Angle-dependent Reactivity for the Chemical Modification by Diazonium Salts on Bilayer Graphene

By

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Abstract

Atomic registry of bilayer graphene can significantly modify their electronic structure and properties. In this work, the experimental observation of the electron transfer chemistry on bilayer graphene is significantly modified by investigating the twist-induced chemical reactivity through chemical functionalization with diazonium salts. Our results have shown that reaction rate for diazonium salt grafting is relatively much higher on twisted graphene bilayer than that on AB stacking (or Bernal stacked). Gerischer–Marcus electron transfer theories analysis, along with band structures of twisted bilayer graphene calculated by density functional theory (DFT), has indicated that different reactivity is mainly contributed from the distinct stacking-induced DOS distribution variation in the gap region. Our results provide experimental venue that allows the selective separation and sort of bilayer graphene according to the stacking modes by electron transfer reactions.

Date: 21 August 2015 (Friday)
Time: 10:00am
Venue: Room 4577 (Lift 27-28)

Examination Committee:
Prof. Fei SUN, Chairman
Prof. Zhengtang LUO, Supervisor
Prof. Richard LAKERVELD

***All are Welcome***