

## Fabrication of graphene in Py-ssDNA solution by sonication

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Two dimensional graphene offers extraordinary electronic, thermal and mechanical properties and is expected to find a variety of applications in biotechnology. The direct dispersion of graphenes in an aqueous solution without oxidization or assistance of organic solvents has generally been considered to be an insurmountable challenge. In this presentation, we propose a simple method to generate graphene from graphite flakes by sonication process in a pyrene-labeled single stranded DNA solution, which results in the stable dispersion of graphenes in water. The presence of mono- and bilayer graphenes and their folded structure were analyzed by transmission electron microscopy (TEM), scanning electron microscopy (SEM) and atomic force microscopy (AFM). The pyrene-labeled DNA on the graphene enables us not only to identify the position of graphene on the glass substrate under the microscope due to the unique fluorescence signal of pyrenes, but also to immobilize various biomolecules through DNA-DNA interaction for biosensing applications.