

# Biopolymers And Biotech Admixtures For Eco Efficient Construction Materials Woodhead Publishing Series In Civil And Structural Engineering Pdf

[Biopolymers And Biotech Admixtures For Eco Efficient Construction Materials Woodhead Publishing Series In Civil And Structural Engineering Pdf](#) - Decoding biopolymers and biotech admixtures for eco efficient construction materials woodhead publishing series in civil and structural engineering pdf: Revealing the Captivating Potential of Verbal Expression

In a period characterized by interconnectedness and an insatiable thirst for knowledge, the captivating potential of verbal expression has emerged as a formidable force. Its power to evoke sentiments, stimulate introspection, and incite profound transformations is genuinely awe-inspiring. Within the pages of "**biopolymers and biotech admixtures for eco efficient construction materials woodhead publishing series in civil and structural engineering pdf**," a mesmerizing literary creation penned with a celebrated wordsmith, readers set about an enlightening odyssey, unraveling the intricate significance of language and its enduring affect our lives. In this appraisal, we shall explore the book is central themes, evaluate its distinctive writing style, and gauge its pervasive influence on the hearts and minds of its readership. Right here, we have countless book **biopolymers and biotech admixtures for eco efficient construction materials woodhead publishing series in civil and structural engineering pdf** and collections to check out. We additionally meet the expense of variant types and afterward type of the books to browse. The pleasing book, fiction, history, novel, scientific research, as capably as various further sorts of books are readily handy here.

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## Biopolymers And Biotech Admixtures For Eco Efficient Construction Materials Woodhead Publishing Series In Civil And Structural Engineering Pdf [PDF]

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Nanomaterials and Polymer Nanocomposites Niranjan Karak  
 2018-10-24 Nanomaterials and Polymer Nanocomposites: Raw Materials to Applications brings together the most recent research in nanoparticles and polymer nanocomposites for a range of applications. The book's coverage is comprehensive, starting with synthesis techniques, then moving to characterization and applications of several different classes of nanomaterial and nanoparticle in nanocomposites. By presenting different nanomaterials, such as metal and metal oxides, clay and POSS, carbon nanotubes, cellulose and bio-based polymers in a structured manner, the book enables an efficient

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capabilities for these advanced materials, making it relevant both for researchers in an academic environment and also industrial R&D. This book is particularly distinctive because it centers on the raw materials on which the nanocomposites are based, the biological properties of the range of materials discussed, and the environmental and economic considerations of different polymer systems. Presents a thorough, up-to-date review of the latest advances and developments in the field of nanomaterials and polymer nanocomposites, with a particular focus on raw materials Includes comprehensive coverage from historical backgrounds, synthesis techniques, characterization, and a detailed look at new and emerging

applications for polymer nanocomposites Provides a range of different material classes, including metal and metal oxides, biopolymers, graphene and cellulose, among others

*Viruses, Bacteria and Fungi in the Built Environment* Fernando Pacheco-Torgal 2021-12-02

*Viruses, Bacteria and Fungi in the Built Environment: Designing Healthy Indoor Environments* opens with a brief introduction to viruses, bacteria and fungi in the built environment and discusses their impact on human health. Sections discuss the microbiology of building materials, the airborne transmission of viruses and bacteria in the built environment, and plumbing-associated microbiome. As the first book on this important area to be written in light of the COVID-19 pandemic, this work will be a valuable reference resource for researchers, civil engineers, architects, postgraduate students, contractors and other professionals working and interested in the field of the built environment. Elements of building design, including choice of materials, ventilation and plumbing can have important implications for the microbiology of a building, and consequently, the health of the building's occupants. This important new reference work explains the microbiology of buildings and disease control in the built environment to those who design and implement new construction and renovate. Provides an essential guide on the microbiology of buildings, covering bacteria, fungi and viruses on surfaces, in air and in water

Comprehensively examines how humidity influences fungal growth in several building materials Includes important information about the airborne transmission of infectious agents Addresses ventilation design to improve human health Presents the first book on disease control in buildings since the COVID-19 pandemic

**The Utilization of Slag in Civil Infrastructure Construction** George C. Wang 2016-06-24

The Utilization of Slag in Civil Infrastructure Construction strives to integrate the theory, research, and practice of slag utilization, including the

