

Investigation of the emission spectrum of the second positive system of molecular nitrogen in a discharge with a liquid electrolyte cathode in air at atmospheric pressure

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The distribution of the emission intensity of the second positive nitrogen system in height was measured in a discharge with a liquid electrolyte cathode at atmospheric pressure in air. It was shown that the emission intensity of the second positive nitrogen system has an absolute maximum near the metal electrode, comparable in integral emission intensity to the integral emission intensity of the rest of the discharge. It was shown that the emission intensity near the metal electrode begins to depend on the solution composition at a discharge current ≥ 60 mA. In this case, the rotational and vibrational temperatures determined from the second positive nitrogen system do not depend on the solution composition near the metal electrode. The rotational temperature increases monotonously with the growth of the discharge current, while the vibrational temperature remains constant within the accuracy of determination.

Keywords: liquid cathode, plasma, electric discharge, air, atmospheric pressure, spectroscopy, emission intensity, second positive nitrogen system, rotational and vibrational temperatures.

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