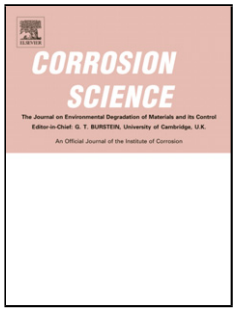

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Inhibition of the corrosion of carbon steel in HCl solution by methionine and its derivatives

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Abstract

The self-assembled films of methionine and its derivatives were prepared on a 1045 carbon steel (CS) surface. EIS and potentiodynamic measurements showed that these films could effectively protect CS against corrosion in 0.5 M HCl, with a maximal protection efficiency of 95.01% achieved by FMOC films. An XPS study confirmed that methionine and its derivatives could form films by chemical adsorption on CS. The inhibition mechanism was theoretically investigated through the quantum chemical calculation and dynamic simulation.

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