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The topics covered include: production and smelting processes for metals; chemical and physical properties of slags; pretreatment and post-treatment technology to enhance slag properties; potential environmental impact; mechanisms of potential expansion; special testing methods and characteristics; slag processing for aggregate and cementitious applications; suitability of slags for use in specific applications; overall properties of materials containing slags; and commercialization and economics. The focus of the book is on slag utilization technology, with a review of the basic properties and an exploration of how its use in the end product will be technically sound, environment-friendly, and economic. Covers the production, processing, and utilization of a broad range of ferrous, non-ferrous, and non-metallurgical slags Provides information on applicable methods for a particular slag and its utilization to reduce potential environmental impacts and promote natural resource sustainability Presents the overall technology of transferring a slag from the waste stream into a useful materials resource Provides a detailed review of the appropriate utilization of each slag from processing right through to aggregate and cementitious use requirements

**Sustainable Plastics** Joseph P. Greene 2022-11-08

Enables Readers to Understand the What, Why, and How Behind Using Sustainable Plastics in Manufacturing Operations The impact of 50 years of unbridled plastics production, use, and disposal is now becoming well known and documented. Plastics made from non-renewable petroleum and natural gas resources threaten the environment, human health, species maintenance, and the very life of the ocean. This book helps readers understand the ability of plastics to be sustainable and goes over the plastic products which have a lower carbon footprint, lower waste, and lower pollution. The well-qualified author's unique perspective puts a special focus on comprehensive coverage of environmental impacts of plastics including Life Cycle

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Assessments (LCA) and sustainability strategies related to biobased plastics (e.g., corn), recycled plastics, and petroleum-based plastics. Other samples topics covered in the book include: End-of-life options for petroleum and biobased plastics including mechanical recycling, chemical recycling, and composting ASTM biodegradation standards for compost, marine, anaerobic digestion, and landfill environments Polymer processing, including injection molding, blow molding, extrusion, and compression molding Environmental data and coverage of petroleum plastics, sustainable composites, and new information on bio-based plastics The book serves as an invaluable resource for plastics engineers, materials engineers, and all professionals in related disciplines looking to understand and apply the usage of sustainable plastics in many different types of manufacturing operations.

**Integrated Environmental Technologies for Wastewater Treatment and Sustainable Development**

Vineet Kumar  
2022-04-29 Integrated Environmental Technologies for Wastewater Treatment and Sustainable Development provides comprehensive and advanced information on integrated environmental technologies and their limitations, challenges and potential applications in treatment of environmental pollutants and those that are discharged in wastewater from industrial, domestic and municipal sources. The book covers applied and recently developed integrated technologies to solve five major trends in the field of wastewater treatment, including nutrient removal and resource recovery, recalcitrant organic and inorganic compounds detoxification, energy saving, and biofuel and bioenergy production for environmental sustainability. The book provides future directions to young researchers, scientists and professionals who are working in the field of bioremediation and phytoremediation to remediate

wastewater pollutants at laboratory  
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development. Illustrates the importance of various advanced oxidation processes in effluent treatment plants Describes underlying mechanisms of constructed wetland-microbial fuel cell technologies for the degradation and detoxification of emerging organic and inorganic contaminants discharged in wastewater Highlights the reuse and recycling of wastewater and recovery of value-added resources from wastewater Focuses on recent advances and challenges in integrated environmental technologies, constructed wetland-microbial fuel cell, microbial electrochemical-constructed wetlands, biofilm reactor-constructed wetland, and anammox- microbial fuel cell technology for sustainable development Illustrates the importance of microbes and plants in bio/phytoremediation and wastewater treatment

Bioprospecting of Microorganism-Based Industrial Molecules

Sudhir P. Singh  
2021-11-30 Discover a comprehensive and current overview of microbial bioprospecting written by leading voices in the field In Bioprospecting of Microorganism-Based Industrial Molecules, distinguished researchers and authors Sudhir P. Singh and Santosh Kumar Upadhyay deliver global perspectives of bioprospecting of biodiversity. The book covers diverse aspects of bioprospecting of microorganisms demonstrating biomass value of nutraceutical, pharmaceutical, biomedical, and bioenergetic importance. The authors present an amalgamation of translational research on bioresource utilization and ecological sustainability that will further the reader's knowledge of the applications of different microbial diversity and reveal new avenues of research investigation. Readers will also benefit from: A thorough introduction to microbial biodiversity and bioprospecting An exploration of anti-ageing and skin lightening microbial products and microbial production of anti-cancerous biomolecules A treatment of UV protective compounds from algal biodiversity and polysaccharides from

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marine microalgal sources Discussions of microbial sources of insect toxic proteins and the role of microbes in bio-surfactants production Perfect for academics, scientists, researchers, graduate and post-graduate students working and studying in the areas of microbiology, food biotechnology, industrial microbiology, plant biotechnology, and microbial biotechnology, Bioprospecting of Microorganism-Based Industrial Molecules is an indispensable guide for anyone looking for a comprehensive overview of the subject.

