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Microbially induced corrosion (MIC)

4.3 Sulphate-reducing bacteria (SRB): bringing together hydrogen, sulphur and nitrogen biocycles4.4 Electron transfer (ET) processes relevant for SRB; 4.5 Bacteria and metal surfaces: influence of extracellular polymeric substances (EPSs); 4.6 Useful methods and tools for MIC assessment; 4.7 Conclusions; Acknowledgements; References; 5 Electroactive biofilms; 5.1 Introduction; 5.2 Different types of electron transfer mechanisms; 5.3 Examples of electroactive biofilms (EABs) from the lab; 5.4 EABs and technological applications; 5.5 EABs and biocorrosion; 5.6 Conclusions; References
6 Immobilization and trapping of living bacteria and applications in corrosion studies 6.1 Introduction; 6.2 Materials and methods; 6.3 Immunoimmobilization, trapping bacteria and applications; 6.4 BiyoTrap and applications; 6.5 Conclusions; Acknowledgements; References; Part Two Evaluating and modelling biocorrosion; 7 Physical and local electrochemical techniques for measuringcorrosion rates of metals; 7.1 Introduction; 7.2 Global measurement of corrosion rate; 7.3 Electrochemical techniques for monitoring generalizedcorrosion; 7.4 Electrochemical techniques for monitoring localizedcorrosion
7.5 ConclusionsReferences; 8 Surface analysis techniques for investigating biocorrosion; 8.1 Introduction; 8.2 X-ray photoelectron spectroscopy (XPS) analysis; 8.3 Time-of-flight secondary ion mass spectrometry (ToF-SIMS) analysis; 8.4 Combining different analysis techniques; 8.5 Conclusions; References; 9 Modelling long term corrosion of steel infrastructure in naturalmarine environments; 9.1 Introduction; 9.2 Models and modelling; 9.3 Models for corrosion; 9.4 Factors involved in marine corrosion; 9.5 Microbiologically influenced corrosion (MIC); 9.6 Corrosion loss model
9.7 Effects of nutrient pollution

Sommario/riassunto

<ul><li>Provides a detailed overview of biocorrosion and the different scientific and/or industrial problems related to microbially induced corrosion</li><li>Introduces a variety of investigative techniques and methodologies that are employed in diagnosing and evaluating microbially induced corrosion</li><li>Includes case studies on: biodeterioration of building materials; biocorrosion issues associated with diesel and biofuels; marine biocorrosion; corrosion of open recirculating cooling water systems and cooling system components; the effect of H<SUB>2</SUB>S on steel corrosion</li></ul>