

The complexity of calcareous deposits processes in a marine environment results in simultaneous effects of the following parameters: temperature, polarization potential, interfacial pH, chemical composition, etc.. The comprehension of these processes implies studies in artificial seawater and a follow-up of the parameters by voltamperometry and chronoamperometry. Calcareous deposits electrochemically are very often used to follow up the evolution of scale deposition in desalination circuits. Again, the scale formation is brought about by electrochemical reduction of dissolved oxygen. The hydroxyl ions formed on the metallic surface engender a rise of interfacial pH which causes calcareous deposition (CaCO_3 and $\text{Mg}(\text{OH})_2$). This reaction goes with reaction of hydrogen evolution which could disrupt the formed deposit. A study is carried out in a solution of seawater ASTM without calcium and without magnesium (so that the deposit will not be formed) on a titanium rotating disk electrode monitored between 300 and 1000 rpm. Study shows that Levich criterion is checked for the four values of selected potential on the diffusion plateau and a very cathodic polarization potential and a high temperature favors hydrogen current rate