**Biobased Adhesives** Manfred Dunky 2023-05-31 Biobased Adhesives Unique and comprehensive book edited by acknowledged leaders on biobased adhesives that will replace petroleum-based adhesives. This book contains 23 chapters covering the various ramifications of biobased adhesives. The chapters are written by world-class scientists and technologists actively involved in the arena of biobased adhesives. The book is divided into three parts: Part 1: Fundamental Aspects; Part 2: Classes of Biobased Adhesives; and Part 3: Applications of Biobased Adhesives. Topics covered include: an introduction to biobased adhesives; adhesion theories and adhesion and surface issues with biobased adhesives; chemistry of adhesives; biorefinery products as biobased raw materials for adhesives; naturally aldehyde-based thermosetting resins; natural crosslinkers; curing and adhesive bond strength development in biobased adhesives; mimicking nature; bio-inspired adhesives; protein adhesives; carbohydrates as adhesives; natural polymer-based adhesives; epoxy adhesives from natural materials; biobased polyurethane adhesives; nanocellulose-modified adhesives; debondable, recyclable, and biodegradable biobased adhesives; 5-Hydroxymethylfurfural-based adhesives; adhesive precursors from tree-derived naval stores; and applications in various diverse arenas such as wood bonding, **Biopolymers And Biotech Admixtures For Eco Efficient Construction Materials**, and **Woodhead Publishing Series In Civil And Structural Engineering Pdf upload Dona m Ferguson**

wearable bioelectronics. Audience This book will interest materials scientists, adhesionists, polymer chemists, marine biologists, food and agriculture scientists, and environmentalists. R&D personnel in a slew of wide-ranging industries such as aviation, shipbuilding, railway, automotive, packaging, construction, wood bonding, and composites should find this book a repository of current and much-needed information. A Thermo-Economic Approach to Energy from Waste Anand Ramanathan 2021-10-26 A Thermo-Economic Approach to Energy From Waste provides readers with the tools to analyze the effectiveness of biomass waste conversion into value-added products and how thermochemical conversion methods can be commercialized with minimum environmental impact. The book provides a comprehensive overview of biomass conversion technologies through pyrolysis, including the types of reactors available, reactor mechanisms, and the upgradation of bio-oil. Case studies are provided on waste disposal in selected favelas (slums) of Rio de Janeiro, including data on subnormal clusters and analyses of solid waste in the 37 slums of Catumbi. Step-by-step guidance is provided on how to use a life cycle assessment (LCA) approach to analyze the potential impact of various waste-to-energy conversion technologies, and a brief overview of the common applications of LCA in other geographical locations is presented, including United States, Europe, China, and Brazil. Finally, waste-to-value-added functional catalysts for the transesterification process in biodiesel production are discussed alongside various other novel technologies for biodiesel production, process simulation, and techno-economic analysis of biodiesel production. Bringing together research and real-world case studies from an LCA perspective, the book provides an ideal reference for researchers and practitioners interested in waste-to-energy conversion, LCA, and the sustainable production of bioenergy. Presents an overview of the technologies for the **Downloaded from [vla.ramtech.uri.edu](http://vla.ramtech.uri.edu) on September 26, 2023 by Dona m Ferguson**

production of biofuels from waste via pyrolysis and gasification Provides a guide to the utilization of LCA to assess the economic and environmental impact of value-added products

Describes real-world case studies on the implementation of LCA in waste-to-energy scenarios

Nanocellulose-Reinforced Thermoplastic Starch Composites

Rushdan Ahmad Ilyas 2023-10-02

Bio-based Materials and Biotechnologies for Eco-efficient Construction

Fernando Pacheco-Torgal 2020-04-01 Bio-based Materials and Biotechnologies for Eco-efficient Construction fills a gap in the published literature, discussing bio-based materials and biotechnologies that are crucial for a more sustainable construction industry.

