

Discharge Motion Simulation in Planar Complex Geometrical Configuration of Electrodes on Unstructured Adaptive Meshes

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Abstract

The paper deals with a numerical solution of ionization wave (discharge) propagation. The model describing the propagation consists of a system of convection-diffusion-reaction equations for charged particles coupled with a Poisson's equation for an electric potential. The transport equations are solved by a finite volume method on an unstructured triangular adaptive grid. The upwind scheme and the diamond scheme are used for the discretization of the convection and diffusion fluxes. The Poisson's equation is discretized also by the diamond scheme. Unstructured meshes allow to solve the discharge motion in more complex geometries. We numerically study the influence of different pin anode shapes as well as the plate cathode shapes and its effect on the discharge splitting.

References

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