Abstract Submitted
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Ablation and deposition processes in carbon arc discharge for nanosynthesis[1] YEVGENY RAITSES, JONATHAN NG, Princeton Plasma Physics Laboratory, Princeton, NJ 08543, VALERIAN NEMCHINSKY, Keiser University, Fort Lauderdale, FL 33309, YAO-WEN YEH, Princeton University, Princeton, NJ 08543, SOPHIA GERSHMAN, VLAD VEKSELMAN, Princeton Plasma Physics Laboratory, Princeton, NJ 08543 — The anodic arc discharges with consumed anodes are used to produce various nanoparticles, including carbon nanotubes [1]. Our experiments with the carbon arc at atmospheric pressure helium demonstrate the dependence of the anode ablation rate on the anode diameter, which cannot be explained by changes of the current density at the anode. In particular, the anode ablation rate for narrow graphite anodes is significantly enhanced resulting in high deposition rates of carbonaceous products on the copper cathode [2]. The proposed model explains these results with interconnected steady-state models of the cathode and the anode processes [3]. Results of experimental validation of this model are presented.

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[3] V. Nemchinskiy and Y. Raitses, J. Phys. D: Appl. Phys. **48** 245202 (2015).

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