

Multi-needle plasma jet for large area treatment and its characteristics according to discharge gas

K. Kim, Y. C. Hong

National Fusion Research Institute, Daejeon, Republic of Korea

Plasma is a reactive partially ionized gas containing electrons, positive/negative ions, radicals, and various atoms and molecules. Recent applications of plasma to biology and medicine have evolved to form the concept of plasma medicine [1]. Its potential has been demonstrated in various applications such as sterilization of infected tissues, acceleration of wound healing, induction of blood coagulation, and delicate surgery [2]. Many research groups are developed plasma sources for bio-medical applications using plasma jet. However the plasma jet sources have disadvantages of small treatment area. So it consume long time to treat large affected area. In this work, we suggest multi-needle plasma jet to treat large area and evaluate its characteristics according to discharge gas. The multi-needle jet system have 12 single plasma jet nozzle and it can be treat 3 cm² area at once. In order to evaluate characteristics of multi-needle jet, we measured electrical and optical characteristics of multi-needle jet according to discharge gas.

[1] G. Fridman, G. F. Friedman, A. Gustol, A. B. Shekhter, V. N. Vasilets, and A. Fridman, *Plasma Process. Polym.* 5, 503 (2008).

[2] D. Dobrynin, G. Fridman, G. Friedman, and A. Fridman, *New J. Phys.* 11, 115020 (2009).

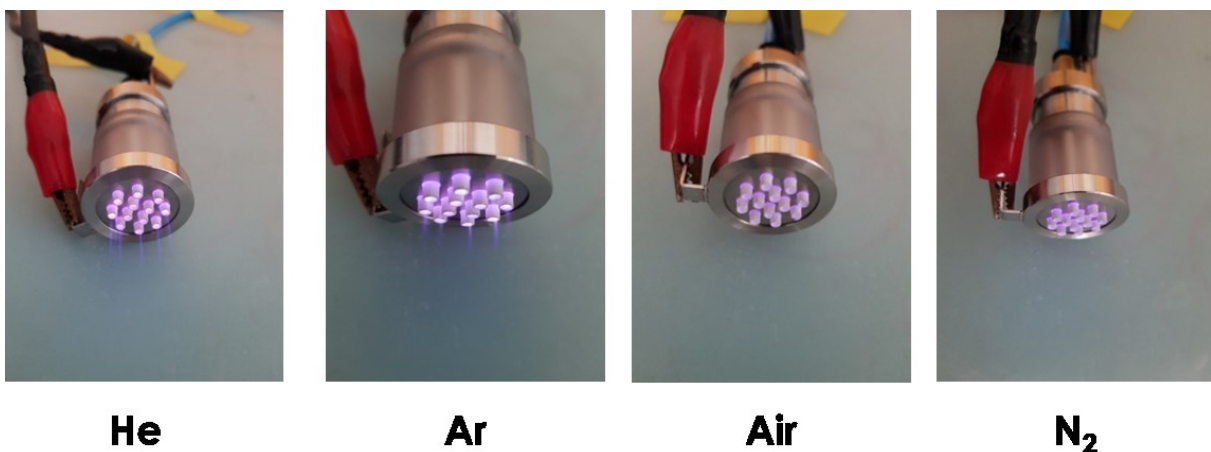


Fig. 1. Photo image of multi-needle jet during discharge