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Experimental study of low-temperature plasma of electrical discharges with liquid electrodes[1] VIKTOR ZHELTUKHIN, Kazan National Research Technological University, ALMAZ GAISIN, A.N.Tupolev's Kazan National Research Technical University-KAI — Results of the experimental research of discharge between the liquid jet cathode (LJC) and the metal anode are presented. The discharge was studied over the voltage range $U = 100 - 600$ V, discharge current range $I = 0.1 - 0.25$ A, external pressure range $P = 10^5$ Pa, discharge power $P_d = 10 - 150$ W. We used the techniques of infrared thermography and spectral measurements. Schlieren's photography is applied for describing the processes in liquid and gas phase. Results of the experimental researches of discharge current-voltage characteristic (CVC), the surface temperature distribution both on the LJC and the metal anode, a spectral measurements are showed. Effects of action both of breakdown and discharge on the jet flow as well as on the air flow near the discharge are described. It is found that the discharge CVC has an ascending behavior due to increase of plasma current density. The discharge is generated on the borders between the LJC and the metal anode as well as along the LJC misshaping this one. It is established that both the convection streams and an electrolyte drops are formed during the discharge burn. It is found that the discharge temperature in the vicinity of electrode surface reaches $T \approx 348$ K.

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