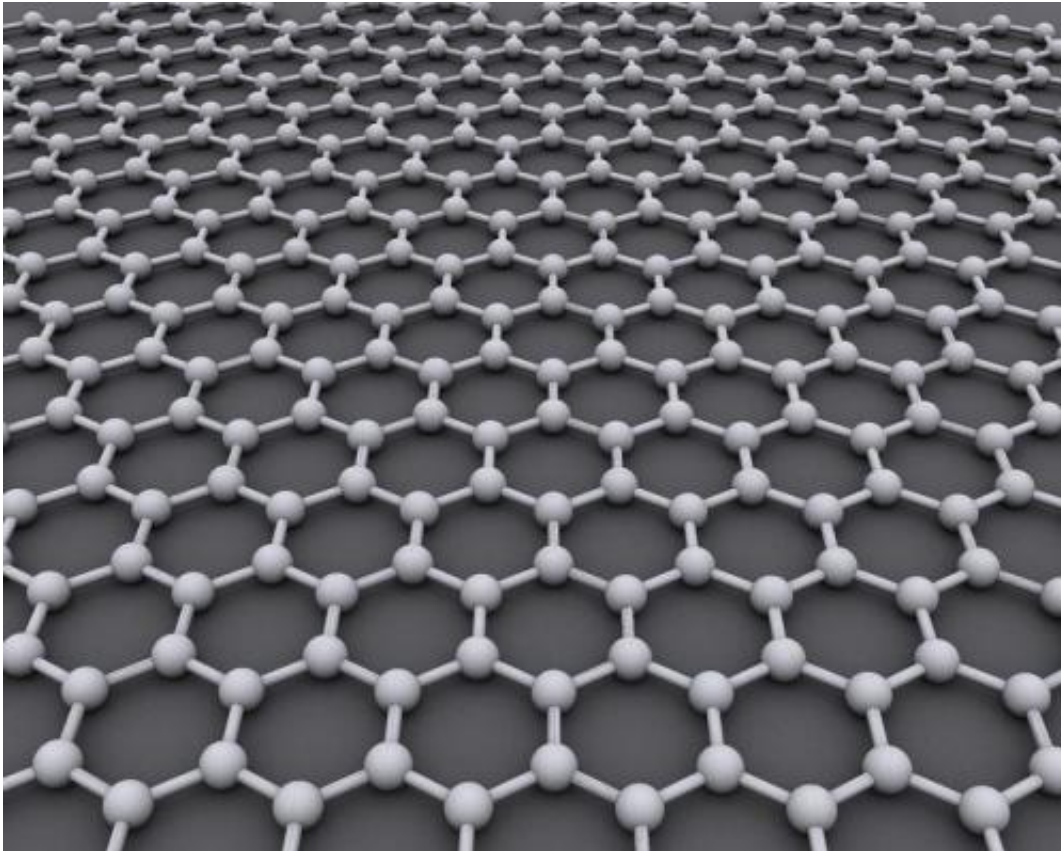


Physicists create artificial 'graphene'

February 2 2016



Credit: AlexanderAlUS/Wikipedia/CC BY-SA 3.0

An international group of physicists led by the University of Arkansas has created an artificial material with a structure comparable to graphene.

"We've basically created the first artificial graphene-like structure with

transition metal atoms in place of [carbon atoms](#)," said Jak Chakhalian, professor of physics and director of the Artificial Quantum Materials Laboratory at the U of A.

In 2014, Chakhalian was selected as a quantum materials investigator for the Gordon and Betty Moore Foundation. His selection came with a \$1.8 million grant, a portion of which funded the study,

Graphene, discovered in 2001, is a one-atom-thick sheet of graphite. Graphene transistors are predicted to be substantially faster and more heat tolerant than today's [silicon transistors](#) and may result in more efficient computers and the next-generation of flexible electronics. Its discoverers were awarded the Nobel Prize in physics in 2010.

The U of A-led group published its findings this week in *Physical Review Letters*, the journal of the American Physical Society, in a paper titled "Mott Electrons in an Artificial Graphene-like Crystal of Rare Earth Nickelate."

"This discovery gives us the ability to create graphene-like structures for many other elements," said Srimanta Middey, a postdoctoral research associate at the U of A who led the study.

More information: S. Middey et al. Mott Electrons in an Artificial Graphenelike Crystal of Rare-Earth Nickelate, *Physical Review Letters* (2016). [DOI: 10.1103/PhysRevLett.116.056801](https://doi.org/10.1103/PhysRevLett.116.056801)

Provided by University of Arkansas

Citation: Physicists create artificial 'graphene' (2016, February 2) retrieved 19 April 2024 from <https://phys.org/news/2016-02-physicists-artificial-graphene.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.