Electrochemical Behavior of Jasmine Tea Extract as Corrosion Inhibitor for Carbon Steel in Hydrochloric Acid Solution

Jun Tang¹, Hu Wang^{1,*}, Xiaoqin Jiang¹, Zhihao Zhu¹, Juan Xie¹, Junlei Tang², Yingying Wang², Mohamad Chamas², Yuanqiang Zhu², Hongguo Tian³

¹ School of Materials Science and Engineering, Southwest Petroleum University, Chengdu 610500, China

² School of Chemistry and Chemical Engineering, Southwest Petroleum University, Chengdu 610500, China

³ Power Workshop, Refining & Chemical Plant of Yumen Oilfield Company, Yumen 735200, China

*E-mail: senty78@126.com

doi: 10.20964/2018.04.41

Received: 21 November 2017 / Accepted: 29 January 2018 / Published: 6 March 2018

The extract of jasmine tea was studied as corrosion inhibitor for carbon steel in 1 mol L⁻¹ HCl solution by electrochemical method, scanning electron microscope (SEM) and X-ray photoelectron spectroscopy (XPS). Inhibition efficiency for carbon steel in HCl solution increases with inhibitor concentration and temperature. Adsorption behavior of the extract obeys Langmuir adsorption isotherm. Polarization curves results indicate that this extract is a mixed type inhibitor. SEM and XPS reveal that the extract adsorbs on metal surface and forms a protective layer.

Keywords: corrosion inhibitor, EIS, XPS, carbon steel, acid solution

[FULL TEXT](#)

© 2018 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/>).