

Primary and Secondary Phenomena during RF Processing of Electron Linac Structures,
A.N. DOVBNYA, V.F. ZHIGLO, National Science Center, Kharkov Institute of Physics & Technology (KFTI) - The dc- and rf-breakdown frequencies as functions of the electric field have been measured. In both cases are extracted two ranges of fields which are characterized by two different breakdown types. Analysis of F-N plots indicates that these field ranges correspond to breakdown initiation by primary and secondary emitters. A creation mechanism of secondary emitters is decrease of the electron work function on surface contamination in consequence of the breakdown. The breakdown frequency is connected with emitters distribution functions of the electric field enhancement factor. This connection is confirmed by experimental data on the influence of surface finish technology on the breakdown frequency which are reported also. Gaussian distribution of primary emitters, as show simulations and experimental results, leads to connection between spatial and temporally breakdown distributions in inhomogeneous accelerating field structures. Some methods using for discovery of secondary effects, binding with gas desorption are discussed.