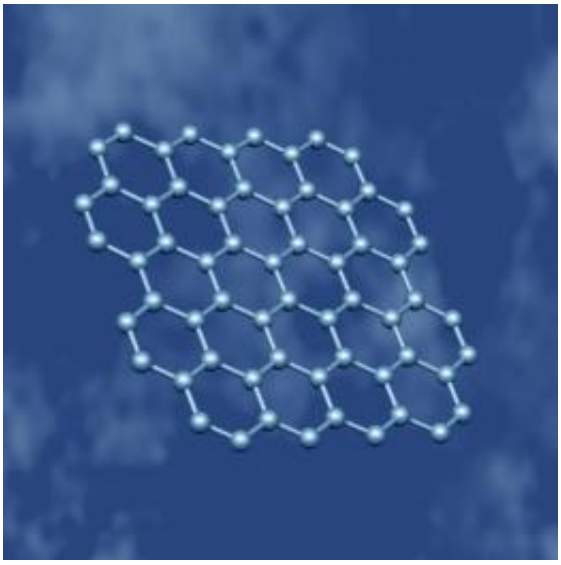
Chemists discover simpler method of making 'wonder material'

April 18 2013



Artistic impression of graphene molecules. Credit: University of Manchester

(Phys.org) —Researchers at Queen's University have discovered a cheaper method for making a substance similar to graphene, a wonder material discovered in 2004.

Graphene is a single layer of carbon atoms, arranged in a lattice pattern, with a wide range of applications including mobile device screens, solar cells, aircraft components, hydrogen fuel cells and fast-charging lithium-ion batteries. The discovery by chemistry professor Suning Wang and her team allows for the creation of a material with properties similar to

graphene at a much lower cost.

"Dr. Wang's elegant process creates a powerful tool to make graphene-based materials. These materials could potentially be used in a vast range of applications in the electronic, semiconductor, display, fuel cell, solar cell, sensing and imaging industries, to name just a few," says Lucy Su, Commercial Development Manager at PARTEQ Innovations, which filed for patent protection on the technology.

Graphene's revolutionary properties derive from its delicate structure, a single-atom-thick sheet of carbon atoms arranged in honeycomb lattices. Creating this ultra-thin honeycomb sheet is both tedious and difficult.

Dr. Wang and her team have created a simpler, greener "bottom-up" method that replaces some of the carbon atoms with boron and nitrogen. This enables them to "grow" graphene-like honeycomb lattices, simply by exposing the compounds to light.

"This discovery exemplifies ground-breaking research leading to transformative technological developments," says Steven Liss, Vice-Principal (Research). "Dr. Wang's discovery has not only led to more effective and efficient processes, but has improved sustainability and minimized environment impact."

Dr. Wang is an award-winning researcher specializing in organoboron chemistry and luminescent materials. Her team's discovery was ranked as "highly important" by the prominent international journal *Angewandte Chemie*.

Provided by Queen's University

Citation: Chemists discover simpler method of making 'wonder material' (2013, April 18)

retrieved 24 April 2024 from
https://phys.org/news/2013-04-chemists-simpler-method-material.html

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.