

Plant Biology For Cultural Heritage Biodeterioration And Conservation

All about biocides for coatings: When it comes to protecting coatings, it is essential to strike the right balance between controlling germs in order to avoid economic damage on the one hand and tolerating microbial life where it is necessary and useful on the other. The new book from Frank Sauer provides a comprehensive overview of the working mechanisms and possible applications of microbicides for coatings - invaluable for formulators and technicians as well as for business people with a basic knowledge of chemistry and biology.

The term biodiversity defines not only all the variety of life in the Earth but also their complex interactions. Under the current scenario of biodiversity loss, and in order to preserve it, it is essential to achieve a deep understanding on all the aspects related to the biological interactions, including their functioning and significance. This volume contains several contributions (nineteen in total) that illustrate the state of the art of the academic research in the field of biological interactions in its widest sense; that is, not only the interactions between living organisms are considered, but also those between living organisms and abiotic elements of the environment as well as those between living organisms and the humans. The theory of Co-Corporeality is based on a conception of the built environment as a biological entity that opens up a space for coexistence and interaction between humans and microbial life. Based on design-led research, this book explores how we can develop environments for a multispecies world. It focuses on the agency of both human and nonhuman actors. New sensor tools enable observation of and interaction between these different actors. Co-Corporeality links microbiology to material science, artificial intelligence, and architecture. The focus is on how microbial activity can create new protoarchitectural materials, how living systems can be integrated into architecture and cooperate along different time scales.

This open access book offers a comprehensive overview of the role and potential of microorganisms in the degradation and preservation of cultural materials (e.g. stone, metals, graphic documents, textiles, paintings, glass, etc.). Microorganisms are a major cause of deterioration in cultural artefacts, both in the case of outdoor monuments and archaeological finds. This book covers the microorganisms involved in biodeterioration and control methods used to reduce their impact on cultural artefacts. Additionally, the reader will learn more about how microorganisms can be used for the preservation and protection of cultural artefacts through bio-based and eco-friendly materials. New avenues for developing methods

and materials for the conservation of cultural artefacts are discussed, together with concrete advances in terms of sustainability, effectiveness and toxicity, making the book essential reading for anyone interested in microbiology and the preservation of cultural heritage.

At the Interface of Nature and Culture

Advanced X-ray Imaging of Electrochemical Energy Materials and Devices

Methods and Measurement Techniques for Biodeterioration Monitoring

Microbial Biotechnology Approaches to Monuments of Cultural Heritage

Biodeterioration of Wooden Cultural Heritage

X-Ray Fluorescence in Biological Sciences

Issues in Life Sciences—Botany and Plant Biology Research: 2012 Edition is a ScholarlyEditions™ eBook that delivers timely, authoritative, and comprehensive information about Plant Nutrition and Soil Science. The editors have built Issues in Life Sciences—Botany and Plant Biology Research: 2012 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Plant Nutrition and Soil Science in this eBook to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Issues in Life Sciences—Botany and Plant Biology Research: 2012 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at <http://www.ScholarlyEditions.com/>.

In recent years, a debate has arisen concerning the convenience of conserving subterranean cultural heritage and the necessary management models. There is often pressure from local authorities more interested in using the cultural heritage sites in order to develop the economy and the tourism industry rather than in the conservation of the cultural

Bioremediation technologies for environments contaminated by organic and inorganic pollutants are a major focus of researchers and scientists worldwide. The chemical control of agricultural pests and advocacy for sustainable agriculture have led to the development of new paradigms in environmental remediation. This book covers recent advances in the bioremediation technology of organic and inorganic

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pollutants in the environment.

Computational Chemistry Methodology in Structural Biology and Materials Sciences provides a selection of new research in theoretical and experimental chemistry, focusing on topics in the materials science and biological activity. Part 1, on Computational Chemistry Methodology in Biological Activity, of the book emphasizes presents new developments in the domain of theoretical and computational chemistry and its applications to bioactive molecules. It looks at various aspects of density functional theory and other issues. Part 2, on Computational Chemistry Methodology in Materials Science, presents informative new research on computational chemistry as applied to materials science. The wide range of topics regarding the application of theoretical and experimental chemistry and materials science and biological domain will be valuable in the context of addressing contemporary research problems.

