Galvanic Corrosion of Brass /steel 907A Couple in Artificial Seawater

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Galvanic corrosion of brass /steel 907A couples with various cathode /anode area ratios were examined by electrochemical impedance spectroscopy and electrochemical noise technique. Experimental results show that the galvanic corrosion of couples accelerate within the initial 24h, and then decrease in the later time (from 26h to 720h). The products nucleation, growth, film formation stages are characterized using energy distribution plots (EDP) and two parameters (n_1 and n_2) are adopted to differentiate the nucleation and growth processes. According to the variation tendency of n_1 and n_2 , galvanic corrosion process are divided into fluctuating stage and stabilization stage. As the cathode /anode area ratios increase, the corrosion rates of brass /steel 907A couples increase and the period of fluctuating stage lengthens.

Keywords: Galvanic corrosion; Electrochemical noise technique; Brass; Steel 907A

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