

Abstract Submitted
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Comparative study of non-thermal atmospheric pressure discharge plasmas for life science applications KAZUNORI KOGA, RYU KATAYAMA, THAPANUT SARINONT, HYUNWOONG SEO, NAHO ITAGAKI, Kyushu University, PANKAJ ATTRI, Kwangwoon University, EDBERTHO LEAL-QUIROS, University of California Merced, AKIYO TANAKA, MASAHARU SHIRATANI, Kyushu University — We are comparing several non-thermal atmospheric pressure discharge plasmas for life science applications. Here we measured discharge period dependence of pH value and 750 nm absorbance of KI-starch solution of deionized water after plasma irradiation with two discharge devices; a dielectric barrier discharge (DBD) jet device and a scalable DBD device [1]. The pH and the absorbance of KI-starch solution are useful indicator of their oxidizability [2, 3]. We have obtained a map of the absorbance and proton concentration $[H^+]$ which is deduced from pH value. For the scalable DBD, the range of the absorbance is between 0.7 and 1.3 and that of $[H^+]$ is between 10^{-7} and 10^{-5} mol/L. For the DBD jet, the range of the absorbance and $[H^+]$ are 2.0-3.2 and 10^{-4} - 10^{-3} mol/L, respectively. Measured data for both devices shows same tendency in the map, while the range of values for the scalable DBD is smaller than that for the DBD jet. The results indicate the oxidizability for the scalable DBD is much weaker than that for the DBD jet. [1] S. Kitazaki, et al., Curr. Appl. Phys. **14** (2014) S149. [2] T. Sarinont, et al., JPS Conf. Proc. **1** (2014) 015078. [3] T. Kawasaki, et al., J. Appl. Phys. **119** (2016) 173301.

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