Green jobs. Be ready. UMUC

Advanced Search FPO

Pollution and Waste Treatment Solutions for Environmental Professionals Contact the Editor: L.K. Williams Login | Register

Home News Community Resources Features Subscribe Advertising / Services Contact Us

Hot Topics
Air
Water
Waste
Global Climate Change
Energy
Sustainability
Ecosystems & Ecology
Industry
Directories
Products by Category
Products by Company
Environment Industry Directory
Industry Links
Water Industry Directory

Water Quality Specialist
ARGUS-HAZCO
argus-hazco.com

Illinois Chemists Use Nanodroplets of Water to Shape Graphene

Dec 18, 2009

Chemists at the University of Illinois at Chicago (UIC) say molding graphene into desired shapes is possible using only a nanodroplet of water.

"Up until now, it wasn't thought we could controllably fold these structures," said Petr Král, assistant professor of chemistry at UIC. "But now we know how to shape graphene by using weak forces between nanodroplets carefully positioned on graphene sheets."

Král and two of his graduate students described the process in a recent article in *Nano Letters*, which is highlighted in *Nature's* "news and views" section on Dec. 17.

Engineers already cut graphene into narrow ribbons and other shapes, expanding the set of carboneous systems such as fullerenes, carbon nanotubes and nano-diamonds. Using computer simulations, Král showed that weak molecular interactions called van der Waals forces between water nanodroplets and graphene can shape it into a wide variety of forms, without the water and graphene chemically binding.

Environmental portfolio
Siemens provides answers for a sustainable future
www.siemens.com/answers
Flood & Water Management
Use DoorDam Products To Manage Flood Water Efficiently. Visit Us!
www.DoorDam.com
Illinois Business Schools
Apply to Argosy University Now - Prepare for Career Advancement.
www.argosy.edu
Carbon Nanotubes
High quality, low cost single-wall (SWCNT) & multi-walled (MWCNTs)
www.helixmaterial.com
Ads by Google

"Depending on the size of the water droplet and the shape and size of graphene flake used, we can fold it in different shapes for various applications," said Král. "It's similar to the way proteins are folded in biological cells with the help of chaperone proteins."

Král and his students discovered they could use water droplets to roll, bend, slide and shape graphene into different complex structures such as capsules, sandwiches, knots and rings –- all potential building blocks of nanodevices with unique mechanical, electrical or optical properties. By using special techniques like atomic force microscopy and carefully guided microscopic needles, water droplets and other materials can be carefully positioned on graphene to shape it into desired forms, he says.

The article was co-authored by Niladri Patra, a UIC chemistry doctoral student and first author on the paper, and former UIC doctoral student Boyang Wang, now a post-doctoral fellow at Northwestern University.

Král's research is supported by the National Science Foundation.

Printable Format E-Mail this page

Comments

Add your Comment
Your Name: (optional)
Your Email: (optional)
Your Location: (optional)
Comment:

Committed To Cleaner Air.
ANGUIL Environmental Systems, Inc.

Oxidizers: Regenerative, Recuperative & Catalytic

Please type the letters/numbers you see above

Submit

Related Articles

Satellites Help Track Stream Flow of Dungeness River 12/24/2009
South Dakota State Builds a Better Scope for Solar 01/01/2010
Phoenix Awards GAC Contract to Calgon Carbon 12/21/2009
AWWA Calls for Technology Conference Papers 12/17/2009
Settlements Bring Funds for Old Southington Landfill Cleanup 12/16/2009

Blogs

Inalienable Water Rights

Whitepapers

Flu Pandemic Annex

Share this Page

LinkedIn Facebook Twitter Google Digg
del.icio.us Technorati Newsvine Fark Yahoo!

Sponsored Links

Leading News Resource: for environmental regulation, litigation, legislative, and policy analysis.
Environmental News: the fast and easy way to get the news you need to know

Copyright 2009 1105 Media Inc. See our Privacy Policy.

1105 MEDIA