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An Investigation of the Role of Near-Anode Plasma Conditions on Anode Spot Self-Organization in Atmospheric Pressure DC Glows YAO KOVACH, JOHN FOSTER, University of Michigan - Ann Arbor — In previous work, plasma self-organization patterns were experimentally observed on both liquid surface and metal anode surface in atmospheric pressure glows. However, the origin of the self-organized pattern formation is still poorly understood and is currently under study. In this work, it was observed that the discharge current is the dominant parameter controlling the onset of the self-organization of the plasma attachment on a liquid anode. On the other hand, it is observed that interelectrode spacing is the key parameter that controls plasma self-organization on metal anodes. Presented here are experiments aimed at understanding how these parameters control conditions at the anode surface which ultimately result in self-organization. Here we determine the effects of space charge at the anode surface and also estimate the anode fall voltage in response to discharge parameter variations. Additionally, electron microscopy is used to assess anode morphological changes resulting from the self-organization plasma attachments.

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