

Graphene with Purpose



Huixin He
Associate Professor, Chemistry

CURRENT RESEARCH

Faster, cheaper, and smarter ways to produce graphenes for specific applications

Due to its excellent electronic, thermal, and mechanical properties and its exceptionally large surface area and light weight, graphene is considered the most powerful man-made nanomaterial that holds great potentials for a wide range of beneficial applications. However, current rate of graphene production far exceeds the demand, due to the lack of "killer applications," as most commercially available graphene are not tailored specifically for a targeted application and offer only marginal benefits over incumbent technologies. Graphene are being produced in mass with no specific purpose, because "there is nothing graphene cannot do," but studies show that different graphene structures are required to fit specific applications for optimal performance. Dr. Huixin He, Associate Professor of Chemistry at Rutgers University, fabricates graphene for targeted applications using energy efficiency and time- and cost-effective microwave chemistry. By exploring the novel properties of nanomaterials, including graphene, Dr. He hopes not only to improve or to develop novel, high-performance devices for detection and treatment of human diseases and renewable clean energy devices, but also to understand the correlation of their performances with the structures of the nanomaterials at the electronic and molecular level.

The microwave chemistry that Dr. He's team leverages not only quickens the process of graphene fabrication -- taking only 30-60 seconds in lieu of the usual several days and hours, but also enables an energy-efficient development of high quality graphene with controlled structures. Currently, Dr. He's lab specializes in generating graphene with controlled sizes from micrometers to nanometers, graphene with...

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AFFILIATION



Rutgers University

EDUCATION

- Ph.D. in Chemistry 1997, Peking University

AWARDS

- American Chemical Society PRO BONO Award, 2015
- Wong K. C. (Hong Kong) Research Award, 2011
- Featured at Rutgers Today, Feb. 25 2010
- The Rutgers Presidential Fellowship for Teaching Excellence, 2009

RESEARCH AREAS

Technology, Chemistry, Materials Science / Physics, Nanotechnology

FUNDING REQUEST

Your contributions will help support Dr. Huixin He and her team at Rutgers University as they design efficient microwave chemistries to develop useful and practical graphene approaches. Donations will help fund the \$500K needed for two years to support personnel and equipments to have an immediate impact in large scale production of graphene with controlled structures. Continuous donations will support their long-term projects in improving battery performance and developing more efficient metal free catalysts.