Graphene growth *via* electron beam

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Since the first observation of graphene in 2004 by Geim and Novoselov [1], the research field of this new two-dimensional material has rapidly grown. Graphene has exciting physical properties such as high mechanical stiffness and excellent electronic transport properties [1,2]. These exceptional properties of graphene are thought to be used in a wide range of applications, from low-dimensional physics to drug delivery system in biomedicine [3]. One of the limitations to bring these applications to reality is our lack of understanding in graphene formation which ideally should be highly reproducible with atomic precision. Most of the techniques used for graphene production are time consuming and normally delivery material with many defects and impurities, which are not suitable for device fabrication.

Towards overcoming this problem we propose a new approach for the growth of graphene from fatty acids and polymers. Using these materials as a source of carbon and a TEM electron beam to drive the reaction we are able to coat oxide nanoparticles with graphene layers. In situ observations are presented and discussed. This approach might be an easy and inexpensive route for coating surfaces and nanoparticles with graphene.

References

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