



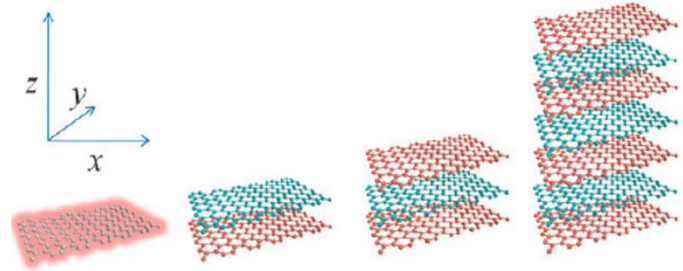
CHALMERS
UNIVERSITY OF TECHNOLOGY

Master Thesis project

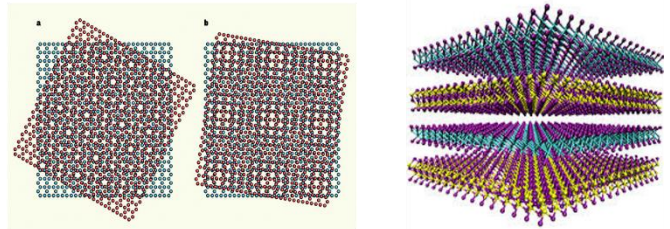
Stacking atomic two-dimensional layered materials into macroscopic electrode for advanced applications

Motivation:

Single layer graphene can be considered as one layer of graphite. For the simple fabrication, one-layer graphene can be obtained after many times mechanical exfoliation of graphite. Since the discovery, Graphene has attracted a lot of attention and has been the subject of numerous theoretical and practical investigations owing to its extraordinary physical and chemical properties. However, very rare studies were done on the manually stacked graphene for the preparation of graphite like film. For the practical applications, graphene film which composed by many layers of graphene are needed, rather than the single layer graphene, for example the graphene films-based electrode which have been proposed as the new generation of multifunctional, transparent, conducting, and flexible devices. Although the graphene can be isolated from graphite by breaking the weak interlayer van der Waals interaction, the process is not reversible, which means the stacked graphene can not form three-dimensional graphite without the assistance of external harsh conditions. The graphene stacks preserve the unique properties of single layer graphene, while it is different from the graphite. Moreover, various properties of graphene can be enhanced, thus expanding its applications area.



Stacked graphene layers



Twisted graphene layers

Aims of the thesis projects:

1. Using our recently developed method to prepare graphene films by stacking single layer graphene (possible work in cleanroom);
2. You will be trained and assisted to do full characterizations of stacked graphene films, for example, SEM, Raman, AFM, TEM, UV-vis etc.
3. An advanced device will be possibly made from graphene films.

Supervision and contact:

If you are interested in the project, please send your CV and a short letter to us as soon as possible.

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