

Abstract Submitted
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Optical emission spectroscopy of carbon arc for nanomaterial synthesis¹ VLADISLAV VEKSELMAN, BRENTLEY STRATTON, YEVGENY RAITSES, Princeton Plasma Physics Laboratory — Arc plasma assisted synthesis of carbon nanostructures is one of the most efficient and simple production methods [1]. In spite of a long time use of this method in materials science research and industrial applications, the role of the plasma in nucleation and growth of nanostructures is not well understood. This is due to complexity of physico-chemical processes governing the plasma nanosynthesis. The objective of this work is to characterize the atmospheric pressure arc plasma used for synthesis of various carbon nanostructures. Optical emission spectroscopy was carried out to determine the distribution of temperature and density of carbon plasma in the synthesis zone as a function of arc discharge parameters. Accurate and detailed mapping of plasma parameters elucidate the general trend governing the formation of carbon nanostructures.

[1] C. Journet, W. K. Maser, P. Bernier, A. Loiseau, M. L. delaChapelle, S. Lefrant, P. Deniard, R. Lee, and J. E. Fischer, Large-scale production of single-walled carbon nanotubes by the electric-arc technique, *Nature* 388, 756 (1997).

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