With comprehensive coverage and contributions from leading experts in the field, the book includes sections on Bio-based materials and biotechnologies for infrastructure applications, Bio-based materials and biotechnologies for building energy efficiency, and other applications, such as using biotechnology to reduce indoor air pollution, for water treatment, and in soil decontamination. The book will be an essential reference resource for academic researchers, civil engineers, contractors working in construction works, postgraduate students and other professionals. Focuses on sustainability and green concepts in construction Discusses recent trends on bio-based materials and biotechnologies for eco-efficient construction Covers many important aspects, including infrastructure applications, energy efficiency for building construction, and air, water and soil related problems

Biodegradable and Biocompatible Polymer Nanocomposites

Kalim Deshmukh 2023-04-10 Biodegradable and Biocompatible Polymer Nanocomposites: Processing, Characterization, and Applications brings together the latest research, highlighting cutting-edge applications in this exciting field. Sections introduce biodegradable and biocompatible polymers and the fundamentals

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properties, biocompatibility and biodegradability, provide in-depth coverage of methods and techniques for processing, spectroscopic and microscopic analysis, dielectric, thermal, and electrical conductivity, and incorporation of functionalized nanoparticles, and green synthesized nanoparticles. The second part of the book guides the reader through the properties and preparation of biodegradable and biocompatible polymer nanocomposites for a range of specific, targeted, state-of-the-art applications across biomedicine, electronic, energy storage, environment and packaging. Finally, sustainability assessment, environmental impact, and recycling strategies are discussed in detail. Provides detailed methods for green synthesis, polymer modification, processing and analysis Explores novel applications across biomedicine, electronics, energy storage, the environment and packaging Examines key issues, such as biocompatibility, biodegradability, recycling strategies and measuring environmental impact

**Advanced Processing, Properties, and Applications of Starch and Other Bio-based Polymers**

Faris M. Al-Oqla 2020-07-30 Advanced Processing, Properties, and Applications of Starch and Other Bio-based Polymers presents the latest cutting-edge research into the processing and applications of bio-based polymers, for novel industrial applications across areas including biomedical and electronics. The book is divided into three sections, covering processing and manufacture, properties, and applications. Throughout the book, key aspects of sustainability are considered, including improved utilization of available natural resources, sustainable design possibilities, cleaner production processes, and waste management. Focuses on starch-based polymers, examining the latest advances in processing and applications with this valuable category of biopolymer Highlights industrial sustainability considerations at all steps of the process, including when sourcing

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materials, designing and producing products, and dealing with waste Supports the processing and development of starch and other bio-based polymers with enhanced functionality for advanced applications

**Bio-based Materials and Biotechnologies for Eco-efficient Construction**

F Pacheco Torgal  
2020-03-13 Bio-based Materials and Biotechnologies for Eco-efficient Construction fills a gap in the published literature, discussing bio-based materials and biotechnologies that are crucial for a more sustainable construction industry. With comprehensive coverage and contributions from leading experts in the field, the book includes sections on Bio-based materials and biotechnologies for infrastructure applications, Bio-based materials and biotechnologies for building energy efficiency, and other applications, such as using biotechnology to reduce indoor air pollution, for water treatment, and in soil decontamination. The book will be an essential reference resource for academic researchers, civil engineers, contractors working in construction works, postgraduate students and other professionals. Focuses on sustainability and green concepts in construction Discusses recent trends on bio-based materials and biotechnologies for eco-efficient construction Covers many important aspects, including infrastructure applications, energy efficiency for building construction, and air, water and soil related problems

Towards Net Zero Carbon Emissions in the Building Industry

Ali Sayigh  
2022-11-08 Towards Net Zero in the Building Industry looks at the contributions that the building and construction industry can (and must) make to help achieve net zero carbon emissions. The building industry accounts for close to 40% of global emissions and this book brings together a global group of contributors from 15 countries to examine ways in which the industry can help with overall CO2 reduction. Coverage includes factors such as

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selection, use of local materials with a low carbon imprint, renewable energy use, energy conservation, greenery and appropriate aesthetics, building size and scale, climate suitability, building functionality and comfort, material recycling, and adoption of green policies. Chapter 6 is available open access under a Creative Commons Attribution 4.0 International License via [link.springer.com](http://link.springer.com).

