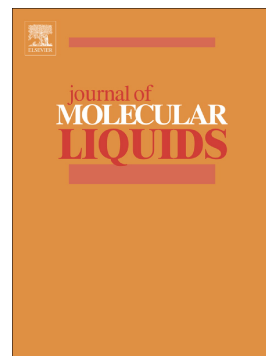


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Adsorption characteristics of Iota-carrageenan and Inulin biopolymers as potential corrosion inhibitors at mild steel/sulphuric acid interface

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Abstract

The corrosion inhibition efficiency performance of biopolymers Iota-carrageenan (IC) and Inulin (INU) on mild steel in 0.5 M H₂SO₄ solution was evaluated using weight loss, potentiodynamic polarization and electrochemical impedance spectroscopy (EIS) techniques. The inhibition efficiency of the inhibitors increased with increase in concentration. Thermodynamic parameters (ΔG_{ads}) and activation parameters (E_a , ΔH° , ΔS°) were calculated to investigate the mechanism of inhibition. Polarization studies revealed that the studied inhibitors are mixed type. Scanning electron microscope (SEM), energy dispersive X-ray spectroscopic (EDX) and atomic force microscopy (AFM) studies were used to characterize the surface morphology of inhibited and uninhibited mild steel.

Keywords: biopolymers; weight loss; electrochemical technique; mixed-type inhibitors; mild steel; corrosion inhibition

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