Computational Chemistry Methodology in Structural Biology and Materials Sciences

The Importance of Biological Interactions in the Study of Biodiversity

British Qualifications 2020

Their Diversity in Space and Time

CONSERVATION OF WOODEN OBJECTS

Science and Technology for the Conservation of Cultural Heritage

From 2nd to 5th October 2012 an International Congress on Science and Technology for the conservation of Cultural Heritage was held in Santiago de Compostela, Spain, organized by the Universidade of Santiago de Compostela on behalf of TechnoHeritage Network. The congress was attended by some 160 participants from 10 countries, which presented a total of 145 contributions among plenary lectures, oral, and poster communications. The congress was dedicated to eight topics, namely (1) Environmental assessment and monitoring (pollution, climate change, natural events, etc.) of Cultural Heritage; (2) Agents and mechanisms of deterioration of Cultural Heritage (physical, chemical, biological), including deterioration of modern materials used in Contemporary Art and information storage; (3) Development of new instruments, non invasive technologies and innovative solutions for analysis, protection and conservation of Cultural Heritage; (4) New products and materials for conservation and maintenance of Cultural Heritage; (5) Preservation of industrial and rural heritage from the 19th and 20th centuries; (6) Security technologies, Remote sensing and Geographical Information Systems for protection and management of Cultural Heritage; (7) Significance and social value of Cultural Heritage; and (8) Policies

for conservation of Cultural Heritage. This volume publishes a total of ninety-three contributions which reflect some of the most recent responses to the challenge of cultural assets conservation.

The study of European wild food plants and herbal medicines is an old discipline that has been invigorated by a new generation of researchers pursuing ethnobotanical studies in fresh contexts. Modern botanical and medical science itself was built on studies of Medieval Europeans' use of food plants and medicinal herbs. In spite of monumental changes introduced in the Age of Discovery and Mercantile Capitalism, some communities, often of immigrants in foreign lands, continue to hold on to old recipes and traditions, while others have adopted and enculturated exotic plants and remedies into their diets and pharmacopoeia in new and creative ways. Now in the 21st century, in the age of the European Union and Globalization, European folk botany is once again dynamically responding to changing cultural, economic, and political contexts. The authors and studies presented in this book reflect work being conducted across Europe's many regions. They tell the story of the on-going evolution of human-plant relations in one of the most bioculturally dynamic places on the planet, and explore new approaches that link the re-evaluation of plant-based cultural heritage with the conservation and use of biocultural diversity.

It has become more and more accepted that nature conservation is not possible without taking into account human activities. Thus an integrated approach to both the natural and cultural heritage is being encouraged and developed. Gathering a number of distinguished authors with diverse backgrounds (from a religious leader to academics to conservation scientists), the book aims to investigate the relationship between human beings and nature, between nature and culture. Looking at nature as 'heritage' of the human race is a recognition both of the tremendous impacts (both positive and negative) that human activities have had on the natural environment, as well as the acceptance of human responsibility for managing our planet in a sustainable and sensitive manner. The texts included examine this interface between human beings and nature in specific places (from the Everglades in Florida and Mont Saint Michel in Atlantic France, to the UK, Europe and the Mediterranean), as well as on a theoretical basis, and in the context of the international biodiversity conventions.

