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Extreme UV Interference Lithography of Carbon Nanosheets and Graphene

Friday, 16 September 2011 13:29 (2 minutes)

Two-dimensional (2D) carbon nanomaterials, e.g., graphene, graphene oxide, carbon nanosheets and ultrathin polymeric films have recently received an enormous attention due to their potential for use in electronics, chemical or biological sensors and filters, nanocomposite materials, etc. Most of these applications require lithographic patterning of these 2D carbon materials with the nanoscale resolution. In this respect, Extreme UV Interference Lithography (EUV-IL) opens broad prospects providing the large-scale nanopatterning and very high resolution with an ultimate limit in the sub-10 nm range. We employ EUV-IL at the SLS XIL-II beamline to generate nanopatterns (dots, lines and grids) in 1 nm thin supramolecular sheets consisting of aromatic molecular precursors and graphene. We characterize these nanopatterns with a Helium Ion Microscope (HIM) which is sensitive to both topographic and chemical features. Nanopatterns of various geometries in the supported and suspended sheets are demonstrated.

Please specify the session

Nanolithography and advanced imaging of two-dimensional carbon materials

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Poster

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