

## ABSTRACT :

Here, we describe the characteristics of the Cape-Djinet thermal station seawaters of Boumerdes (Algeria). The high hardness had disastrous consequences. Potential, temperature and brine effects on calcareous deposition on titanium electrodes were measured using chronoamperometry and are reported in this paper. Electrochemical measurements showed that the dissolved oxygen played a key role in calcareous deposition. It has been shown that the reaction of reduction oxygen dissolved on the titanium electrode occurred with a global 4 electron process. Scanning electron microscopy images of titanium electrodes that were polarized at  $-1.3$  V/SCE for 1 hour in natural seawater at  $20^{\circ}\text{C}$  showed that the electrode surface was completely covered with deposits in the form of compact layers that were adherent to the surface of the electrode followed by well-dispersed crystals. SDE analysis confirmed these results in which the peaks were rich in magnesium, oxygen and calcium. In contrast, for the brine solution, the deposit was in the form of crackled, weakly bonded platelets followed by those with a small crystal grain size having cubic form. SDE analysis revealed that these crystals were strongly related to sodium chloride salt