Short Communication

Anti-corrosion Properties of a Bioinspired superhydrophobic surface on Stainless Steel

Erling Zhao¹, Yanqiang Li¹, Liguao Gao^{1,*}, Shuzhang Yang¹, Tingli Ma^{2,*}

¹State Key Laboratory of Fine Chemicals, School of petroleum and chemical engineering, Dalian University of Technology, Panjin, 124221, China.

²Graduate School of Life Science and Systems Engineering, Kyushu Institute of Technology, Kitakyushu, Fukuoka, 808-0196, Japan

*E-mail: liguo.gao@dlut.edu.cn tinglima@dlut.edu.cn

doi: 10.20964/2017.10.23

Received: 2 March 2017 / *Accepted:* 19 July 2017 / *Published:* 12 September 2017

Metal corrosion causes tremendous financial loss and disasters every year. Inspired by “lotus effect,” a superhydrophobic stainless steel surface with anti-corrosion property was realized in this study. The bioinspired micro–nano structures were fabricated by utilizing two chemical etching procedures. The water contact angle (CA) of the prepared surface reached 173°. The correlative mechanism between CA and surface morphology was elucidated by adjusting the key reaction conditions. Electrochemical corrosion test showed that the bioinspired superhydrophobic stainless steel possessed a polarization resistance that is 28.9 times higher than that of common stainless-steel surface.

Keywords: Superhydrophobic; Stainless steel; Micro-nano structure; Anti-corrosion

[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/>).