

Abstract Submitted
for the GEC14 Meeting of
The American Physical Society

Utilization of plasmas for graphene synthesis¹ MICHAEL KEIDAR, ALEXEY SHASHURIN, 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. Synthesis of well-adhered graphene films on the various substrate materials with controllable flake thickness down to about 2 layers was demonstrated. Optimal synthesis conditions were analyzed.

¹This work was supported by National Science Foundation (NSF Grant No. CBET-1249213).

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Date submitted: 13 Jun 2014

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