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**DC glow discharge in nitrogen with hollow cathode or anode** V.A. LISOVSKIY, R.O. OSMAYEV, D.I. KHILKO, V.D. YEGORENKOV, V.N. Karazin Kharkiv National University — This paper reports the experiments we have performed with a “hollow cathode and a flat anode” and a “hollow anode and a flat cathode”. The discharge with a hollow cathode may burn at low pressure (below 0.1 Torr) in the high voltage mode with an electron beam that can attain the anode. With the gas pressure increasing the electron beam does not leave the cavity, and the discharge is burning in the glow mode. But with the voltage increasing a “hollow” mode sets in when the cathode cavity is filled with the negative glow. The transition between the “glow” and “hollow” modes possesses a hysteresis pattern. At still higher nitrogen pressure (above 0.5 Torr) the total thickness of two cathode sheaths comprises only a small part of the cathode cavity, the negative glow in the form of a thin film covers the cathode surface, the “hollow” mode ceases to play a remarkable role. When we have employed a hollow anode and a flat cathode the flow of fast electrons comes only out of the flat cathode sheath. As the area of the flat cathode is much less than one of the hollow cathode, then using the flat cathode and the hollow anode one can get the discharge current less than one with the hollow cathode.

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