*Proceedings of International Conference on Innovative Technologies for Clean and Sustainable Development (ICITCSD - 2021)* Varinder S. Kanwar  
2022-04-28 This volume presents select proceedings of the International Conference on Innovative Technologies for Clean and Sustainable Development (ICITCSD - 2021), held at the National Institute of Technical Teachers Training & Research and Chitkara University, Himachal Pradesh, India. It covers several important aspects of sustainable civil engineering practices, dealing with effective waste and material management, natural resources, industrial products, energy, food, transportation and shelter, environmental impact mitigation, waste minimization and management, sustainable infrastructure, and geospatial technology for sustainable and clean environment. Emphasis is placed on conserving and protecting the environment and the natural resource base essential for future development. The book includes case studies and ongoing research work from various fields related to civil engineering presented by academicians, scientists, and researchers. The book also discusses engineering solutions to sustainable development and green design issues. Special emphasis is given on qualitative guidelines for the generation, treatment, handling, transport, disposal, and recycling of wastes. The book is intended as a practice-oriented reference guide for researchers and practitioners. It will be useful for anyone working in sustainable civil engineering and related fields.

**Construction 4.0** Marco Casini

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2021-11-24 Developments in data acquisition technologies, digital information and analysis, automated construction processes, and advanced materials and products have finally started to move the construction industry - traditionally reluctant to innovation and slow in adopting new technologies - toward a new era. Massive changes are occurring because of the possibilities created by Building information modeling, Extended reality, Internet of Things, Artificial intelligence and Machine Learning, Big data, Nanotechnology, 3D printing, and other advanced technologies, which are strongly interconnected and are driving the capabilities for much more efficient construction at scale. Construction 4.0: Advanced Technology, Tools and Materials for the Digital Transformation of the Construction Industry provides readers with a state-of-the-art review of the ongoing digital transformation of the sector within the new 4.0 framework, presenting a thorough investigation of the emerging trends, technologies, and strategies in the fields of smart building design, construction, and operation and providing a comprehensive guideline on how to exploit the new possibilities offered by the digital revolution. It will be an essential reference resource for academic researchers, material scientists and civil engineers, undergraduate and graduate students, and other professionals working in the field of smart ecoefficient construction and cutting-edge technologies applied to construction. Provides an overview of the Construction 4.0 framework to address the global challenges of the buildingsector in the 21st century and an in-depth analysis of the most advanced digital technologies and systems forthe operation and maintenance of infrastructure, real estate, and other built assets Covers major innovations across the value chain, including building design, fabrication, construction, operationand maintenance, and end-of-life Illustrates the most advanced digital tools and methods to support

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includinggenerative design, virtual reality, and digital fabrication Presents a thorough review of the most advanced construction materials, building methods, and techniquesfor a new connected and automated construction model Explores the digital transformation for smart energy buildings and their integration with emerging smartgrids and smart cities Reflects upon major findings and identifies emerging market opportunities for the whole AECO sector

#### **Life Cycle Assessment on Green**

**Building Implementation** Vivian W. Y. Tam 2018-09-27 This book is a printed edition of the Special Issue "Life Cycle Assessment on Green Building Implementation" that was published in Sustainability

#### **Novel Polymeric Materials For Environmental Applications**

Paramita Das 2023-03-21 Polymeric materials play an essential and ubiquitous role in many fields including structural and packaging materials, drug development, tissue engineering, wastewater treatment, pollutant removal, separation, water purification, smart agriculture, and even road and building construction. This book contains eleven comprehensive chapters covering topics from deriving polymers from natural resources or wastes to developing novel functional polymeric materials in the form of membranes, hydrogels, foams, nanocomposites for various environmental applications. This book also discusses the utilization of waste plastics and the challenges and progress made in recycling and reusing commercially viable polymers. Such information is valuable and accelerates technological progress. Each chapter further gives the current fabrication methodology, challenges, and future scope of these materials related to their environmental applications. Thus anyone working on polymer-based materials will benefit from the comprehensive knowledge presented in this book on novel polymeric materials and their various environmental applications.

