Yoshitaka Fujimoto, Insights in Analytical Electrochemistry, 3:2
DOI: 10.21767/2470-9867-C1-002

First-principles theoretical investigation of graphene for sensor applications

Yoshitaka Fujimoto
Tokyo Institute of Technology, Japan

Ever since the successful exfoliation of graphene from multilayer graphite, graphene has received much interest from the viewpoints of fundamental physics and relevant applications in nanoelectronics because it shows various unique properties. Specifically, due to its extremely high carrier mobility, graphene is a potential device material for next-generation nanoelectronics. One of the effective ways to control the electronic properties of graphene is to dope with heteroatoms. Furthermore, substitutionally doped graphene can often enhance its chemical reactivity. Thus, doped graphene is also a good candidate for promising sensor applications because of the high carrier mobility as well as the high sensitivity. I will talk about our theoretical works of chemical doping as well as gas adsorption including environmentally polluting gases effects on the stabilities and the electronic properties of graphene layers based on the first-principles electronic-structure study within the density-functional theory.

Biography

Fujimoto received his PhD degree in Engineering from Osaka University, Japan. After receiving his PhD he moved to the University of Tokyo. Then, he joined Department of Physics, Tokyo Institute of Technology as an Assistant Professor. His research interests include electronic properties of surfaces/interfaces of semiconductors and atomic-layered materials. He has published over 50 technical articles in peer-reviewed journals, reviews, book, book chapters, etc. and has served as referee of many international journals, organizer and committee in conferences.

fujimoto@stat.phys.titech.ac.jp

Notes: