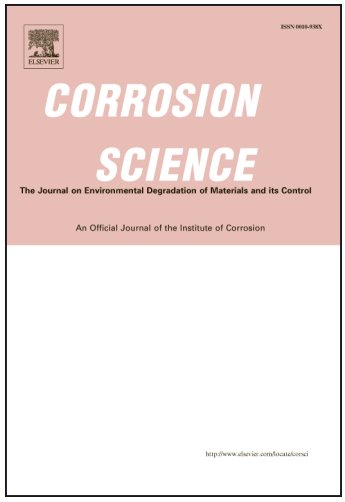

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The failure behaviour of an epoxy glass flake coating/steel system under marine alternating hydrostatic pressure

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Abstract: The failure behaviour of an epoxy glass flake coating/steel system under marine alternating hydrostatic pressure (AHP) was studied by electrochemical impedance spectroscopy (EIS), gravimetric tests, adhesion tests and scanning electron microscopy (SEM). Results reveal that AHP promoted water transportation into the coatings, and deteriorated the interface structures of the coating/steel system, including the coating/steel interface and the pigment/binder interface in the coating body. The failure process of the coating/steel system under marine AHP is discussed in the paper.

Keywords: A. Organic coatings; A. steel; B. EIS; C. Polymer coatings

1. Introduction

With rapid developments in deep sea exploration, more metallic equipment are deployed in the deep sea environments. In contrast with ordinary sea and marine environments, the deep sea environments are specifically characterized by high hydrostatic pressure, relatively low temperature and variable dissolved oxygen

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