#### **Marine Concrete Structures**

Mark Alexander 2016-09-13 Marine Concrete

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ashes in cement mortar and concrete, and construction using soil-cement blocks, clay-based materials, adobe and earthen materials, and ancient stone masonry. Timber, bamboo, and paper construction materials are investigated in the final section of the book. Provides a state-of-the-art review of the modern use and engineering of nonconventional building materials Contains chapters that focus on individual construction materials and address both material characterization and structural applications Covers sustainable engineering and the trend towards engineering for humanity

Recent Trends in Cold-Formed Steel Construction Cheng Yu 2016-05-27

Recent Trends in Cold-Formed Steel Construction discusses advancements in an area that has become an important construction material for buildings. The book addresses cutting-edge new technologies and design methods using cold-formed steel as a main structural material, and provides technical guidance on how to design and build sustainable and energy-efficient cold-formed steel buildings. Part One of the book introduces the codes, specifications, and design methods for cold-formed steel structures, while Part Two provides computational analysis of cold-formed steel structures. Part Three examines the structural performance of cold-formed steel buildings and reviews the thermal performance, acoustic performance, fire protection, floor vibrations, and blast resistance of these buildings, with a final section reviewing innovation and sustainability in cold-formed steel construction. Addresses building sciences issues and provides performance solutions for cold-formed buildings Provides guidance for using the next generation design method, computational tools, and technologies Edited by an experienced researcher and educator with significant knowledge on new developments in cold-formed steel construction

**Trends in Sustainable Buildings and Infrastructure** Víctor Yepes

2021-06-11, The recently established **Biopolymers And Biotech Admixtures For Eco Efficient Construction Materials** Woodhead Publishing Series In Civil And Structural Engineering Pdf upload Dona m Ferguson

for a paradigm shift in the way that buildings and infrastructures are conceived. The construction industry is a major source of environmental impacts, given its great material consumption and energy demands. It is also a major contributor to the economic growth of regions, through the provision of useful infrastructure and generation of employment, among other factors. Conventional approaches underlying current building design practices fall short of covering the relevant environmental and social implications derived from inappropriate design, construction, and planning. The development of adequate sustainable design strategies is therefore becoming extremely relevant regarding the achievement of the United Nations 2030 Agenda Goals for Sustainable Development. This book comprises 11 chapters that highlight the actual research trends in the construction sector, aiming to increase the knowledge on sustainable design practices by highlighting the actual practices that explore efficient ways to reduce the environmental consequences related to the construction industry, while promoting social wellbeing and economic development. The chapters collect papers included in the Special Issue "Trends in Sustainable Buildings and Infrastructure" of the International Journal of Environmental Research and Public Health.

**Smart Buildings** Marco Casini 2016-05-27 Smart Buildings: Advanced Materials and Nanotechnology to Improve Energy Efficiency and Environmental Performance presents a thorough analysis of the latest advancements in construction materials and building design that are applied to maximize building efficiency in both new and existing buildings. After a brief introduction on the issues concerning the design process in the third millennium, Part One examines the differences between Zero Energy, Green, and Smart Buildings, with particular emphasis placed on the issue of smart buildings and smart housing, mainly the 'envelope' and how to make it

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more adaptive with the new possibilities offered by nanotechnology and smart materials. Part Two focuses on the last generation of solutions for smart thermal insulation. Based on the results of extensive research into more innovative insulation materials, chapters discuss achievements in nanotechnology, bio-ecological, and phase-change materials. The technical characteristics, performance level, and methods of use for each are described in detail, as are the achievements in the field of green walls and their use as a solution for upgrading the energy efficiency and environmental performance of existing buildings. Finally, Part Three reviews current research on smart windows, with the assumption that transparent surfaces represent the most critical element in the energy balance of the building. Chapters provide an extensive review on the technical features of transparent closures that are currently on the market or under development, from so-called dynamic glazing to bio-adaptive and photovoltaic glazing. The aesthetic potential and performance limits are also be discussed. Presents valuable definitions that are given to explain the characteristics, requirements, and differences between 'zero energy', 'green' and 'smart' buildings Contains particular focus on the next generation of construction materials and the most advanced products currently entering the market Lists both the advantages and disadvantages to help the reader choose the most suitable solution Takes into consideration both design and materials aspects Promotes the existence of new advanced materials providing technical information to encourage further use and reduce costs compared to more traditional materials

*Microbial Biotechnology for Renewable and Sustainable Energy* Jitendra Kumar Saini 2022-05-04 This book covers various aspects of microbial biotechnology to produce bioenergy. It focuses on production of biofuels from plant and microbial biomass

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other wastes. It educates readers about various biomass resources, major aspects of production of renewable energy and fuels based on biochemical conversion routes. There is special focus on the microbial system and biotechnological processes as well as process optimization and industrial scale-up. The book brings together current challenges and potential solutions to enhance biomass to biofuel bioconversion. It is relevant for researchers, academicians, students as well as industry professionals working on biomass-based biorefineries.

