Abstract Submitted
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Monte Carlo simulation of radio-frequency breakdown in oxygen and air[1] MARIJA SAVIC, DRAGANA MARIC, MARIJA RADMILOVIC-RADJENOVIC, ZORAN LJ. PETROVIC, Institute of Physics, University of Belgrade, Pregrevica 118, 11080 Belgrade — Radio frequency discharges have been used extensively in the materials processing industry. Nevertheless, processes taking place during the breakdown are still poorly understood. Part of the reason is in large displacement current which prohibits measurements and leaves all to modelling. We have performed detailed simulations using Monte Carlo code, tested in our group, that allows also verification against RF and DC benchmarks and treatment of temporal spatial non-localities. This work contains simulation results of the breakdown voltage curves, Paschen curves. Background gases are oxygen and synthetic air. Electrons were initialized at the point in the middle of the gap and their distribution is evolved in time under the effect of the applied field through Monte Carlo approach. Results qualitatively agree with the available experimental and simulation results. In order to get better insight of the processes leading to the breakdown, spatial distribution of electron energy and concentration as well as rates of ionization and elastic scattering are discussed.

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