guinness World Records. But their work will likely yield more than just bragging rights.

Ajayan said the material could be used in solar energy conversion. "You could think of a material that basically collects all the light that falls into it," he said.

It could also be used in infrared detection or astronomical observation.

THREE-FOLD BLACKNESS

Ajayan, who worked with a team at Rensselaer Polytechnic Institute in Troy, New York, said the material gets its blackness from three things.

It is composed of carbon nano-tubes, tiny tubes of tightly rolled carbon that are 400 hundred times smaller than the diameter of a strand of hair. The carbon helps absorb some of the light.

These tubes are standing on end, much like a patch of grass. This arrangement traps light in the tiny gaps between the "blades."

The researchers have also made the surface of this carbon nano-tube carpet irregular and rough to cut down on reflectivity.

"Such a nano-tube array not only reflects light weakly, but also absorbs light strongly," said Shawn-Yu Lin, a professor of physics at Rensselaer, who helped make the substance.

The researchers have tested the material on visible light only. Now they want to see how it fares against infrared and ultraviolet light, and other wavelengths such as radiation used in communications systems.

"If you could make materials that would block these radiations, it could have serious applications for stealth and defense," Ajayan said.

The work was released online last week and will be published in an upcoming issue of the journal Nano Letters. The Indian-born Ajayan holds the 2006 Guinness World Record as co-inventor of the smallest brush in the world.

(Editing by Maggie Fox and Xavier Briand)

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