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Authors:

O. Zeggai

A. Ould-abbas

H. Zeggai

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Abstract

Knowledge of the chemical composition of plasma is required for calculations and modeling in thermal plasmas. Indeed, from the knowledge of this composition can be calculated thermodynamic properties, transport coefficients and the radiative properties of a plasma environment. In this work, we propose to study the influence of thermodynamic equilibrium concentration of oxygen in a gas mixture N₂/O₂. Particularly we study the evolution of the species density in the plasma created according to the temperature and pressure variables for O₂ mixtures. A thermodynamic equilibrium, when you want to take into account a large number of species, two main methods are usually employed, one is based on the law of mass action and the other on minimization of the Gibbs. We decided in our study to the law of mass action and the method of Newton-Raphson. The results show that when the plasma is in thermodynamic equilibrium densities of the different species present in plasma that are functions of temperature and pressure. They are not independent because they are bound by certain laws of thermodynamic equilibrium

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