Interest in environmental anthropology has grown steadily in recent years, reflecting national and international concern about the environment and developing research priorities. This major new international series is a vehicle for publishing up-to-date monographs and edited works on particular issues, themes, places, or peoples which focus on the interrelationship between society, culture, and the environment. Relevant areas include human ecology, the perception and representation of the environment, ethno-ecological knowledge, the human dimension of biodiversity conservation, and the ethnography of environmental problems. While the underlying ethos of the series will be anthropological, the approach is interdisciplinary. The Study of European wild food plants and herbal

medicines in an old discipline that has been invigorated by a new generation of researchers pursuing ethnobotanical studies in new contexts. Modern botanical and medical science itself was built on studies of medieval Europeans' use of food plants and medicinal herbs. In spite of monumental changes introduced in the Age of Discovery and Mercantile Capitalism, some communities, often immigrants in foreign lands, continue to hold onto old recipes and traditions, while others have adopted and enculturated exotic plants and remedies into their diets and pharmacopoeia in new and creative ways. Now in the 21st century, in the age of the European Union and globalization, European folk botany is once again dynamically responding to changing cultural, economic and political contexts. The authors and studies presented in this volume reflect work being conducted across Europe's many regions. They tell the story of the ongoing evolution of human-plant relations in one of the most bioculturally dynamic places on the planet, and explore new approaches that link the re-evaluation of plant-based cultural heritage with the conservation and use of biocultural diversity.

A Complete Guide to Professional, Vocational and Academic Qualifications in the United Kingdom

Organisms and Decay Mechanisms in Aquatic and Terrestrial Ecosystems

Stone Conservation

Sustainability in Energy and Buildings

Cultural Heritage and Aerobiology

Methods, Products, Applications, and Perspectives

This second fully updated and extended edition of Biotechnology and Conservation of Cultural Heritage provides in-depth insights into the role of different microorganisms and microbial compounds in biodeterioration, conservation and restoration of artworks and artifacts. Latest methods to detect, remove and prevent microbial colonization on artwork surfaces and in air environments of libraries and museums are discussed and illustrated by engaging case studies. Furthermore, this edition covers new case studies on Archaeobiology, exploring ways to perform the molecular biology characterization, restoring and protecting museum taxidermal specimens, preserving and guaranteeing the future integrity. Finally, the use of halloysite-nanotubes is investigated to set up innovative protocols in consolidation and long-term protection of waterlogged and archaeological wood. This book addresses to Biologists, Microbiologists, Conservation Scientists and Conservators who are interested in understanding the role of microorganisms and bioactive molecules in conservation projects.

This book comprehensively outlines synchrotron-based X-ray imaging technologies and their associated applications in gaining fundamental insights into the physical and chemical properties as well as reaction mechanisms of energy materials. In this book the major X-ray imaging technologies utilised, depending on research goals and sample specifications, are discussed. With X-ray imaging techniques, the morphology, phase, lattice and strain information

of energy materials in both 2D and 3D can be obtained in an intuitive way. In addition, due to the high penetration of X-rays, operando/in situ experiments can be designed to track the qualitative and quantitative changes of the samples during operation. This book will broaden the reader's view on X-ray imaging techniques and inspire new ideas and possibilities in energy materials research.

Brings together wide-ranging scientific contributions from those who have studied the biological degradation of cultural heritages. It tackles both general topics (mechanisms of biodeterioration; correlation between biodeterioration and environment; and destructive organisms) and specific ones (the problems presented by different materials, environments, climatic conditions, and geographic settings). The contributors also discuss ways to diagnose, prevent, and control deterioration.

Since prehistoric times and throughout the course of human evolution, wood has been an integral part of all civilizations. Wooden Cultural Heritage can be found worldwide, providing valuable information on the social and economic context of human history. Nonetheless, as a natural cellulosic material, wood shows low resistance to biodeterioration and thus wooden Cultural Heritage often fails to escape decomposition in both aquatic and terrestrial ecosystems. This book provides a comprehensive overview on the biodeterioration of wooden Cultural Heritage and describes the decay mechanisms of key organisms and microorganisms encountered in aquatic and terrestrial ecosystems. Cultural Heritage professionals, researchers and academics may explore within this book the associations between deteriogens, habitats and decay, which will assist them to understand wood biodeterioration and design effective prevention, mitigation and remediation strategies. The book presents case studies around the world to demonstrate the impact of biogenic deterioration on wooden Cultural Heritage and illustrates mechanisms and patterns in order to be a useful handbook of decay diagnosis. Lastly, by adopting a holistic approach to wood decay, basic concepts of wood technology, ecology, and deteriogens' biology are introduced, permitting readers of different scientific backgrounds to easily comprehend wood biodeterioration.

