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The effect of the normal current density and plasma spatial structuring in the DBD in argon[1] IVAN SHKURENKOV, YURI MANKELEVICH, TATYANA RAKHIMOVA — The DBDs is one of the most popular systems for producing low-temperature non-equilibrium plasma. Due to the DBD wide technical application, its spatial structure is of great interest. The high pressure DBD in argon was simulated using the developed 2D model. The DBD of kilohertz range non-uniformity observed during the calculations– the system of concentric plasma rings formation. The simulated structuring process obtained in our model is consistent with the experimental observations. The effect of the normal current density was obtained numerically in our simulation. Both the effect of normal current density and the filaments formation are caused by the nonstationarity at the current channel boundary. The increase in the discharge current occurs due to increase in the number of rings and as a result in the discharge area. The electron concentration and current density in each ring with the applied voltage increase or drop tend to be the same. The DBDs with different dielectrics are studied. The calculations showed that the filamentation process depend on the dielectric layers properties. It was shown that the radial electric field is smoother in the DBD with thinner dielectric layers. It results in more uniform (over the radius) discharge.

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Ivan Shkurenkov

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