

Abstract Submitted
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Utilization of plasmas for graphene synthesis¹ ALEXEY SHASHURIN, MICHAEL KEIDAR, The George Washington University — Graphene is a one-atom-thick planar sheet of carbon atoms that are densely packed in a honeycomb crystal lattice. Graphene has tremendous range of potential applications ranging from high-speed transistors to electrochemical energy storage devices and biochemical sensors. Methods of graphene synthesis include mechanical exfoliation, epitaxial growth on SiC, CVD and colloidal suspensions. In this work the utilization of plasmas in synthesis process is considered. Types of carbonaceous structures produced by the anodic arc and regions of their synthesis were studied. Ultimate role of substrate temperature and transformations occurring with various carbonaceous structures generated in plasma discharge were considered. Formation of graphene film on copper substrate was detected at temperatures around the copper melting point. The film consisted of several layers graphene flakes having typical sizes of about 200 nm. Time required for crystallization of graphene on externally heated substrates was determined.

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