

Interaction between domain structure of graphene islands and Cu lattice during ambient pressure chemical vapor deposition

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Several factors affecting graphene microstructures such as domain size, crystallographic orientation, lattice defects, and surface morphologies have been studied for decades, but there are still many unsolved problems. Recently, studies on domain morphologies of graphene islands have provided critical clues for better understanding of graphene synthesis mechanism in chemical vapor deposition method. Here, we demonstrate the variations in domains of graphene islands and its synthesis mechanism depending on the copper domain using an atmospheric pressure chemical vapor deposition method. The copper domains were characterized by Electron backscatter diffraction, and the domain structures of graphene islands on each Cu domain were investigated by observing the birefringence color of liquid crystal on the surface of graphene. Additionally, Transmission electron microscope and Raman mapping were conducted for better understanding of graphene islands. Our results provide a deep understanding for graphene synthesis mechanism in APCVD process.