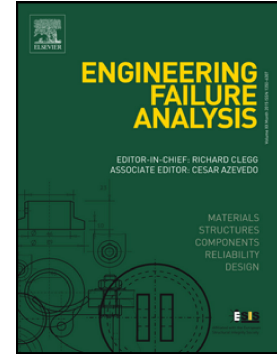


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Mechanistic Models for Environmentally- Assisted Cracking in Sour Service

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Abstract:

Environmentally- assisted cracking (EAC) of structural metal materials occurs by initiation and coalescence of micro cracks, subcritical crack propagation and multiple large crack formation or final failure under combination of material, stress and corrosive environment. EAC is an important issue in sour oil and gas fields due to presence of different operational conditions; therefore, it can influence on the performance and lifetime of materials widely carried out in the oil and gas industries. Numerous standard mathematical models have been established based on the mechanisms leading to the EAC pertaining failures. The aim of this research is introducing the development of the simulating models basis for the quantitative prediction and qualitative diagnostics of the cracking incidence and failure under the impact of stresses and sour environments. The comparative aspects of the mentioned simulation models were discussed through diagrams, tables and scientific figures.

Keywords: Environmentally-assisted cracking; failure; modeling; prediction

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