The Conservation of Subterranean Cultural Heritage

Natural Heritage

An Overview of Current Research

PROCEEDINGS 4th International Congress on "Science and Technology for the Safeguard of Cultural Heritage in the Mediterranean Basin" VOL. I

Coping with Biological Growth on Stone Heritage Objects

Issues in Life Sciences: Botany and Plant Biology Research: 2011 Edition

Now in its 50th edition, British Qualifications 2020 is the definitive one-volume guide to the most recognized qualification on offer in the United Kingdom. With an equal focus on both academic and professional vocational studies, this indispensable guide has full details

institutions and organizations involved in the provision of further and higher education making it the essential reference source for careers advisers, students, and employers. It contains a comprehensive and up-to-date description of the structure of further and higher education in the UK, including an explanation of the most recent education reforms, providing essential context for the qualifications listed. British Qualifications 2020 is compiled and checked annually to ensure the highest currency and accuracy of this information. Containing details on the professional vocational qualifications available from over 350 professional institutions and accrediting bodies, informative entries for all UK academic universities and colleges, and a full description of the current structural and legislative framework of academic and vocational education, it is the complete reference for lifelong learning and continuing professional development in the UK.

Cyanobacteria have existed for 3.5 billion years, yet they are still the most important photosynthetic organisms on the planet for cycling carbon and nitrogen. The ecosystems where they have key roles range from the warmer oceans to many Antarctic sites. They include dense nuisance growths in nutrient-rich lakes and nitrogen-fixers which aid the fertility of rice-fields and many soils, especially the biological soil crusts of arid regions. Molecular biology has in recent years provided major advances in our understanding of cyanobacterial ecology. Perhaps for more than any other group of organisms, it is possible to see how the ecology, physiology, biochemistry, ultrastructure and molecular biology interrelate. This all helps to deal with practical problems such as the control of nuisance blooms and the use of cyanobacterial inocula to manage semi-desert soils. Large-scale culture of several organisms, especially "Spirulina" (Arthrospira), for health food and specialist products is increasingly being expanded for a much wider range of uses. In view of their probable contribution to past oil deposits, much attention is currently focused on their potential as a source of biofuel. Please visit <http://extras.springer.com/> to view Extra Materials below this volume. This book complements the highly successful Ecology of Cyanobacteria and integrates the discoveries of the past twelve years with the older literature.

Managing biosecurity is everybody's business. The book's multi-site, multi-sectoral research contributes to an holistic, evidence-based strategy for managing plant biosecurity in diverse contexts. The intent is to provide a starting point for all stakeholders in the biosecurity endeavor – policy personnel at all levels of governance, planners and regional development government organizations, community groups and individuals – to plan localized strategies that 'fit' national needs and constraints and the way people live their lives. In putting forward a 'strategy', we draw on many disciplines and cultural perspectives on a problem that is fundamentally a multidisciplinary and global issue. At the same time, the contributing researchers remain aware that such a strategy is always subject to local contextual factors and influences, indigenous and local knowledge and culture, and is regarded as a tool for planning, always subject to change.

It is becoming clear that the Mediterranean region is one of the "hottest" of the biodiversity hotspots on the planet. There is also an increasing concern for the conservation, adaptive management, and restoration of the unique natural ecosystems and cultural landscapes that characterize this area. The region's biological and cultural heritage as well as its huge diversity of biodiversity is now at real risk. This brings a further urgency to the task of communicating detailed but readily accessible information on the Mediterranean biota, and an ecological, historical and evolutionary perspective to the changing contexts in which the region's flora and fauna continue to evolve. There is no other recent textbook devoted solely to

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Mediterranean evolutionary ecology, and a synthesis of the many recent advances is overdue. This new work builds on the success and reputation of the first edition, although the text has been updated and expanded to document recent changes to biodiversity, new ecological and evolutionary insights, and the challenges for the future. These changes include the addition of two new chapters devoted to the Mediterranean Sea itself, and especially coastal areas. Throughout the book, the pressing issues of global change (especially climate warming) are addressed, in conjunction with changing land use, and in terms of their potential impact on biota, communities, ecosystems, and landscapes.

