

Title: Study of Glow Discharge in Oxygen and its Mixtures at Medium Pressures

Author: Lukáš Schmiedt

Department: Department of Surface and Plasma Science

Supervisor: Doc. RNDr. Věra Hrachová, CSc.
Department of Surface and Plasma Science

Abstract:

The positive column of DC glow discharge sustained in oxygen and oxygen-argon mixtures has been studied in two discharge tubes of the same shape made from different materials (Silica and Pyrex glass) for total pressures 200 – 1750 Pa and discharge currents up to 40 mA. Parameters of the discharge – electric field strength and emission spectra – were studied with respect to existence of the low- and high-gradient forms of the positive column of the discharge. We have focused on the qualitative analysis of the differences in emission spectra for both particular forms, as well as on possibility of determination of the rotational temperature of oxygen molecule under various discharge conditions, particularly with respect to the relative amount of the admixture.

Keywords: glow discharge; oxygen; medium pressures; emission spectra