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The Photochemical Chlorination of Graphene

Chemistry has great potential as a means to control the electronic properties of the two-dimensional carbon material graphene. Electron-transfer between graphene and adsorbed molecules can increase its conductance by shifting the Fermi level to a region of the band structure with a greater density of states. Chemical functionalization of graphene can generate a band gap. We use micro-Raman spectroscopy to study the dynamics of electron transfer and covalent bond formation for dihalogen-graphene chemical interactions. The formation of covalent bonds disrupts the graphene π -bonding structure to generate a bandgap.