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Reduction of Reaction Mechanisms in Oxygen Plasma VERA HRACHOVA, RUDOLF HRACH, Charles University, Faculty of Mathematics and Physics, Prague — For the study of processes in chemically active plasmas a macroscopic kinetic approach is very useful. This technique is based on the system of chemical reactions between plasma species. If the number of species in the model is moderate, there exist various numerical techniques to solve the resulting set of differential equations. However, when the kinetic scheme of the model is complicated, the set of input chemical reactions must be reduced first in order to be able to solve the model. In the contribution one of these techniques is analysed. The method is based on the monitoring of the speed of every reaction during the kinetic calculation. The main goal is to preserve only the reactions influencing profoundly the resulting concentrations of main products. Developed reduction technique was applied to the analysis of active discharge in both oxygen and oxygen-argon mixtures. The input experimental data were obtained from the measurements in oxygen containing gas mixtures performed in our laboratory. In the final part of the contribution, the role of most important chemical reactions in the dependence on various plasma parameters is discussed.

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