

## CORROSION OF A STRUCTURAL STEEL BURIED IN A LOAMY SOIL

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In recent years, with the advancement in technologies, construction engineers have been working to replace quarry sand by raw earth in the construction field. For this purpose, several studies have been launched on these materials. In this work, we have studied the corrosion of a structural steel immersed in loamy soil. To achieve that, electrochemistry methods such as electrochemical impedance spectroscopy (EIS), voltammetry, and free potential measurements were performed on a radiometer, potentiometer PGZ 301 to test the samples. The results were adjusted using ZSimpWin software to determine the kinetic parameters such as corrosion potential and corrosion rate. The results showed that the evolution of the corrosion rate goes through two phases, the first phase corresponds to a decrease from an initial value around 35  $\mu\text{m}/\text{year}$  to reach the value 14  $\mu\text{m}/\text{year}$  after an immersion time between 750 and 900 hours. The second phase shows a fluctuation of the corrosion rate followed by a long stabilization around the value 22  $\mu\text{m}/\text{year}$  after 7000 hours immersion time. The corrosion rate values obtained by the two methods, Stern Gerry and linear polarization were compared to validate our calculations. The energy dispersive X-ray analysis (EDS) and dynamic recrystallization (DRX) analysis showed the formation of a passive film around the steels which was composed of different species such as magnetite, etc., where the film plays a very important role on the evolution of the corrosion process

### Biography

BAGHDAD Miloud, in February 2015. He enrolled in PhD after a national competition under the theme, study of corrosion of steels in composite materials, option Physics of materials. In December 5/ 2017 participate in 5th doctoral day under the theme (corrosion study of steels immersed in soils environment). In April 17/ 2018 i made an experimental presentation at the 11th Scientific and Technical Day (3rd edition of the scientific exhibition Algeria) Algeria, in April 2017. He spend a month of internship at Havre university (France) at the laboratory (Ondes ET Milieux Complexes, UMR CNRS 6294, LOMC), His work related with the fields, corrosion of material, impedance spectroscopy measurement, Analytical Chemistry and surface characterization.

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