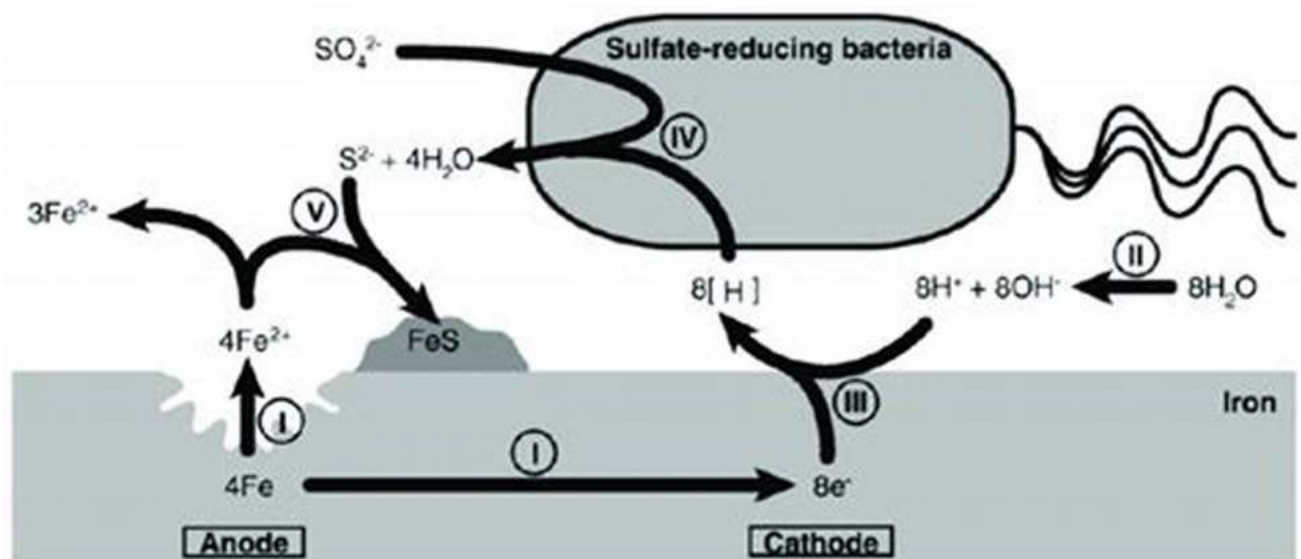


Discover the Hidden Danger of Microbiologically Influenced Corrosion in Wiley's Corrosion Study

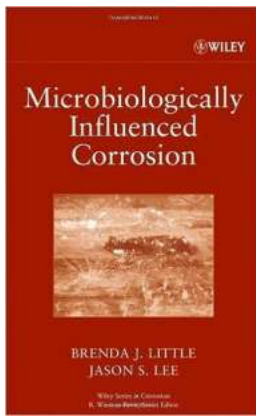
The Silent Threat That Could Be Destroying Your Infrastructure



Corrosion is an issue that affects countless industries worldwide, resulting in massive financial losses and compromised safety. However, there is a hidden danger lurking beneath the surface, known as Microbiologically Influenced Corrosion (MIC), which poses an even greater threat to the integrity of structures and infrastructure. In this article, we delve into Wiley's groundbreaking research on MIC in corrosion, uncovering its causes, effects, and preventive measures.

The Nature of Microbiologically Influenced Corrosion

What is MIC?



Microbiologically Influenced Corrosion (Wiley Series in Corrosion Book 7)

by Germán N. Gallardo Aparicio (1st Edition, Kindle Edition)

★★★★☆ 4.7 out of 5

Language : English

File size : 6290 KB

Text-to-Speech: Enabled

Screen Reader: Supported

Print length : 279 pages

Lending : Enabled



MIC is a type of corrosion that occurs when microorganisms, such as bacteria and fungi, interact with metals in the presence of moisture and oxygen. These microbes create a unique environment that accelerates the corrosion process, leading to severe damage to metal surfaces.

Understanding the Causes

One of the primary causes of MIC is the formation of biofilms. These biofilms act as protective layers, shielding the microorganisms from harmful environmental factors while allowing them to thrive. Within these biofilms, different species of microbes work together, producing corrosive byproducts that attack the metal surface.

Effects on Structures and Infrastructure

The consequences of MIC can be catastrophic. Structures and infrastructure affected by MIC often experience localized or pitting corrosion, which can result in reduced load-bearing capacities and structural failures. This type of corrosion can

be particularly challenging to detect and mitigate, leading to significant maintenance costs and potential safety hazards.

Wiley's Study on Microbiologically Influenced Corrosion

In Wiley's comprehensive research on MIC, a team of corrosion experts explored various aspects of this phenomenon, aiming to enhance understanding and develop effective preventive strategies. Some key findings from the study include:

1. Identifying the Key Microorganisms:

The study identified several microorganisms that play a crucial role in MIC, such as sulfate-reducing bacteria (SRB), acid-producing bacteria (APB), and iron-oxidizing bacteria (IOB). Understanding the presence and behavior of these microbes is vital for preventing MIC and preserving the integrity of structures.

2. Analyzing the Corrosive Mechanisms:

By studying the corrosive byproducts produced by the microorganisms, researchers gained insights into the mechanisms that drive MIC. This knowledge can aid in developing targeted corrosion prevention strategies that inhibit the growth and activity of these microbes.

