

Abstract Submitted  
for the GEC14 Meeting of  
The American Physical Society

**Vacuum ultraviolet spectroscopic analysis of AC excited non-equilibrium atmospheric pressure Ar plasma jet** KEIGO TAKEDA, KENJI ISHIKAWA, HIROMASA TANAKA, HIROKI KONDO, MAKOTO SEKINE, MASARU HORI, Nagoya University — Plasma biomedical treatments with atmospheric pressure plasma jets (APPJ) have attracted very much. In the treatments, reactive species and high energy photons emitted from APPJ are important factors to realize the performance. Vacuum ultraviolet (VUV) spectroscopy is one of useful techniques to measure quantitative behaviors of atomic radicals and high energy photons. In this study, an AC excited APPJ with Ar gas has been investigated by using the spectroscopy. The Ar APPJ was generated under open air condition, and VUV emission spectra was measured by using a VUV monochromator. The spectra of atomic species such as O (130.4 nm), N (120.0, 174.3 nm), and H (121.6 nm) were observed. The emission intensity of N atom (174.3 nm) in the plasma remote region exponentially decreased with increasing the distance from the plasma jet. The absorption coefficient was estimated to be  $1.8 \text{ cm}^{-1}$ , over 20 mm distance from the plasma jet, the coefficient increase to  $4.2 \text{ cm}^{-1}$  which is almost same with value due to atmosphere. We will discuss behaviors of reactive species and high energy photons emitted from the AC excited Ar APPJ on the basis of the results measured by VUV spectroscopy.

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Date submitted: 13 Jun 2014

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