Influence of the sapphire surface termination in the PECVD synthesis of graphene

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The transfer process of graphene to technologically important substrates induces defects and damages the high quality graphene synthesized on catalytic substrates. In this scope the graphene synthesis by plasma enhanced chemical vapour deposition (PECVD) on non-catalytic substrates such as sapphire, arises as a solution for removing the transfer process and thus introduce graphene in consumer electronics at large scales [1].

This work studies the control of plasma induced modifications on the either Al- or OH- c-plane sapphire surface terminations, and their influence on the PECVD synthesis of graphene. The surface terminations are assessed via contact angle measurements, whereas a defect analysis on the graphene synthesis is carried out by Raman spectroscopy reports a relationship between the nature of the defects and the surface termination of the sapphire substrate.

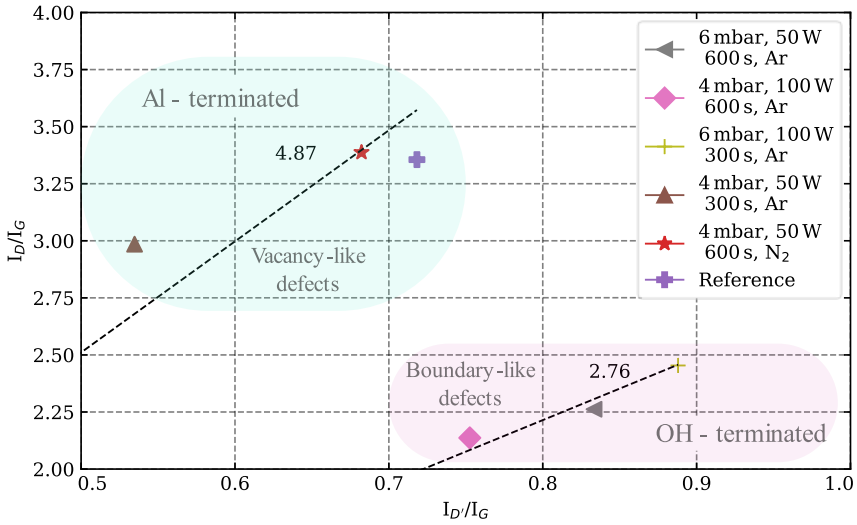

Figure 1 Raman spectroscopy I_D/I_G and $I_{D'}/I_G$ ratios employed to evaluate the nature of defects [2]

References

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