Short Communication

Effect of *Alcaligenes sp.* and sulfate-reducing bacteria on corrosion of Q235 steel in simulated marine environment

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doi: 10.20964/2019.09.83

Received: 8 June 2019 / Accepted: 15 July 2019 / Published: 5 August 2019

Sulfate-reducing bacteria, as anaerobic microorganisms, are the most important and representative bacteria responsible for metal corrosion. *Alcaligenes sp.*, as a hydrocarbon-degrading bacterium, often coexists with sulfate-reducing bacteria in coastal environments, especially in storage tanks and pipelines. In this paper, the corrosion behavior of Q235 steel in the solution of pure sulfate-reducing bacteria, *Alcaligenes sp.* and their mixed bacteria were analyzed by open circuit potential, electrochemical impedance spectroscopy, polarization curves and stereoscopic microscope. All the electrochemical results and morphology analysis showed that the corrosion of Q235 steel was the most severe in the pure sulfate-reducing bacteria medium. The corrosion behavior in the mixed bacteria system was similar to that in a pure *Alcaligenes sp.* system, and the involvement of *Alcaligenes sp.* greatly weakened the local corrosion of Q235 steel by sulfate-reducing bacteria. It provides a new possible approach to increase the service life of the material when microbiologically influenced corrosion is dominated by sulfate-reducing bacteria.

Keywords: MIC; Sulfate-reducing bacteria; *Alcaligenes sp.*; Mixed bacteria

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