

Role of Growth Parameters on the Domain Structure of CVD-Grown Graphene on Nickel

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Large area graphene films have been widely synthesized using the CVD method, which uses various transition metal films as a catalyst. Especially, Ni is a widely used metal catalyst in this method to grow graphene due to controllable growth of multi-layer graphene, smallest lattice constant mismatch among the several transition metals, and low cost.

Graphene grown on Ni has a higher resistance compared to graphene on Cu despite its large thickness, which is mainly due to the small polycrystalline domain structure of graphene on Ni which hinders charge transport. Also, the domain size and shape distribution is not uniform in every layer of graphene, which may also have an effect on its electrical properties. Through this research, we will investigate how the domain structures are arranged in each stacked interlayer of the multi-layer graphene. This may reveal how the domain structures of multilayer graphene influence graphene properties and open a window to obtain high quality graphene.