

Novel method to make nanomaterials discovered

February 24 2012

Researchers at the NanoScience Center of the University of Jyväskylä, Finland, and at Harvard University, have discovered a novel way to make nanomaterials. Using computer simulations, the researchers have been able to predict that long and narrow graphene nanoribbons can be rolled into carbon nanotubes by means of twisting. The research has received funding from the Academy of Finland.

The basic idea is simple and easily explained: just twist the ends of a strap on your backpack and watch what happens. Being classical in origin, the [mechanism](#) is robust and valid on the macro-, micro- and nanoscale.

The mechanism also enables experimental control, which has earlier been impossible. The mechanism can be used to make various kinds of novel [carbon](#) nanotubes, to encapsulate molecules inside the tubes, or to make tubules from ribbons made out of other planar nanomaterials.

For the past twenty years, carbon nanotubes have been described as "rolled-up graphenes", even though no-one ever really did the rolling. Today, nanotubes, along with many other [nanomaterials](#), are made by atom-by-atom growth.

The results were published in *Physical Review B*. Besides being granted the status "Editor's Suggestion", the research was also highlighted in the esteemed *Physics* special journal of the American Physical Society. The research used the computer resources of the Finnish IT Centre for

Science (CSC), based in Espoo.

More information: O.O. Kit, T. Tallinen, L. Mahadevan J. Timonen, P. Koskinen. "Twisting Graphene Nanoribbons into Carbon Nanotubes". *Physical Review B*. 85, 085428 (2012)
prb.aps.org/abstract/PRB/v85/i8/e085428

Provided by Academy of Finland

Citation: Novel method to make nanomaterials discovered (2012, February 24) retrieved 20 March 2024 from <https://phys.org/news/2012-02-method-nanomaterials.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--