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Corrosion of AISI4130 in différents électrolytiques solution

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Abstract : This article discusses the electrochemical behavior of AISI 4130 alloy steel in various electrolyte solutions H₂SO₄, HCl and NaCl. Corrosion tests were carried out on a potentiostat / galvanostat at room temperature in the various electrolytes, under an Ag / AgCl reference electrode with Electrochemical Impedance Spectroscopy (EIS) measurement. The results obtained through the Tafel curves show that the corrosion process can be divided in two parts highlighting the aggressivity of Cl⁻ ions. The impedance which is characterized by a large semicircle in the Nyquist graph increases under H₂SO₄. Equivalent circuits have been determined to represent the corrosion processes at different electrolytes.

Keywords : AISI 4130, electrolytes H₂SO₄, HCl and NaCl