

**Development of atmospheric-pressure plasma reactor: Discharge characteristics****Osaka City Univ. , °Soshi Imai, Yusuke Sasaki, Tatsuru Shirafuji, °Jun-Seok Oh****E-mail: jsch@osaka-cu.ac.jp**

Atmospheric pressure plasmas are getting importance and widely used in life sciences including biological, biomedical, agriculture etc. The biological response induced by plasma is often thought to arise due to the electrically neutral reactive species in both gas and liquid phases. Number of studies reported such neutral reactive species are strongly link to the biological and medical effects e.g. killing bacteria and cancer treatment etc. In general, when the chemistry of the plasma (gas discharge) is investigated, we observe a lot of positively and negatively charged ionic species as well as electrical neutrals. As it mentioned above, however, it is still not fully understood the complex reactive species chemistry. Only we speculated that the humid ambient air and impurity level of gas are probably strongly to generate reactive species and also unnecessary reactive species.

For precisely control the generation of reactive species, it is necessary to control the level of humid ambient air and impurity of gas. In an open ambient condition, however, it is impossible to regulate the generation of the reactive species. In this study, we introduce our recent development of atmospheric pressure plasma reactor to regulate the production of reactive species. Our plasma reactor is composed by Pyrex cross tube to avoid humid ambient air into plasma and Pyrex coated tungsten electrode to avoid contamination by electrode. The plasma reactor can be operated several kilovolts at a frequency of kHz range likely general dielectric barrier discharge. In the poster, we will present our development atmospheric pressure plasma, especially discharge characteristics.

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