Proceedings of SEB 2019

The Science of Ethnobotany

People, Health and Wild Plant Resources

The Mediterranean Region

Co-Corporeality of Humans, Machines, & Microbes

Microclimate for Cultural Heritage

For the majority of the world's population, medicinal and aromatic plants are the most important source of life-saving drugs. Biotechnological tools represent important resources for selecting, multiplying and conserving the critical genotypes of medicinal plants. In this regard, in-vitro regeneration holds tremendous potential for the production of high-quality plant-based medicines, while cryopreservation - a long-term conservation method using liquid nitrogen - provides an opportunity to conserve endangered medicinal and aromatic plants. In-vitro production of secondary metabolites in plant cell suspension cultures has been reported for various medicinal plants, and bioreactors represent a key step toward the commercial production of secondary metabolites by means of plant biotechnology. Addressing these key aspects, the book contains 29 chapters, divided into three sections. Section 1: In-vitro production of secondary metabolites Section 2: In-vitro propagation, genetic transformation and germplasm conservation Section 3: Conventional and molecular approaches

X-Ray Fluorescence in Biological Sciences Discover a comprehensive exploration of X-ray fluorescence in chemical biology and the clinical and plant sciences In X-Ray Fluorescence in Biological Sciences: Principles, Instrumentation, and Applications, a team of accomplished researchers delivers extensive coverage of the application of X-ray fluorescence (XRF) in the biological sciences, including chemical biology, clinical science, and plant science. The book also explores recent advances in XRF imaging techniques in these fields. The authors focus on

understanding and investigating the intercellular structures and metals in plant cells, with advanced discussions of recently developed micro-analytical methods, like energy dispersive X-ray fluorescence spectrometry (EDXRF), total reflection X-ray fluorescence spectrometry (TXRF), micro-proton induced X-ray emission (micro-PIXE), electron probe X-ray microanalysis (EPXMA), synchrotron-based X-ray fluorescence microscopy (SXRF, SRIXE, or micro-XRF) and secondary ion mass spectrometry (SIMS). With thorough descriptions of protocols and practical approaches, the book also includes: A thorough introduction to the historical background and fundamentals of X-ray fluorescence, as well as recent developments in X-ray fluorescence analysis Comprehensive explorations of the general properties, production, and detection of X-rays and the preparation of samples for X-ray fluorescence analysis Practical discussions of the quantification of prepared samples observed under X-ray fluorescence and the relation between precision and beam size and sample amount In-depth examinations of wavelength-dispersive X-ray fluorescence and living materials Perfect for students and researchers studying the natural and chemical sciences, medical biology, plant physiology, agriculture, and botany, X-Ray Fluorescence in Biological Sciences: Principles, Instrumentation, and Applications will also earn a place in the libraries of researchers at biotechnology companies. Aerobiology is the science that studies the biological component of the atmosphere and its effects on living systems and on the environment. This term was used for the first time in 1935, but the attention of scientists to the biological component of the atmosphere goes back to 1769, when the Italian biologist Spallanzani carried out a series of experiments that disproved the concept of spontaneous generation of life and proved the presence of viable microorganisms in the air. Aerobiology has marked characteristics of interdisciplinarity: its application fields range from respiratory diseases to the airborne outbreak of animal and vegetal diseases and to the biodegradation of substances and materials. The latter is the subject of this book. The purpose of aerobiological research applied to the conservation of cultural heritage is to evaluate the risk of alteration by airborne microorganisms of materials forming artefacts of historical,

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artistic and archaeological interest. Airborne spores and vegetative structures may develop on different substrates and may be a cause of degradation, in relation to the types of materials, the microclimatic situation and the pollution of the conservation environments. The qualitative and quantitative evaluation of the biological component of air, performed by means of targeted analysis campaigns, and of the characteristics of materials and environments, supplies indispensable information for the evaluation of the actual risk and the planning of interventions. This book is divided into four main parts.

