Abstract Submitted
for the GEC18 Meeting of
The American Physical Society

Spatiotemporal behavior of OH radical in AC-excited atmospheric pressure Ar plasma jet generated in open air KEIGO TAKEDA, Meijo University, REN KURAMASHI, KENJI ISHIKAWA, TAKAYUKI TSUTSUMI, MASARU HORI, Nagoya University — Reactive species generated by atmospheric pressure plasma jets (APPJs) play important roles to achieve very interesting results on the applications in various fields such as biotechnology, medicine, surface treatment, etc. In atmosphere, the gas-phase reactions caused by APPJ produce many kinds of reactive species in the gas-phase. Moreover, in the case of pulse-modulated APPJs, the composition of the species supplied to the sample would be changed temporally. As results, the reactions make it difficult to understand the mechanisms of surface reaction due to APPJ treatment. Therefore, spatiotemporal diagnosis of the reactive species generated by APPJ is required to clarify the gas-phase reactions and understand the mechanism of surface reaction. In this study, spatiotemporal measurement of gas-phase OH radical generated by an AC excited Ar gas APPJ in open air was performed by laser induced fluorescence (LIF) spectroscopy. From results, the highest LIF signal of OH radical was observed at the front edge of the APPJ. Moreover, it was found that the localized LIF signal moved toward the direction of gas downstream with the progress of discharge. The average shift speed of the localized position was about 1.3 mm/ms.

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Date submitted: 14 Jun 2018 Electronic form version 1.4