ISOTOPE LABELING IS AN EFFICIENT TOOL FOR ADDRESSING OF INDIVIDUAL LAYERS IN ARTIFICIAL MULTILAYERED GRAPHENE

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Abstract
The growth of graphene by chemical vapor deposition allows to prepare 12C or 13C graphene by a combination of the 12CH4 and 13CH4 precursor gases. The multi-layer graphene can be prepared by a subsequent transfer of single layer graphene sheets. In this study we combined 12C and 13C graphene to make two layer graphene sheet. Due to a different mass of carbon isotopes the 12C and 13C graphene layers can be easily distinguished by Raman spectroscopy.

A review of our results on isotopically engineered two layer graphene (2-LG) will be presented: 1) Analysis of effects of the substrate on the bottom layer and the environment on the top layer. 2) Comparison of the effects of the heat treatment on the top and bottom graphene layer in 2-LG and 3) Analysis of the effects of electrochemical doping on 2-LG including the discussion of charge distribution between the top and bottom layer.

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