Microclimate for Cultural Heritage: Conservation and Restoration of Indoor and Outdoor Monuments, Second Edition, is a cutting-edge, theoretical, and practical handbook concerning microclimate, environmental factors, and conservation of cultural heritage. Although the focus is on cultural heritage objects, most of the theory and instrumental methodologies are common to other fields of application, such as atmospheric and environmental sciences. Microclimate for Cultural Heritage, Second Edition, is a useful treatise on microphysics and a practical handbook for conservators and specialists in physics, chemistry, architecture, engineering, geology, and biology who work in the multidisciplinary field of the environment, and, in particular, in the conservation of works of art. Part I, devoted to applied theory, is a concise treatise on microphysics, which includes a survey on the basic ideas of environmental diagnosis and conservation. The second part of the book focuses on practical utilization, and shows in detail how field surveys should be performed, with many suggestions and examples, as well as some common errors to avoid. Presents updated scientific and technological findings based on the novel European standards on microclimate and cultural heritage Includes the latest information on experimental research on environmental factors and their impact on materials, such as the behavior of water and its interactions with cultural heritage materials Contains case studies of outdoor and indoor microclimate conditions and their effects, providing ideas for readers facing similar problems caused by heat, water, radiation, pollution, or air motions Covers instruments and methods for practical applications to help readers understand, to observe and interpret observations, and avoid

errors

Conservation, Genetic Improvement and Utilization

Biological Diversity in Space and Time

Preservation of Cultural Heritage and Resources Threatened by Climate Change

People, Health, and Wild Plant Resources

Biodeterioration and Conservation

Plant Biology for Cultural Heritage

Is it possible that plants have shaped the very trajectory of human cultures? Using riveting stories of fieldwork in remote villages, two of the world's leading ethnobotanists argue that our past and our future are deeply intertwined with plants. Creating massive sea craft from plants, indigenous shipwrights spurred the navigation of the world's oceans. Today, indigenous agricultural innovations continue to feed, clothe, and heal the world's population. One out of four prescription drugs, for example, were discovered from plants used by traditional healers. Objects as common as baskets for winnowing or wooden boxes to store feathers were ornamented with traditional designs demonstrating the human ability to understand our environment and to perceive the cosmos. Throughout the world, the human body has been used as the ultimate canvas for plant-based adornment as well as indelible design using tattoo inks. Plants also garnered religious significance, both as offerings to the gods and as a doorway into the other world. Indigenous claims that plants themselves are sacred is leading to a startling reformulation of conservation. The authors argue that conservation goals can best be achieved by learning from, rather than opposing, indigenous peoples and their beliefs. KEY FEATURES • An engrossing narrative that invites the reader to personally engage with the relationship between plants, people, and culture • Full-color illustrations throughout—including many original photographs captured by the authors during fieldwork • New to this edition—"Plants That Harm," a chapter that examines the dangers of poisonous plants and the promise that their study holds for novel treatments for some of our most serious diseases, including Alzheimer's and substance addiction • Additional readings at the end of each chapter to encourage further exploration • Boxed features on selected topics that offer further insight • Provocative questions to facilitate group discussion

Designed for the college classroom as well as for lay readers, this update of *Plants, People, and Culture* entices the reader with firsthand stories of fieldwork, spectacular illustrations, and a deep respect for both indigenous peoples and the earth's natural heritage.

