

Abstract Submitted
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Measurements of electric potential in the carbon arc¹ NIRBHAV CHOPRA, YEVGENY RAITSES, PPPL — In an anodic carbon arc discharge for synthesis of nanomaterials, carbon material is introduced into the arc by the ablation of the graphite anode. Characterizing the anode ablation is important for understanding of the formation of carbon nanomaterials (e.g. carbon nanotubes) in the arc [1]. Anode ablation depends on the power balance at the anode, which is influenced by whether the anode sheath is electron-repelling (negative anode sheath) or electron-attracting (positive anode sheath) [2]. In this work, we study the spatial distribution of the electric potential in the arc. To measure the electric potential, a fast swinging Langmuir probe was developed and used. The floating potential of the probe is measured, from which the plasma potential is estimated. The dependence of the electric potential distribution on the arc current will be discussed. [1] J. Fetterman, Y. Raitses, and M. Keidar, “Enhanced ablation of small anodes in a carbon nanotube arc plasma”, *Carbon* 46, 1322 (2008). [2] V. Nemchinsky and Y. Raitses, “Anode sheath transition in an anodic arc for synthesis of nanomaterials”, *Plasma Sources Sci. T.* 25, 035003 (2016).

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