3. Implementing Preventive Measures:

Based on their findings, the Wiley team proposed preventive measures to combat MIC effectively. These measures include the use of corrosion-resistant materials, regular monitoring and maintenance, and the application of antimicrobial coatings.

Protecting Your Structures and Infrastructure

Now that you understand the severity of MIC and the insights gleaned from Wiley's corrosion study, it's crucial to take proactive steps to protect your structures and infrastructure. Here are some key preventive measures you can implement:

1. Regular Inspection and Monitoring:

Develop a comprehensive inspection and monitoring plan to identify early signs of MIC. This involves regularly checking for signs of localized corrosion, biofilm formation, and unusual metal degradation.

2. Material Selection:

Consider using corrosion-resistant materials during the construction or maintenance of structures. These materials are specifically designed to resist MIC and can significantly extend the lifespan of your assets.

3. Implement Protective Coatings:

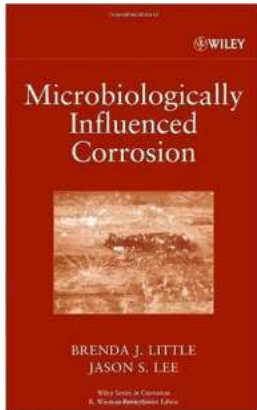
Apply antimicrobial coatings to metal surfaces to prevent the formation of biofilms and inhibit the growth of corrosive microorganisms. These coatings act as an additional barrier of protection against MIC.

4. Maintain Dry Environments:

Minimize moisture levels and ensure adequate ventilation in areas susceptible to MIC. By controlling the environmental conditions, you can limit the growth and activity of corrosive microorganisms.

Microbiologically Influenced Corrosion is a significant threat that demands attention from industries relying on metal structures. With the insights obtained

from Wiley's pioneering research on MIC in corrosion, you now have valuable knowledge to combat this silent danger. By implementing preventive measures and staying vigilant, you can safeguard your structures and infrastructure, saving costs and ensuring long-term safety.



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A multi-disciplinary, multi-industry overview of microbiologically influenced corrosion, with strategies for diagnosis and control or prevention

Microbiologically Influenced Corrosion helps engineers and scientists understand and combat the costly failures that occur due to microbiologically influenced corrosion (MIC). This book combines recent findings from diverse disciplines into one comprehensive reference. Complete with case histories from a variety of environments, it covers:

- Biofilm formation
- Causative organisms, relating bacteria and fungi to corrosion mechanisms for groups of metals

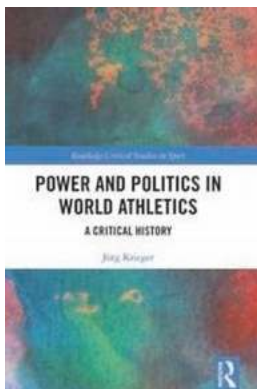
- Diagnosing and monitoring MIC
- Electrochemical techniques, with an overview of methods for detection of MIC
- The impact of alloying elements, including antimicrobial metals, and design features on MIC
- MIC of non-metallics
- Strategies for control or prevention of MIC, including engineering, chemical, and biological approaches

This is a valuable, all-inclusive reference for corrosion scientists, engineers, and researchers, as well as designers, managers, and operators.



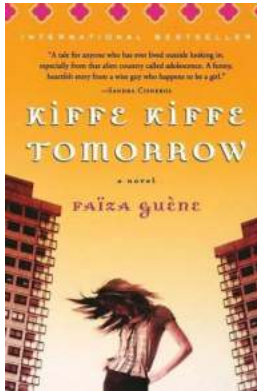
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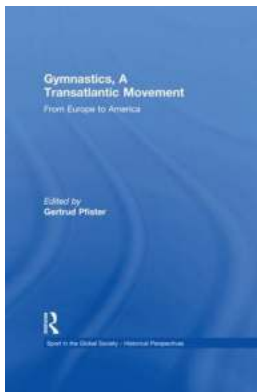
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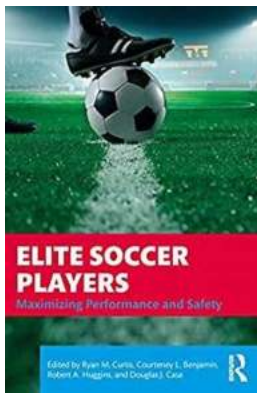
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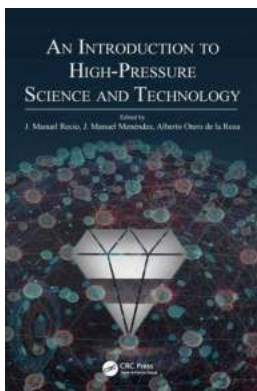
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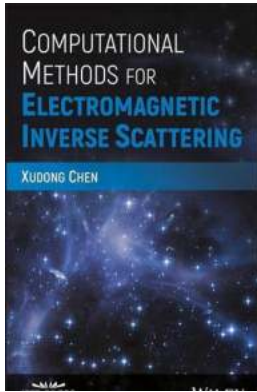
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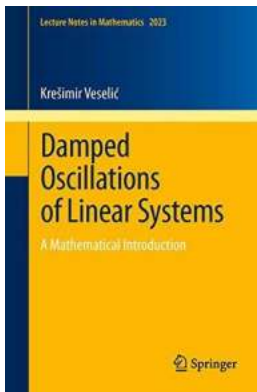
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