OPTICAL EMISSION SPECTROSCOPY OF A TWO-DI MENSAIONAL CAPILLARY DISCHARGE ARRAY

Max Chung[1,2]
[1]*Dept. of Elect. Eng., Southern Taiwan University, Taiwan*
[2]*CMNST, NCKU, Tainan, Taiwan*

Shiaw Huei Chen, Yung Chih Chen, Ming Sung Yang
INER, AEC, Taoyuan, Taiwan

Capillary discharge is the primary apparatus for atmospheric pressure discharge plasma. Most atmospheric pressure plasm a devices are point or line type because the difficulty of formi ng a two dimensional array mainly lies in the current supply c apability of the power supply. We constructed a two dimensio nal atmospheric pressure plasma array based on series connec ted capillary discharge. Each capillary device is composed of a metal tube and a plate on one end, and a perforated acrylic dielectric plate serves as barrier lies adjacent to this metal. A metal at the bottom serves as the other electrode. Total more t han 50 of these capillary discharge tubes forms a roughly 20x 20 cm atmospheric pressure plasma source. When turned on, a more or less uniform atmospheric pressure plasma forms pr ovided enough power is supplied. Optical emission is used to diagnose the species at different power setting. At higher pow er, the OES spectrum displays a broad dark body radiation be sides individual Nitrogen lines, which indicates the heating of the dielectric and its emission.

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