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Mini Review

Corrosion of General Oil-field Grade Steel in CO_2 Environment - an Update in the Light of Current Understanding

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In this review, we discussed the current mechanistic understanding and effects of key parameters on corrosion of carbon and low alloy steel (CLAS) in CO_2 environments. In particular, we emphasized on the current understanding related to the mechanism of early stage nucleation of siderite that has evolved from the outcomes of in-situ synchrotron-based X-ray studies under various modes. We also highlighted the effect of the most important environmental and metallurgical factors affecting the corrosion behavior of CLAS. Finally, we addressed the aspects of material chemistry and micro-alloying necessary for achieving the most effective and economic materials system for mitigating corrosion in CO_2 environment.

Keywords: CO_2 corrosion, mechanism, early stage nucleation, micro-alloying, environmental factors.

FULL TEXT