

Development of novel conduction control technique for graphene

November 16 2012

Researchers at the Nanoelectronics Research Institute of the National Institute of Advanced Industrial Science and Technology (AIST), in joint work with a NIMS team, have developed a novel technique for controlling the electrical conductivity of graphene.

In the technique developed in this research, a helium ion beam is irradiated on [graphene](#) using a helium ion microscope to artificially introduce a low concentration of crystal defects, and it becomes possible to modulate the movement of electrons and holes in the graphene by applying a voltage to the gate electrode.

Although this phenomenon of conduction control by introduction of crystal defects had been predicted theoretically, there were no examples in which on/off operation at room temperature was achieved experimentally. It is possible to introduce the technique developed in this work in the existing framework of production technology, including large area wafers.

Details of this technology were presented at the 2012 International Conference on Solid State Devices and Materials (SSDM2012) held in Kyoto, Japan September 25-27, 2012.

Provided by National Institute for Materials Science

Citation: Development of novel conduction control technique for graphene (2012, November 16)

retrieved 20 June 2024 from <https://phys.org/news/2012-11-technique-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.