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Self-organization and Electrolyte Ion Mass Transport Processes with Chemistry in 1 ATM DC Glows YAO KOVACH, University of Michigan Ann Arbor, MARIA GARCIA, University of Cordoba, JOHN FOSTER, University of Michigan Ann Arbor — In plasma physics, self-organization is observed in phenomena ranging from plasmoid formation in low pressure, RF plasmas to large-scale, and magnetized structures observed on the surface of the sun. Of recent interest is the puzzling information of self-organization patterns on the surface of liquid anodes in 1 ATM DC glows. While these patterns are of academic interest in regards to understanding collective phenomena, the appearance of the patterns may play an important role in the sub-surface liquid phase chemistry, driving convection and inducing thermal gradients. In this current work, a new, complex, star-shaped structure with round edges was observed with a copper sulfate electrolyte. The pattern was not observed with sodium chloride solutions. This observation suggests that electrolyte ion mass or perhaps ionization state may play a key role in deterring overall pattern shape. In order to understand the role of the transport of electrolyte ions from liquid to the gas phase on discharge maintenance, and pattern formation, spectroscopic analysis of the halo surrounds the main plasma column for multiple electrolytes are studied as a function of discharge conditions.

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