

Large-scale synthesis of graphene sheets

Business Opportunity

Graphene consists of single sheets of carbon atoms arranged in a regular hexagonal or chicken-wire array. It represents the ultimate in thin-layer technology due to its mono-atomic thickness and robust structure. To date, most methods for producing graphene rely on the mechanical or chemical cleavage of pyrolytic graphite, severely limiting yield and purity.

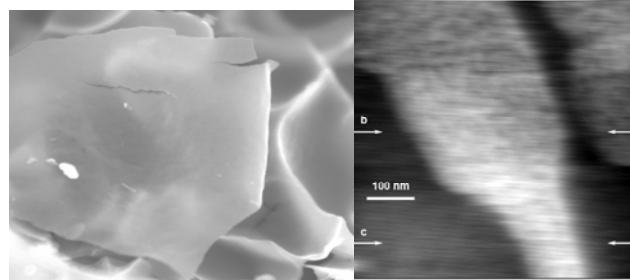
Researchers at the University of New South Wales have developed a simple, non-graphitic route to producing graphene resulting in high yields and a high purity product.

The Market

Graphene is recognised as a major contender amongst leading-edge technologies that will enable the semiconductor industry (forecast to be worth US\$1,500 billion/annum by 2010) to maintain Moore's Law beyond the limitations of silicon materials. The enormous surface area of single graphene sheets also makes the material an ideal component in the energy sector: batteries (currently a US\$50 billion market), hydrogen storage (US\$300 billion by 2010), along with various activated carbon technologies currently estimated at US\$1.1 billion annually.

The Technology

The IP for the large-scale synthesis of graphene has been patented and constitutes a paradigm shift in production methodology. The technique brings the efficiencies of scale inherent to chemical synthesis to bear on graphene production. It also allows for additional parameters such as chemical doping of the graphene sheets to be investigated.



Electron microscope (left) and atomic force microscope (right) images of single graphene sheets synthesised by the large-scale synthesis.

The Team

The team is lead by Dr. John Stride of the School of Chemistry, he has significant experience in nanomaterials and materials chemistry, and has extensive international academic collaborations.

Investment Opportunity

NSi is looking for industry partners to further support the research and advance the proof of concept for this process technology and/or its applications. Typically, an arrangement with NSi would provide the partner with an option to negotiate a licence and/or a future equity position should a spin-off entity become the commercialisation vehicle.

The technology is the subject of a recent Australian provisional patent application.

Further Information:

Dr. Robin Stanley
Senior Business Development Manager
T: +61 2 9385 6518 or +61 410 415 074
E: r.stanley@nsinnovations.com.au
Ref: 07_2112