

Low Temperature direct growth of graphene on Semi-conductors

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Graphene, serving as an ideal two-dimensional material platform, exhibits extraordinary electrical[1], optical[2], thermal[3] and mechanical[4, 5] properties. The growth of graphene at low temperature has been an outstanding goal for the community to avoid the drawbacks of the transfer process and directly grow in semiconductors that maybe affected by the high temperature growth [6].

Our study thus concentrates on demonstrate the preliminary attempt of directly growing graphene on III-V substrates by means of conventional chemical vapor deposition (CVD) something that has never been reported on material such as GaAs. At low temperature process optimized by our team we prove the possibility of growing graphene on GaAs at a temperature of 450°C and germanium at a temperature of 780 °C.

References

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Figures

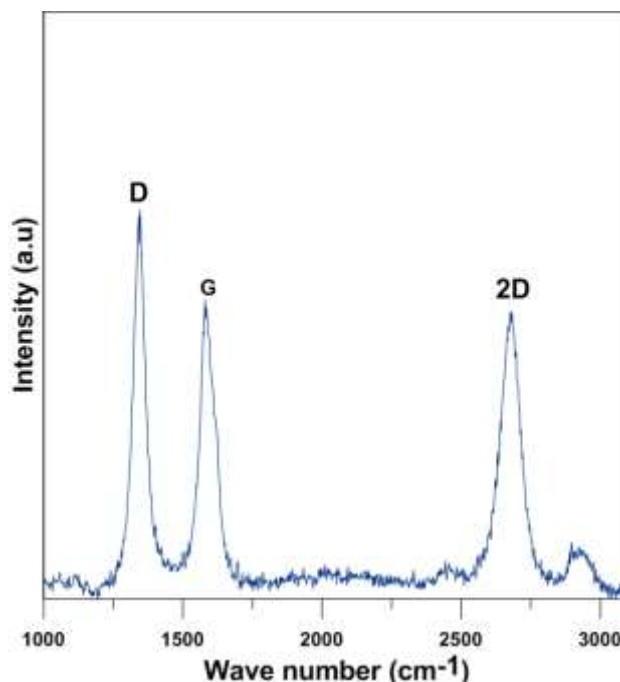


Figure 1: Raman spectrum of graphene on Germanium at 780 °C

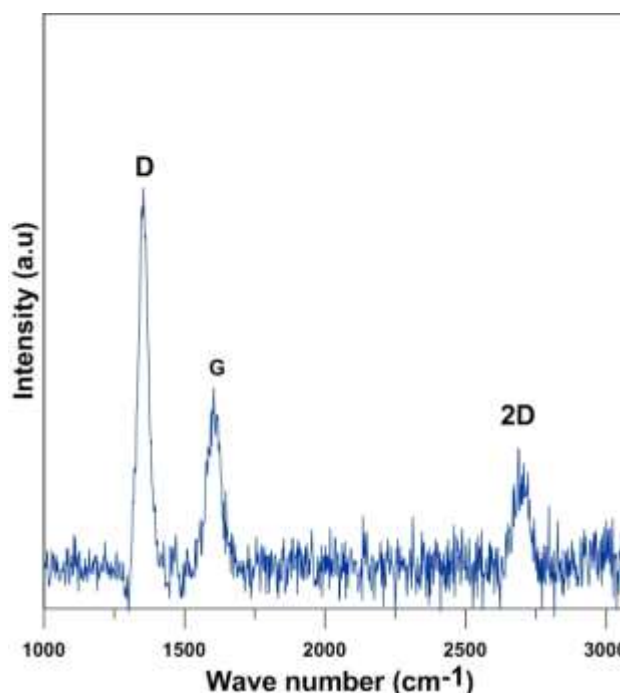


Figure 2: Raman spectrum of graphene on GaAs at 450 °C