

Reproducible Large Area CVD Graphene

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Graphene, a single atomic layer of graphite, attracts enormous interest from academia and industry. Because of unique properties such as high mobility of charge carriers, ultra-high young's modulus and thermal conductivity, graphene is studied as candidate material for future applications in various fields such as electronics, optoelectronics, composite materials, and thermal management.

Chemical vapor deposition (CVD) has enabled the growth of single layer graphene on copper foil for arbitrary size. Rapid thermal chemical vapor deposition (RT-CVD), improved etching and transfer methods enabled faster and larger production of homogeneous graphene films over 450 x 350 mm². Further efforts are being made to fabricate ultra large size graphene film, which is as large as 900 x 1600 mm². Improvements of the production techniques require advanced characterization methods for controlling each process to achieve uniformity and reproducibility of the resulting graphene films.

In this presentation, various techniques used for the characterization of CVD graphene will be reported. Characterization of the defects and their effects on the quality of the graphene will be discussed.

References

[1] J. Ryu, et al., ACS Nano, 8 (2014) 950

[2] S. Kim, et al., Chemistry of Materials, 26 (2014) 2332