Short Communication

Corrosion Inhibition Effect of a New Quinoline Derivative on Q235 Steel in H₂SO₄ Solution

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In this work, a new quinoline derivative namely 5-benzyl-8-propoxyquinoline (5BPQ) has been studied to inhibit the Q235 steel corrosion in sulfuric acid. The protection ability of 5BPQ was investigated by electrochemical tests, weight loss and SEM measurements. Results indicate that the target 5BPQ has strong adsorption ability on the steel surface, thus shows excellent corrosion protective performance for steel in acid solution. The maximum inhibition efficiency of 5BPQ is 97.7%), which is attributed to the effect of the heterocyclic rings. Scanning electron microscope (SEM) was utilized to further analysis the appearance of steel surface. Furthermore, the quantum calculation and molecular dynamics (MD) simulation further supported experiment. The systematic study gives a new guide to design novel quinoline derivative molecules to obtain the corrosion protection ability.

Keywords: Corrosion Inhibitor; Q235 steel; SEM; MD Simulation.

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