

NT-P026

Site-Specific Growth of Width-Tailored Graphene Nanoribbons on Insulating Substrates

송우석, 김수연, 김유석, 김성환, 이수일, 송인경, 전철호, 박종윤

성균관대학교 물리학과

The band-gap opening in graphene is a key factor in developing graphene-based field effect transistors. Although graphene is a gapless semimetal, a band-gap opens when graphene is formed into a graphene nanoribbon (GNR). Moreover, the band-gap energy can be manipulated by the width of the GNR. In this study, we propose a site-specific synthesis of a width-tailored GNR directly onto an insulating substrate. Predeposition of a diamond-like carbon nanotemplate onto a SiO₂/Si wafer via focused ion beam-assisted chemical vapor deposition is first utilized for growth of the GNR. These results may present a feasible route for growing a width-tailored GNR onto a specific region of an insulating substrate.

Keywords: Graphene, Bandgap, Focused ion beam