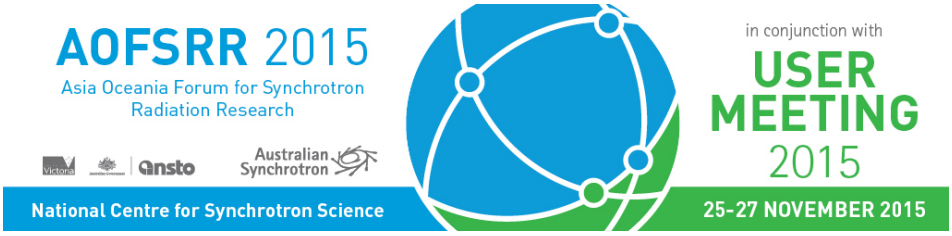

Contribution ID : **20** Type : **Oral**

Functionalization of graphene via foreign atoms intercalation

Friday, 27 November 2015 11:00 (30)

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. The massless Dirac fermions have also chirality, suppressing electron backscattering. However, real graphenes often show different electronic structures depending on what they are facing. We provide angle-resolved photoemission spectroscopy (ARPES) and scanning tunneling microscopy (STM) results of graphenes grown on different substrates, such as Ni, Cu, SiC, etc. The electronic structures can be modified by adsorbing or intercalating foreign atoms. Since the intercalation could be useful to give a special function to graphene such as superconductivity, 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.

Keywords

graphene, electronic structure, Ni, Cu, SiC, ARPES, STM, intercalation, adsorption

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Session Classification : Surface Science

Track Classification : Surface Science