

Abstract Submitted  
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**Modeling of dielectric barrier discharge excimer lamp excited by mono polar voltage pulses** HARUAKI AKASHI, Dept. Appl. Phys., National Defense Academy, AKINORI ODA, Nagoya Institute of Technology, YOSUKE SAKAI, Hokkaido University — Filamental discharges in Dielectric Barrier Discharge (DBD) excimer lamp excited by mono polar voltage pulses has been simulated using two dimensional fluid model. And the differences of the filament discharges formations between mono polar case and bipolar case [1] have been examined. Xe gas was used and its pressure is 300Torr. Simulated region is 1cm (gap length) x 3cm (radial length). Periodical boundary conditions are assumed for the radial direction boundaries. The both electrodes are covered with dielectrics and their thickness is 0.2cm. Applied voltage is 5kV trapezoid shape with 50% duty ratio waveform and its repetition rate is 200kpps. First a small amount of electron-ion pair is provided in the middle of the gap for initial condition. Then the voltage starts to apply. In the case of bipolar excitation, the discharge starts from one filament (streamer discharge), and finally, 5 filaments are obtained self-consistently. In the case of mono polar case, as first, similar to bipolar case, the discharge starts from one filament, however, only 3 filaments have been obtained. This result is similar to that of 100kHz bipolar voltage case.

[1] H. Akashi et al, IEEE Trans. Plasma Science, Vol.33, No.2 (2005) pp.308-309

Haruaki Akashi

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