

Abstract Submitted  
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**Chemical reactions induced by plasma in contact with the solution containing halide ions: importance of ion distribution at gas-liquid interface for plasma-liquid interaction**<sup>1</sup> KOSUKE TACHIBANA, KOICHI YASUOKA, Department of Electrical and Electronic Engineering, Tokyo Institute of Technology — Plasma in contact with liquid is widely studied for the research of water purification, nanoparticle synthesis, and so on. However, plasma-liquid interaction has not been fully understood. In order to deepen the understanding of the plasma-liquid interaction, we are focusing on ion distribution at gas-liquid interface and using halide ions of chloride and iodide ions. That is because these ions have similar chemical properties but different distributions at the gas-liquid interface. There is a paper reporting that chloride ions exist in a region a little away from the gas-liquid interface while iodide ions gather at the gas-liquid interface. In order to investigate the importance of the ion distribution at the gas-liquid interface, we irradiated a DC plasma to 2.1 mol/L NaCl and NaI solution. The DC plasma was generated between a metal pin electrode and water surface in argon atmosphere, and the current was regulated at 2 mA. Though the DC plasma could not oxidize chloride ions into chlorine in the 2.1 M NaCl solution within 600 s, the plasma was able to oxidize iodide ions into iodine in the 2.1 M NaI solution within 20 s. The experimental results have shown that the ion distribution at gas-liquid interface can play an important role in the plasma-liquid interaction.

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