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Simple Evaluation Method of Atmospheric Plasma Irradiation Dose using pH of Water KAZUNORI KOGA, THAPANUT SARINONT, TAKAAKI AMANO, HYUNWOONG SEO, NAHO ITAGAKI, YOSHIMICHI NAKATSU, AKIYO TANAKA, MASAHARU SHIRATANI, Kyushu University —
Atmospheric discharge plasmas are promising for agricultural productivity improvements and novel medical therapies, because plasma provides high flux of short-lifetime reactive species at low temperature, leading to low damage to living body. For the plasma-bio applications, various kinds of plasma systems are employed, thus common evaluation methods are needed to compare plasma irradiation dose quantitatively among the systems. Here we offer simple evaluation method of plasma irradiation dose using pH of water. Experiments were carried out with a scalable DBD device [1-2]. 300 μl of deionized water was prepared into the quartz 96 microwell plate at 3 mm below electrode. The pH value has been measured just after 10 minutes irradiation. The pH value was evaluated as a function of plasma irradiation dose. Atmospheric air plasma irradiation decreases pH of water with increasing the dose. We also measured concentrations of chemical species such as nitrites, nitrates and H_2O_2. The results indicate our method is promising to evaluate plasma irradiation dose quantitatively.

[1] S. Kitazaki, et al., Curr. Appl. Phys. **14** (2014) S149.
[2] S. Kitazaki, et al., MRS Proc. **1469** (2012) mrss12-1469-ww0608.

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