

The Properties of Mono-, Double- and Triplelayer CVD Graphene Transferred by Electrochemical Delamination

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Abstract

The realization of a low-cost and large-scale application of graphene has become possible with the advancement of its CVD growth on copper foil. It is, however, absolutely vital that graphene is transferred reliably and time-effectively if it is to be widely exploited.

In this work we investigate the properties of a CVD graphene grown on copper foil as a monolayer and consecutively transferred onto a high-resistivity Si/SiO₂ substrate to form a mono-, double- and triple layer. The transfer method is based on the electrochemical delamination [1] performed at a high pace of 1mm per second. We illustrate the influence of different electrolyte compositions on the quality and the properties of graphene films. We relate the obtained physical and electrical characteristics to graphene transferred by copper etching.

The characterization of delaminated graphene includes Raman spectroscopy and SEM imaging. Further assessment of graphene properties is performed with a classical DC Hall method and a contactless technique that utilize a single post dielectric resonator operating at microwave frequencies [2,3].

References

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