Processes leading to the formation of the deposit on the thinner electrode during the alternative current arc discharge with carbon electrodes of different diameters

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In the process of synthesizing carbon nanostructures by arc discharge between two electrodes of different diameters a solid deposit is formed on the larger diameter electrode. The present paper discusses the mechanism of the formation of the carbonaceous deposit on the larger diameter electrode. Among the driving forces of the deposit formation we have considered the thermophoretic force and the impact force of the flux consisting of carbon atoms resulted from the evaporation of the smaller diameter electrode. Based on our experimental results we have analyzed the contribution of each of these components taking into account the environment created by the presence of plasma.

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