

Abstract Submitted
for the GEC12 Meeting of
The American Physical Society

Generation and characteristic survey of atmospheric-pressure dry, vapor, mist plasma jet using high-frequency high-voltage power supply¹ NORIMITSU TAKAMURA, Graduate School of Science and Technology, Kumamoto University, DOUYAN WANG, Priority Organization for Innovation and Excellence, Kumamoto University, TAKAO NAMIHIRA, Bioelectronics Research Center, Kumamoto University, HIDENORI AKIYAMA, Graduate School of Science and Technology, Kumamoto University — Atmospheric-pressure plasma jet has attracted in the various fields for example surface treatment of materials, bacterial killing and so on. The reasons why the plasma used these applications are because it is a non-thermal, high pressure, uniform glow plasma discharge that produces a high velocity effluent stream of highly reactive chemical species. While passing through the plasma, the feed gas becomes excited, dissociated or ionized by electron impact. Once the gas exits, the discharge volume, ions and electrons are rapidly lost by recombination, but the fast-flowing effluent still contains neutral metastable species and radicals. In our previous study, GFP-7R proteins were promoted delivering into the HeLa cells by dry plasma jet. In this case, we irradiated dry plasma jet only the surface of cell suspension. Therefore, it may be expected that raising the ratio of surface area/volume exposed to plasma by to mist the cell suspension causes further improvement of protein transduction efficiency by irradiating plasma. In this study, we investigated the optimal driving parameters of the plasma jets. The length of dry, vapor, and mist plasma jets and the generated chemical species of each plasma jet will be introduced at the conference.

¹This work was a part of the Global COE program on “Global Initiative Center for Pulsed Power Engineering” of Kumamoto University from the Ministry of Education, Culture, Sports, Science and Technology (MEXT), Japan.

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Date submitted: 27 Jun 2012

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