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Computational study of sheath structure in oxygen containing plasmas at medium pressures. RUDOLF HRACH, Faculty of Mathematics and Physics, Charles University, STANISLAV NOVAK, Faculty of Science, University J.E. Purkinje, TOMAS IBEHEJ, VERA HRACHOVA, Faculty of Mathematics and Physics, Charles University — Plasma mixtures containing active species are used in many plasma-assisted material treatment technologies. The analysis of such systems is rather difficult, as both physical and chemical processes affect plasma properties. A combination of experimental and computational approaches is the best suited, especially at higher pressures and/or in chemically active plasmas. The first part of our study of argon-oxygen mixtures was based on experimental results obtained in the positive column of DC glow discharge. The plasma was analysed by the macroscopic kinetic approach which is based on the set of chemical reactions in the discharge. The result of this model is a time evolution of the number densities of each species. In the second part of contribution the detailed analysis of processes taking place during the interaction of oxygen containing plasma with immersed substrates was performed, the results of the first model being the input parameters. The used method was the particle simulation technique applied to multicomponent plasma. The sheath structure and fluxes of charged particles to substrates were analysed in the dependence on plasma pressure, plasma composition and surface geometry.

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