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Nanotubes used as semiconductor material

CHAMPAIGN, Ill., March 26 (UPI) -- U.S. researchers have developed a method of using dense arrays of aligned and linear nanotubes as thin-film semiconductor material.

Despite the attractive electrical properties and physical features of single-walled carbon nanotubes, incorporating them into scalable integrated circuits has proven to be a challenge because of difficulties in manipulating and positioning the molecular scale objects and in achieving sufficient current outputs.

Now, researchers at the University of Illinois, Lehigh University and Purdue University have found a way to use such arrays for integration into electronic devices.

The scientists report nanotube arrays can be transferred to plastic and other unusual substrates for applications such as flexible displays, structural health monitors and heads-up displays. The arrays also can be used to enhance the performance of devices built with conventional silicon-based chip technology.

"The aligned arrays represent an important step toward large-scale integrated nanotube electronics," said University of Illinois Professor John Rogers, corresponding author of a paper detailing the research.

The paper has been accepted for publication in the journal Nature Nanotechnology and is posted on its Web site.

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