Study on the Galvanic Corrosion Behavior of Q235 /Ti Couple in Artificial Seawater

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The corrosion behavior of Q235/Ti galvanic couple in the artificial seawater has been investigated by using electrochemical impedance spectroscopy (EIS), electrochemical noise (EN) and scanning electron microscope (SEM) techniques. The results show that the whole corrosion process of Q235/Ti galvanic couple should be divided into three stages by using EIS technique, whereas the same corrosion process can only be divided into two stages by using EN technique. There exists good relationship between the charge transfer resistance (R_{ct}) obtained from EIS technique and the corrosion index S_E obtained by EN technique. EN technique is more sensitive to pitting corrosion than EIS technique, and can be used to distinguish the main corrosion type.

Keywords: Q235/Ti couple; Galvanic corrosion; Electrochemical impedance spectroscopy; Electrochemical noise; Maximum entropy method

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