

Abstract Submitted
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Graphene production in magnetically enhanced anodic arc¹

ALEXEY SHASHURIN, Applied Plasma Science LLC, YEVGENY RAITSES, Princeton Plasma Physics Laboratory, MICHAEL KEIDAR, The George Washington University — Graphene is a one-atom-thick planar sheet of sp²-bonded carbon atoms that are densely packed in a honeycomb crystal lattice. This new material, which combines aspects of semiconductors and metals, could be a leading candidate to replace silicon in applications ranging from high-speed computer chips to biochemical sensors. However, before graphene sheets can be applied to commercial applications, it is necessary to find lower cost methods of mass production. Recently, a new method of graphene synthesis in magnetically controlled anodic arc discharge was discovered.² The effect of external magnetic field application to the discharge zone on production yield of graphene flakes is studied using specially-designed magnetic system able to create different magnetic field configurations with magnitudes of up to several kGauss. The considered here method may have broad commercial impact on production of bulk graphene for different energy, electronics, aerospace, mechanical, civil, and biomedical applications, and especially for newly emerging ultracapacitor industry.

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²M. Keidar, A. Shashurin, O. Volotskova, Y. Raitses, and I. I. Beilis Phys. Plasmas 17, 057101 (2010)

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