

Abstract Submitted
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Measurement of activated species generated by AC power excited non-equilibrium atmospheric pressure Ar plasma jet with air engulfment KEIGO TAKEDA, KENJI ISHIKAWA, HIROMASA TANAKA, Graduate School of Engineering, Nagoya University, HIROYUKI KANO, NU Eco-Engineering, Co., Ltd., MAKOTO SEKINE, MASARU HORI, Graduate School of Engineering, Nagoya University — Non-equilibrium atmospheric pressure plasma jet (NEAPPJ) is very attractive tool for bio and medical applications. In the plasma treatments, samples are typically located at a far region from main discharge, and treated in open air without purge gases. Influence of air engulfment on generation of activated species in the NEAPPJ in open air is a large issue for the application. In this study, the AC excited argon NEAPPJ with the gas flow rate of 2 slm was generated under the open air condition. The densities of the ground state nitrogen monoxide (NO) and the ground state O atom generated by the NEAPPJ were measured by laser induced fluorescence spectroscopy and vacuum ultraviolet absorption spectroscopy. The length of the plasma jet was around 10 mm. Up to 10 mm, the NO density increased with increasing the distance from plasma head, and then saturated in remote region of plasma. On the other hand, the O atom density decreased from 10^{14} to 10^{13} cm^{-3} with increasing the distance. Especially, the amount of decrease in O atom density became the largest at the plasma edge. We will discuss the generation and loss processes of activated species generated in the NEAPPJ with the measurement results using spectroscopic methods.

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