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Biomass of Microalgae *Chlorella sorokiniana* as Green Corrosion Inhibitor for Mild Steel in HCl Solution

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Biomass of microalgae *Chlorella sorokiniana* was studied as a green inhibitor of corrosion of mild steel in 1 mol L^{-1} HCl solution. The investigation includes weight-loss experiments, potentiodynamic polarization curves, electrochemical impedance measurements and surface analysis by scanning electron microscopy. The use of 100 mg L^{-1} of the *Chlorella sorokiniana* biomass reached an inhibition efficiency of 94.6% after 24 h of immersion. The addition of the microalgae biomass did not change the apparent activation energy which characterizes adsorption by blocking, showing that the constituents form a protective film on the metallic surface of mild steel. The high molecular weight fraction isolated from the biomass showed an inhibition efficiency close to the total biomass, which suggests that proteins macromolecules are probably responsible for the inhibitory action observed by the microalgae biomass.

Keywords: mild steel, green inhibitor, microalgae *Chlorella sorokiniana*.

FULL TEXT