***Ipomoea batatas* leaves extract as a green corrosion inhibitor for Q235 steel in HCl solution**

Wenguang Zeng^{1,2}, Yanyan Xu^{1,2}, Pengli Ge^{1,2}, Wenwen Xiao^{1,2}, Qingshan Liu^{1,2},
Zhengyuan Gao^{3,*}, Yongbo Yan^{4,*},

¹ SINOPEC Northwest Company of China Petroleum and Chemical Corporation, Urumqi 830011, China;

² Key Laboratory of Enhanced Oil Recovery in Carbonate Fractured-vuggy Reservoirs, SINOPEC, Urumqi 830011, China

³ School of Mechatronics & Vehicle Engineering, Chongqing Jiaotong University, Chongqing, 400074, China;

⁴ School of Oil and Natural Gas Engineering, Southwest Petroleum University, Chengdu 610500

*E-mail: zhengyuangao@cqjtu.edu.cn (Z. Gao); 779265488@qq.com (Y. Yan).

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In this study, *Ipomoea batatas* leaves extract (IBLE) was prepared to control Q235 steel corrosion in 1 M HCl solution firstly. The adsorption and corrosion inhibition properties were examined by weight loss, surface topography and electrochemical methods, as well as theoretical simulations. Experimental results reveal that IBLE is a high efficiency mixed-type inhibitor with optimal performance of 96.4% at 200 mg/L. This contributes to the adsorption of IBLE onto steel samples, which involves both physisorption and chemisorption, consequently forming a strong protective film between steel and acid solution. In addition, molecular simulation results further confirm that IBLE can be effectively adsorbed onto Fe(110) substrate. Therefore, we developed a novel eco-friendly, efficient corrosion inhibitor for steel in HCl solution.

Keywords: Corrosion inhibitor; Extract; DFT; Langmuir; Molecular dynamics simulation.

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