SIMULATION OF THE EXPLOSION OF A SURFACE MICROPROTRUSION DURING A RADIO FREQUENCY BREAKDOWN

E. V. ORESHKIN,[1] *S. A. BARENGOLTS*,[1,2] *V. I. ORESHKIN*,[3,4] *AND K. V. KHISHCHENKO*[5]

[1]*Lebedev Physical Institute, RAS, Moscow 119991, Russian Federation*
[2]*Prokhorov General Physics Institute, RAS, Moscow 119991, Russian Federation*
[3]*Institute of High Current Electronics, RAS, Tomsk 634055, Russian Federation*
[4]*National Research Tomsk Polytechnic University, Tomsk 634050, Russian Federation*
[5]*Joint Institute for High Temperatures, RAS, Moscow 125412, Russian Federation*

The explosion of a surface microprotrusion under the action of a radio frequency electromagnetic field has been numerically simulated. It has been demonstrated that the microexplosion and the subsequent crater formation occur in much the same way as they do in the case of a dc field. The results obtained support the hypothesis that a dc vacuum breakdown and a breakdown initiated by an rf wave incident on a metal surface proceed by the same mechanism [1, 2].

This work was supported in part by the Russian Foundation for Basic Research (grants Nos. 17-08-01282, 19-08-01004, 17-08-00459); by the RAS Presidium (basic research program I.11P); Scholarship of the President of the Russian Federation Grant No. SP- 300.2019.1.

REFERENCES

[1] *A Barengolts S. A. et al. //Physical Review Accelerators and Beams. – 2018. – Т. 21. – №. 6. – P. 061004.*
[2] *Oreshkin E. et al. //2018 28th International Symposium on Discharges and Electrical Insulation in Vacuum (ISDEIV). – IEEE, 2018. – Т. 2. – P. 491-494.*