This book provides detailed insights into the role of microorganisms

and microbial products in biodeterioration, conservation and restoration of cultural heritage. Topics to be discussed are microbial colonization and their growth control on both artworks and aerosol of indoor environments such as libraries or museums, as well as human health hazard from exposure to microbial agents. In addition innovative biotechnological protocols and strategies for the removal of undesired layers on artwork surfaces are described in detail. Also the advances and perspectives in this emerging biotechnological field are discussed, supported by the latest original findings.

This teaching guide covers the identification, deterioration, and conservation of artifacts made from plant materials. Detailed information on plant anatomy, morphology, and development, focusing on information useful to the conservator in identifying plant fibers are described, as well as the processing, construction, and decorative techniques commonly used in such artifacts. A final chapter provides a thorough discussion of conservation, preservation, storage, and restoration methods. This is a valuable resource to conservators and students alike.

Coping with Biological Growth on Stone Heritage Objects: Methods, Products, Applications, and Perspectives offers hands-on guidance for addressing the specific challenges involved in conserving historical monuments, sculptures, archaeological sites, and caves that have been attacked and colonized by micro- and macroorganisms. The volume provides many case studies of removal of biological growth with practical advice for making the right choices. It presents detailed and updated information related to biocides and to alternative substances, features that will be valuable to dealing with these challenges. The author's goal is to provide access to information and offer the conceptual framework needed to understand complex issues, so that the reader can comprehend the nature of conservation problems and formulate her/his own views. From bacteria to plants, biological agents pose serious risks to the preservation of cultural heritage. In an effort to save heritage objects, buildings, and sites, conservators' activities aim to arrest, mitigate, and prevent the damages caused by bacteria, algae, fungi, lichens, plants, and birds. Although much has been learned about these problems, information is scattered across meeting proceedings and assorted journals that often are not available to restorers and conservators. This book fills the gap by providing a comprehensive selection and examination of international papers published in the last fifteen years, focusing on the appropriate methods, techniques, and products that are useful for the prevention and removal of micro- and macroorganisms that grow on artificial and natural stone works of art, including wall paintings. Results on new substances with antimicrobial properties

and alternative methods for the control of biological growth are presented as well. The book also emphasize issues on bioreceptivity of stones and the factors influencing biological growth and includes an outline of the various organisms able to develop on stones, a discussion on the bioprotection of stones by biofilms and lichens, a review of the main analytical techniques, and a section on bioremediation. This volume will be a valuable reference for cultural heritage conservators and restorers, scientists, and heritage-site staff involved in conservation and maintenance of buildings, archaeological sites, parks, and caves.
Principles, Instrumentation, and Applications

**Issues in Life Sciences—Botany and Plant Biology Research: 2012 Edition
Directory**

**The Conservation of Artifacts Made from Plant Materials
Biotechnological Approaches for Medicinal and Aromatic Plants**

This volume contains the proceedings of the 11th KES International Conference on Sustainability and Energy in Buildings 2019 (SEB19) held in Budapest, 4th -5th July 2019 organised by KES International in partnership with Cardiff Metropolitan University, Wales, UK. SEB-19 invited contributions on a range of topics related to sustainable buildings and explored innovative themes regarding sustainable energy systems. The aim of the conference was to bring together researchers, and government and industry professionals to discuss the future of energy in buildings, neighbourhoods and cities from a theoretical, practical, implementation and simulation perspective. The conference formed an exciting chance to present, interact, and learn about the latest research and practical developments on the subject. The conference attracted submissions from around the world. Submissions for the Full-Paper Track were subjected to a blind peer-review process. Only the best of these were selected for presentation at the conference and publication in these proceedings. It is intended that this volume provides a useful and informative snapshot of recent research developments in the important and vibrant area of Sustainability in Energy and Buildings.

