



ChemTech

International Journal of ChemTech Research

CODEN(USA): IJCRGG, ISSN: 0974-4290, ISSN(Online):2455-9555
Vol.10 No.7, pp769-778,2017

Streamer Discharge Beginning, Development, and Branching in a 3cm Atmospheric Air Gap

Thamir H. Khalaf, Samar A. Shakir*

Department of Physics, College of Science, University of Baghdad, Iraq

Abstract: In this work, based on the stochastic model, streamer discharge was modeled and simulated in an atmospheric pressure air gap of 3 cm length. The plasma channels (streamer discharge channels) were followed, step by step, from the anode (rod) to the cathode (plane). The streamer grows in random zigzag trajectory and branched in several positions between the two electrodes. The minimum applied voltage causes the streamer discharge to connect the air gap between the electrodes and causing breakdown is 27.46 kV. The number and positions of branches appeared depending on the applied voltage values. The local voltage and field distributions shown agreement with the streamer development trajectory conferring to the simulation progress time.

Keywords : streamer discharge, plasma channels, air discharge, pre-breakdown, discharge simulation, air gaps.

Samar A. Shakir *et al* // International Journal of ChemTech Research, 2017, 10(7): 769-778.
