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Modes of burning and axial structure of dc discharge with transverse diaphragm POLINA OGLOBLINA, VALERIY LISOVSKIY¹, VLADIMIR YEGORENKOV, Kharkov National University, 61022, Kharkov, Svobody Sq. 4, Ukraine — This paper reports the CVCs of the dc discharge with a diaphragm located between the electrodes. We determined the conditions when normal and abnormal modes of such a dc discharge can exist. The axial profiles of the plasma parameters (electron temperature, plasma potential and concentration) from the anode to the cathode sheath boundary were also registered with a single Langmuir probe. We demonstrated that at low nitrogen pressure of 0.1 Torr and the discharge current of 1 mA a double layer was formed near the diaphragm only in the cathode part of the tube whereas with the current of 10 mA the double layer expanded to the anode part too. At the nitrogen pressure of 0.5 Torr a positive column was observed in the anode part of the tube, and the double layers were formed on both sides of the diaphragm (in the anode as well as in the cathode parts of the tube). These layers accelerated electrons into the orifice. In all cases the maximum of the plasma concentration is located inside the orifice.

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