2018 IEEE International Power Modulator and High Voltage Conference



Contribution ID: 58

Type: Poster Presentation

Temporal-spatial Diagnosis of Pulsed Plasma Jet Array Interaction: The Effect of Input Gas and Jet Spacing

Monday 4 June 2018 13:30 (1h 30m)

Atmospheric pressure plasma jets (APPJs) are suitable for uneven surface and larger-scale treatment, which have been a research hotspot in recent years, ex. surface modification for high voltage insulation. But the interaction between individual jets is the main concern impeding their wide application. In this paper, the temporal-spatial distribution of reactive species in one-dimensional plasma jet array driven by nanosecond pulse power were studied. The effect of input gas and jet spacing on jet interaction were evaluated by electrical, optical and fluidal measurements. Results showed that: (1) The repulsive force between He plasma jet was stronger than Ar plasma jet; (2) The interaction force become weaker with longer jet distance, in our case, with distance of 20 mm, no obvious jet interaction was observed; (3) Although center jet travelled into a shorter distance compared to jets outsides, the emission intensity of N2 second positive band and N2+ first negative band showed a slower dissipation rate than that of outside jets; (4) N2+ first negative band was very sensitive to jet distance, which showed a faster dissipation rate with shorter jet distance.

Authors: WANG, Ruixue (Institute of Electrical Engineering, Chinese Academy of Science); Mr ZHAO, Yong (Institute of Electrical Engineering, Chinese Academy of Sciences); Dr JINTAO, Qiu (Institute of Electrical Engineering, Chinese Academy of Sciences); Prof. SHAO, Tao (Institute of Electrical Engineering, Chinese Academy of Sciences)

Session Classification: Poster 1 - Dielectrics and Electromagnetic Phenomena