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Functionalizing Graphene via Interface Engineering

MARCH 16 | Bldg. 101
4 P.M. | Seminar room on the 1st floor

Graphene has many intriguing characteristics in its electronic structure. Its conduction and valence bands meet at a Dirac point and the energy depends linearly on the wave vector near the K-points, similar to a relativistic particle. However, real graphenes often show different electronic structures from the simple theoretical one depending on what they are facing. This means that it could be possible to tune graphene's electronic structure by engineering the interface for lots of applications. We provide angle-resolved photoemission spectroscopy utilizing vacuum ultraviolet from the Pohang Accelerator Laboratory (PAL) and scanning tunneling microscopy results of graphenes grown on different substrates, such as Cu(111), Fe(111), Ni(111), SiC(0001), etc. The electronic structures are considerably different depending on the interface with the substrates and can be further modified by intercalating or adsorbing foreign atoms. We show some experimental data for the intercalation of several atoms between graphene and substrate together with the role of steps, defects, domain boundaries in real graphenes. Such an interface engineering could be useful to give a special function to graphene, for examples, photoluminescence, magnetism, superconductivity, etc., that graphene originally does not have.

You are cordially invited to attend!

Special Guest Speaker