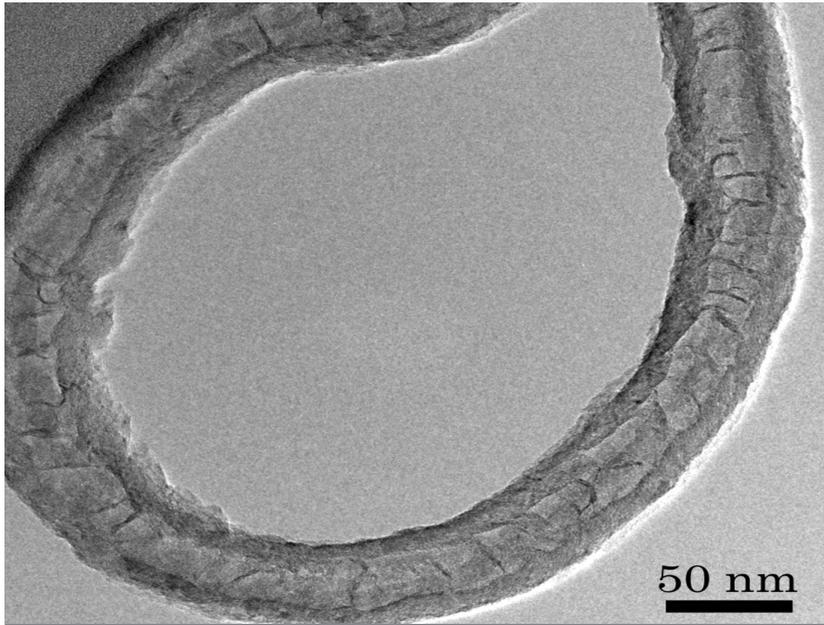


TECHNOLOGY SOLUTION

Materials and Coatings



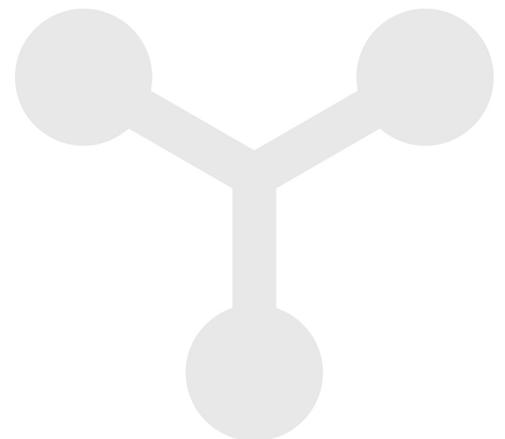
Automated transfer of large-area defect-free graphene using a fluid transfer system

Gently removing graphene from its growth substrate and placing it onto an application substrate.

Currently, tools like forceps or glass slides are used to physically move or lift graphene layers in order to deposit them on application substrates. These tools, along with manual handling, apply concentrated pressures that may result in damage to the sensitive graphene layer. Additionally, they required manual labor limiting the scale of graphene production. The invention is a system that can be utilized as a post-processing system for graphene production allowing for automatic and gentle processing of graphene.

BENEFITS

- Scalable Graphene Production
- Graphene less prone to damage



THE TECHNOLOGY

The innovation is a series of inter-connected fluid reservoirs. The first reservoir comprises an etching agent that dissolves the growth substrate of a graphene sample. Subsequent reservoirs contain deionized water designed to wash off the etching agent. A graphene sample comprising a polymeric top coat, graphene layer, and growth substrate is floated in the first etchant reservoir. When the growth substrate has dissolved in the etchant fluid, the level of that reservoir is raised with additional etchant fluid. The rising etchant fluid level causes the etchant to flow into the next reservoir, creating a gentle current. The graphene sample floats along the current and is subsequently transferred into the next deionized water reservoir. The etchant is washed off in the deionized water. Once all the etchant is washed off, an application substrate is placed at the bottom of the deionized water reservoir. When the deionized water is drained, the graphene sample is mated with the application substrate via Van Der Waals forces. This innovation democratizes the the production of graphene, allowing it to be processed reliably and easily in house. This system can be utilized as a post-processing system for graphene production providing graphene substrates while keeping sensitive research and development safely in-house.

APPLICATIONS

The technology has several potential applications:

- Graphene Production
- Electronics
- Sensors

PUBLICATIONS

Patent Pending

More Information

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