

Identification and Phylogenetic Analysis of New Sulfate-Reducing Bacteria Isolated from Oilfield Samples

Wu Chen^{a,b}, Fu Xiang^b, Jie Fu^a, Qiang Wang^a, Wenjun Wang^b, Qingfu Zeng^a, and Longjiang Yu^{b,*}

^a Engineering Research Center of Textile Printing and Dyeing, Ministry of Education, Wuhan University of Science and Engineering, Wuhan 430073, China

^b Institute of Resource Biology and Biotechnology, College of Life Science and Technology, Huazhong University of Science and Technology, Wuhan 430074, China.
E-mail: yulongjiang@hust.edu.cn

* Author for correspondence and reprint requests

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Microbiologically influenced corrosion (MIC) caused by sulfate-reducing bacteria (SRB) has been investigated in an oilfield injection water system. Strain CW-01 was isolated from an oilfield and strain CW-04 was isolated from biofilm dirt of pipeline walls. The strains were facultative anaerobes, non-motile, Gram-positive, pole flagellum, and spore-forming curved rods. The growth was observed over the temperature range 20–70 °C. Strain CW-01 grew optimally at 37 °C. The pH range for growth was 3.0–11, optimal at pH 6.0. Strain CW-04 grew optimally at 48 °C. The pH range for growth was 3.0–10, optimal at pH 7.2. The strains grew at a very broad range of salt concentrations. Optimal growth was observed with 1.5 g/L NaCl for strain CW-01 and 0.7 g/L NaCl for strain CW-04. The strains showed most similarity in physiological characteristics, except for acetone and saccharose. Analysis of the 16S rDNA sequences allowed strains CW-01 and CW-04 to be classified into the genus *Desulfotomaculum*. The corrosion speciality of the strains had been comparatively investigated. Especially SRB's growth curve, bearable oxygen capability, drug fastness and corrosion rate had been analyzed. The results showed that it is difficult to prevent bacterial corrosion caused by these two strains.

Key words: Microbiologically Influenced Corrosion, Sulfate-Reducing Bacteria, 16S rDNA