

MRSEC SEMINAR SERIES

Chemical Functionalization as an Approach to the Modification of the Electronic and Magnetic Properties of Graphene

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Abstract:

We report the application of a range of chemical reactions to the basal plane functionalization of graphene, including the Diels–Alder reaction – in which we show that graphene can act as both diene and dienophile – and the addition of nitrophenyl radicals. The chemical formation of covalent carbon–carbon bonds involving the basal plane carbon atoms offers an alternative approach to the control of the electronic properties of graphene; the transformation of the carbon centers from sp^2 to sp^3 introduces a barrier to electron flow by saturating the carbon atoms and opening a band gap which potentially allows the generation of insulating and semiconducting regions in graphene wafers. In this talk I will discuss our work on the electronic and magnetic properties of chemically modified graphene.