With its wide spectrum of data, case studies, monitoring, and experimental and numerical simulation techniques, the multidisciplinary approach of material, environmental, and computer science applied to the conservation of cultural heritage offers several opportunities for the heritage science and conservation community to map and monitor state-of-the-art knowledge on natural and human-induced climate change impacts on cultural heritage—mainly constituted by the built environment—in Europe and Latin America. Geosciences' Special Issue titled "Preservation of Cultural Heritage and Resources Threatened by Climate Change" was launched to take stock of the existing but still fragmentary knowledge on this challenge, and to enable the community to respond to the implementation of the Paris agreement. These 10 papers exploit a broad range of data derived from preventive conservation monitoring conducted indoors in museums, churches, historical buildings, or outdoors in archeological sites and city centers. Case studies presented in the papers focus on a well-assorted sample of decay phenomena occurring on heritage materials (e.g., surface recession and biomass accumulation on limestone, depositions of pollutant on marble, salt weathering on inorganic building materials, and weathering processes on mortars in many local- to regional-scale study areas in the Scandinavian Peninsula, the United Kingdom, Belgium, France, Italy, Greece, and Panama).

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Besides monitoring, the methodological approaches showcased include, but are not limited to, original material characterization, decay product characterization, and climate and numerical modelling on material components for assessing environmental impact and climate change effects.

The conservation treatment for waterlogged wooden objects along with the case of Sinan shipwreck has made a turning point to make a progress on the conservation treatment of wooden objects in Korea. Such development and knowledge has established a platform to develop advance methodology and technique of conservation skills for wooden objects

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Issues in Life Sciences: Botany and Plant Biology Research: 2011 Edition is a ScholarlyEditions™ eBook that delivers timely, authoritative, and comprehensive information about Life Sciences—Botany and Plant Biology Research. The editors have built Issues in Life Sciences: Botany and Plant Biology Research: 2011 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Life Sciences—Botany and Plant Biology Research in this eBook to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Issues in Life Sciences: Botany and Plant Biology Research: 2011 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at <http://www.ScholarlyEditions.com/>.

Ethnobotany in the New Europe

Biodegradation Technology of Organic and Inorganic Pollutants

Managing Biosecurity Across Borders

Innovative Strategies for Teaching in the Plant Sciences

Ecology of Cyanobacteria II

Microorganisms in the Deterioration and Preservation of Cultural Heritage

Our country's cultural legacy is one of the world's most diverse, drawing millions of visitors every year to our convents and monuments, and to our museums, libraries, concert halls and festivals. In addition, it is a dynamic trigger of economic activity and jobs. Among the various scientific branches, microbial biotechnology offers an innovative and precise approach to the complexity of problems that restorers face in their daily work. This book discusses a range of topics, including the biodiversity of microbial communities from various cultural heritage monuments, microbial biotechnological cleaning techniques, the role of bacterial fungal communities for the conservation of cultural heritage, and microbial enzymes and their potential applications as bioremediation agents. Written by internationally recognized experts, and providing up-to-date and detailed insights into microbial biotechnology approaches to cultural heritage monuments, the book is a valuable resource for biological scientists, especially microbiologists, microbial biotechnologists, biochemists and microbial biotechnologists. With reference to Khurda District of Orissa, India; contributed articles.

First published in 1996, this volume has been substantially updated to reflect new research in the conservation of stone monuments, sculpture, and archaeological sites.

Innovative Strategies for Teaching in the Plant Sciences focuses on innovative ways in which educators can enrich the plant science content being taught in universities and secondary schools. Drawing on contributions from scholars around the world, various methods of teaching plant science is demonstrated. Specifically, core concepts from ethnobotany can be used to

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foster the development of connections between students, their environment, and other cultures around the world. Furthermore, the volume presents different ways to incorporate local methods and technology into a hands-on approach to teaching and learning in the plant sciences. Written by leaders in the field, Innovative Strategies for Teaching in the Plant Sciences is a valuable resource for teachers and graduate students in the plant sciences.

Conservation, Restoration, and Maintenance of Indoor and Outdoor Monuments

Plants, People, and Culture

Microbicides in Coatings

The Cultural Heritage of Khurda

Biotechnology and Conservation of Cultural Heritage

Recent Insights into the Double Role of Hydrogen Peroxide in Plants