

Abstract Submitted
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Influence of gas composition on characteristics of self-organized pattern formation observed in atmospheric DC glow discharge using liquid anode¹ NAOKI SHIRAI, SATOSHI UCHIDA, FUMIYOSHI TOCHIKUBO, Tokyo Metropolitan University, TOKYO METROPOLITAN UNIVERSITY TEAM — Non-thermal plasma in and with liquids has attracted considerable interest for its potential use in a wide range of applications. In particular, the use of a discharge with a liquid as an electrode for analytical techniques and material processes has been reported. Previously, we investigate fundamental characteristics of atmospheric dc glow discharge using liquid electrode with miniature helium flow. Especially, when liquid anode discharge is generated, self-organized luminous patterns are observed on the liquid surface at a creation condition. Although the mechanisms of this pattern formation have not understood completely, we assume that the patterns are dependence on negative ion in the discharge from previous results. In this study, we feed oxygen gas flow to atmospheric dc discharge using liquid anode in order to investigate the influence of negative ion on the condition of self-organized pattern formation. When oxygen gas flow is fed to the discharge space, anode luminous patterns are changed from ring patterns to several dots patterns. Therefore the pattern formation may depend on the negative ion in the discharge. It presumes that a certain reaction such as generation and quenching of electron has occurred on the anode surface.

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