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Investigation of droplet generation induced by atmospheric pressure glow discharge in contact with liquid NAOKI SHIRAI, GOJU SUGA, SHUSUKE NISHIYAMA, KOICHI SASAKI, Hokkaido University — Atmospheric pressure non-thermal plasma in and in contact with liquids has been studied for a wide range of applications. Although many researches have been reported about plasma using liquid electrode, the detail mechanism of the plasma-liquid interaction have not been understood completely. For example, optical emission mechanism of metal cation (such as Na^+) transported from liquid (NaCl aq.) electrode is still unclear. In this study, we focused attention on droplet generation from liquid electrode when liquid electrode discharge is generated. The droplet generation depends on optical emission from the discharge. The droplet dynamics in plasma was observed by laser light scattering. With increasing concentration of NaCl aq., amount of droplet increased and distance of scattered droplet became longer. Namely, amount of droplet depend on the concentration of NaCl aq. solution. When we use the NaCl aq. solution mixed with other electrolyte including metal cation such as $CuSO_4$, intensity of spectral emission of Cu increased compared with the case of using only $CuSO_4$ aq. solution. These results indicate that droplet generation which depends on concentration of NaCl aq. is important factor for transport of metal cation in solution to gas phase.

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