Physical processes ongoing during the interaction of both inert gas and chemically active plasma with surfaces of immersed solids are studied in this work. The technique used is a computer modeling based on experimental data obtained in our department and also taken from the literature. Focus of this work are two-dimensional particle simulations, whose outputs are parameters of a sheath formed around the immersed solid and characteristics of the contained charged particles. The study of multicomponent plasma presents an analysis of both statical and dynamical properties of the sheath depending on electronegativity. The research of influence of the computer modeling technique on the accuracy of the results and effi ciency of the computations is also accented.