

Tuneable magnetism in graphene

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I will review our recent experiments on inducing and controlling magnetic response of graphene via introduction of point defects such as vacancies and adatoms. Graphene is hailed as potentially an ideal material for spintronics due to its weak spin-orbit interaction and the ability to control its electronic properties by the electric field effect. We have demonstrated that point defects in graphene - both vacancies and adatoms – carry magnetic moments, leading to pronounced paramagnetic behaviour that dominates graphene's low-temperature magnetism. Even better, we show that the defect magnetism is itinerant (i.e. due to localisation of conduction electrons) and can be controlled by doping, so that the induced magnetic moments can be switched on and off. This not only adds important functionality to potential graphene devices but also has important implications for spin transport.