

Abstract Submitted
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Diagnostics of AC excited Atmospheric Pressure Plasma Jet with He for Biomedical Applications MASARU HORI, KEIGO TAKEDA, TAKUMI KUMAKURA, KENJI ISHIKAWA, HIROMASA TANAKA, HIROKI KONDO, MAKOTO SEKINE, Nagoya University, YOSHIHIRO NAKAI, NU Global — Atmospheric pressure plasma jets (APPJ) are frequently used for biomedical applications. Reactive species generated by the APPJ play important roles for treatments of biomedical samples. Therefore, high density APPJ sources are required to realize the high performance. Our group has developed AC excited Ar APPJ with electron density as high as 10^{15} cm^{-3} , and realized the selective killing of cancer cells and the inactivate spores of *Penicillium digitatum*. Recently, a new spot-size AC excited APPJ with He gas have been developed. In this study, the He APPJ was characterized by using spectroscopy. The plasma was discharged at a He flow rate of 5 slm and a discharge voltage of AC 9 kV. Gas temperature and electron density of the APPJ were measured by optical emission spectroscopy. From theoretical fitting of 2nd positive system of N_2 emission (380.4 nm) and Stark broadening of Balmer β line of H atom (486.1 nm), the gas temperature and the electron density was estimated to be 299 K and $3.4 \times 10^{15} \text{ cm}^{-3}$. The AC excited He APPJ has a potential to realize high density with room temperature and become a very powerful tool for biomedical applications.

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