

Study of plasma in the mixtures with molecular gas at wide pressure range

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Abstract:

The positive column of DC glow discharge sustained in oxygen and oxygen-nitrogen mixtures has been studied in two discharge tubes of the same shape made from different materials (Silica and Pyrex glass) for total pressures 650 – 2000 Pa and discharge currents up to 40 mA. Various parameters of the discharge – axial electric field strength, concentration of electrons and emission spectra – were studied with emphasis placed on transition region between low- and high-gradient form of the positive column. We have focused on the qualitative and quantitative analysis of the differences in emission spectra for both particular forms and the transitional region between them. The impact of 1 % admixture of nitrogen was also studied.