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Graphene wettability engineering YOUNG JUN SHIN, National University of Singapore , YINGYING WANG, Nanyang Technological University, HAN HUANG, GOPINADHAN KALON, ANDREW THYE SHEN WEE, National University of Singapore , ZEXIANG SHEN, Nanyang Technological University, CHARANJIT SINGH BHATIA, HYUNSOO YANG, National University of Singapore
— Graphene has attracted much attention due to its superior characteristics. In order to fabricate useful devices, understanding the surface property of graphene is very important since the contact deposition is critical for the device performance and functionality. However, there have been few studies investigating the surface property of graphene. We investigated the wettability of graphene on SiC by contact angle measurements. Mono layer epitaxial graphene showed a hydrophobic characteristic similar to HOPG and no correlation was found between different layers of graphene and wettability. Upon oxygen plasma treatment, defects are introduced into graphene and the level of damage was investigated by Raman spectroscopy. There exists a correlation between the level of defects and the contact angle. As more defects are induced, surface energy of graphene is increased leading to hydrophilic nature. Oxygen plasma treatment with an optimized power and duration has been proposed to control the adhesion property for contact fabrication.

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