

Abstract Submitted  
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**High-yield production of graphene sheets by chemical exfoliation of graphite** XIAOHONG AN, SWASTIK KAR, MORRIS WASHINGTON, SAROJ NAYAK, Rensselaer Polytechnic Institute, DEPARTMENT OF PHYSICS, APPLIED PHYSICS AND ASTRONOMY TEAM — Graphene, a single atomic layer of graphite, has attracted vast interest recently owing to its perfect two-dimensional crystallographic nature, which have resulted in intensive investigations of fundamental physics and promising applications. Up to now, several techniques have been used to produce small areas of graphene, such as mechanical methods, exfoliation, epitaxial growth method and reduced graphene from graphene oxide. However, chemical approaches for high-yield production of graphene sheets is still absent. Here, we report that graphene dispersion produced by chemical exfoliation of graphite in solvent of 1-pyrenecarboxylic acid in water. We confirm the presence of monolayer graphene sheets by Scanning transmission electron microscopy and Raman spectroscopy. Large area of graphene sheets on SiO<sub>2</sub>/Si substrate can be obtained by evaporating the graphene dispersion in oven and rinsing with methanol. We demonstrate the high-yield production of graphene sheets by optical microscopy and scanning electron microscopy. Electrical and other applications of graphene developed this way are currently being investigated. This new graphene processing of chemical exfoliation of graphite could lead to applications in future scalable graphene nano-electronics devices.

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