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Nota di contenuto	Frontmatter -- Table of contents -- Preface -- List of authors -- Acknowledgements -- Theme 1 Physico-chemistry of surfaces -- Chapitre 1: Introduction to the physical chemistry of surfaces -- Chapitre 2: Construction materials: general description and physical chemistry -- Chapitre 3: Microorganism-Concrete Interactions -- Theme 2 Biofilms: actors of biodeterioration -- Chapitre 4: The bacterial cell: the functional unit of biofilms -- Chapitre 5: Biofilm lifestyle of the microscopic inhabitants of surfaces. -- Chapitre 6: Journey to the centre of biofilms : nature, cohesiveness and functions of the exopolymer matrix -- Chapitre 7: Biofilms in a marine environment : example of intertidal mud flats and metallic port structures -- Chapitre 8: Biofilms and management of microbial quality in drinking water supply systems -- Chapitre 9: Biofilms in industrial cooling circuits -- Theme 3 Biocorrosion of metallic materials -- Chapitre 10: Electrochemical methods applied to biocorrosion -- Chapitre 11: On the iron-sulphur interactions involved in biocorrosion phenomena -- Theme 4 Biodeterioration of non-metallic materials -- Chapitre 12: Biodeterioration of cementitious materials : interactions environment - microorganisms - materials -- Chapitre 13: Concrete biodeterioration -- Chapitre 14: Biodeterioration of cementitious materials in sewage structures -- Chapitre 15: Biodeterioration of cultural properties -- Theme 5 Design and modification of materials --

Chapitre 16: Choosing metallic materials with respect to microbial induced corrosion -- Chapitre 17: Antimicrobial surfaces : A tool to combat biofilm development -- Chapitre 18: Extracellular microbial substances for cementitious materials

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## Sommario/riassunto

This multidisciplinary book is the result of a collective work synthesizing presentations made by various specialists during the CNRS «BIODEMAT» school, which took place in October 2014 in La Rochelle (France). It is designed for readers of a range of scientific specialties (chemistry, biology, physics, etc.) and examines various industrial problems (e.g., water, sewerage and maintaining building materials). Metallic, cementitious, polymeric and composite materials age depending on their service and operational environments. In such cases, the presence of microorganisms can lead to biodeterioration. However, microorganisms can also help protect structures, provided their immense possibilities are mastered and put to good use. This book is divided into five themes related to biocolonization, material biodeterioration, and potential improvements to such materials resulting in better performance levels with respect to biodeterioration:

- physical chemistry of surfaces;
- biofilm implication in biodeterioration;
- biocorrosion of metallic materials;
- biodeterioration of non-metallic materials;
- design and modification of materials.

The affiliations of the authors of the various chapters illustrate the synergy between academic research and its transfer to industry. This demonstrates the essential interaction between the various actors in this complex field: analysing, understanding, and responding to the scientific issues related to biodeterioration.

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