Abstract Submitted
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The role of electron-electrode collisions and secondary electrons in radio-frequency breakdown[1] MARIJA PUAC, Institute of Physics, University of Belgrade, Pregrevica 118, Zemun, Belgrade, 11080, Serbia, ANTONIJE DJORDJEVIC, School of Electrical Engineering, University of Belgrade, Belgrade, 11120, Serbia, Serbian Academy of Sciences and Arts, 11001, Belgrade, ZORAN LJ PETROVIC, Institute of Physics, University of Belgrade, Pregrevica 118,Belgrade, 11080, Serbia, Serbian Academy of Sciences and Arts, 11001 Belgrade — While radio-frequency (RF) plasmas have been studied in great detail, the physical foundation of the RF breakdown is less known and is the subject of this paper. Due to the alternating field, the RF breakdown can be supported by electrons only. Thereby, the voltage breakdown curve has a skewed "U" shape with a double-valued region at low pressures [1]. The effects at the electrodes can complement the shape of the breakdown curve by banding its left-hand side. Even a second minimum can be noticed in some gases. At the surface of the electrodes there are two groups of effects. The first group comprises electron collisions with the electrode that involve elastic reflection, inelastic reflection when electron loses a portion of its incoming energy, and electron absorption by the electrode. The second group of effects is the emission of secondary electrons by electrons or heavy particles that leads to multipacting at low pressures and high voltages. Each influence on the voltage breakdown curve has been examined separately. [1] M. Puač, D. Marić, M. Radmilović-Radjenović, M. Šuvakov and Z. Lj Petrović, Plasma Sources Sci. Technol., https://doi.org/10.1088/1361-6595/aacc0c (2018).

[1]Serbian MESTD projects OI 171037, III 41011, SASA project F155

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