Galvanic Corrosion Behavior of 907A/ Titanium Couple in Simulated Seawater

Xiaodong Zhang¹, Xiaoqing Du^{2,*}, Chao Cai³, Zhao Zhang^{2,*}

¹ MIUR, Naval University of Engineering, Wuhan 430033, China

² Department of Chemistry, Zhejiang University, Hangzhou 310027, China

³ Department of Chemistry, Ningxia University, Yinchuan 750021, China

*E-mail: eaglezzy@zju.edu.cn, amyzju88@163.com

doi: 10.20964/2017.03.75

Received: 3 January 2017 / Accepted: 29 January 2017 / Published: 12 February 2017

The corrosion behaviors of 907A and 907A/ titanium galvanic couple (GC) in seawater have been studied by using electrochemical impedance spectroscopy and electrochemical noise techniques in conjunction with scanning electron microscope method. The results show that, both the corrosion process of 907A and 907A /Ti GC can be divided into two stages but with different demarcation point, and the potential difference between Ti and 907A not only markedly accelerates the corrosion process of 907A in 907A/Ti GC, but also possibly changes its corrosion mechanism. The electrochemical active energy E_a derived from the corrosion noise has been first adopted to characterize the corrosion process of 907A and 907A/Ti GC in seawater, and it is found that the larger the E_a value, the higher the corrosion rate.

Keywords: 907A/Ti; Galvanic corrosion; Electrochemical noise; Electrochemical impedance spectroscopy;

[FULL TEXT](#)

© 2017 The Authors. Published by ESG (www.electrochemsci.org). This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).