

## **Effect of Covalent Chemistry on the Electronic Structure and Properties of Carbon Nanotubes and Graphene**

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We have demonstrated the functionalization of epitaxial graphene with nitrophenyl groups and by the application of Diels-Alder chemistry. 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 recent results on the modification of the electronic structure and properties of graphene, and the application of organometallic chemistry to facilitate the interconnection of single-walled carbon nanotubes and to increase the dimensionality of graphitic surfaces. .