**Characteristics and Uses of Steel Slag in Building Construction** Ivanka Netinger Grubeša 2016-05-20  
Characteristics and Uses of Steel Slag in Building Construction focuses predominantly on the utilization of ferrous slag (blast furnace and steel slag) in building construction. This extensive literature review discusses the worldwide utilization of ferrous slag and applications in all sectors of civil engineering, including structural engineering, road construction, and hydro-technical structures. It presents cutting-edge research on the characteristics and properties of ferrous slag, and its overall impact on the environment. Comprehensively reviews the literature on the use of blast furnace and steel slag in civil engineering Examines the environmental impact of slag production and its effect on human health Presents cutting-edge research from worldwide studies on the use of blast furnace and steel slag

**Insights and Innovations in Structural Engineering, Mechanics and Computation** Alphose Zingoni 2016-11-25 Insights and Innovations in Structural Engineering, Mechanics and Computation comprises 360 papers that were presented at the Sixth International Conference on Structural Engineering, Mechanics and Computation (SEMC 2016, Cape Town, South Africa, 5-7 September 2016). The papers reflect the broad scope of the SEMC conferences, and cover a wide range of engineering structures (buildings, bridges, towers, roofs, foundations, offshore structures,

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focus on the preparation and applications of biopolymers in a specific industrial area, including food science and nutraceuticals, medicine and pharmaceuticals, textiles, cosmeceutical, packaging, adhesives and automotive, 3D printing, super capacitor and energy storage devices, and environmental applications. The final chapter compares and analyzes biopolymers alongside synthetic polymers, also offering valuable insight into social, economic, and environmental aspects. This is an essential resource for those seeking to understand, research, or utilize biopolymers in industrial applications. This includes researchers, scientists, and advanced students working in biopolymers, polymer science, polymer chemistry, biomaterials, materials science, nanotechnology, composites, and biotechnology. This is a highly valuable book for scientists, R&D professionals, designers, and engineers across multiple industries and disciplines, who are looking to utilize biopolymers for components and products. Introduces a broad range of industrial application areas, including food, medicine, textiles, cosmetics, packaging, automotive, 3D printing, energy, and more Offers an industry-oriented approach, addressing challenges and explaining the preparation and application of biopolymers for functional products and parts Considers important factors such as resources, classification, sustainability, and life cycle assessment (LCA) modeling and simulation Compares and analyzes biopolymers alongside synthetic polymers, also offering valuable insight into social, economic, and environmental aspects

*Start-Up Creation* Fernando Pacheco-Torgal 2016-05-14 *Start-Up Creation: The Smart Eco-efficient Built Environment* provides a state-of-the-art review on high-technology applications and explains how these can be applied to improve the eco-efficiency of the built environment. Divided into four main parts, the

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successful startup companies that grow from university research, including the development of a business plan, the importance of intellectual property, necessary entrepreneurial skills, and innovative thinking. Part Two presents the latest research findings on nano and bio-based technologies and their application and use to the energy efficiency of the built environment. Part Three focuses on the use of genetic algorithms, Big Data, and the Internet of Things applications. Finally, the book ends with an entire section dedicated to App development using selected case studies that illustrate their application and use for monitoring building energy-efficiency. Presents a definitive guide for startups that arise from college and university research, and how the application of advanced technologies can be applied to the built environment Includes case studies on new advanced technologies and apps development Links startup creation to the eco-efficient built environment through software applications

[Microbial Biotechnology Approaches to Monuments of Cultural Heritage](#) Ajar Nath Yadav 2020-06-24

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

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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.

**Bio-Inspired Materials** Ulisses Targino Bezerra 2019-04-16 Nature has provided opportunities for scientists to observe patterns in biomaterials which can be imitated when designing construction materials. Materials designed with natural elements can be robust and environment friendly at the same time. Advances in our understanding of biology and materials science coupled with the extensive observation of nature have stimulated the search for better accommodation/compression of materials and the higher organization/reduction of mechanical stress in man-made structures. Bio-Inspired Materials is a collection of topics that explore frontiers in 3 sections of bio-inspired design: (i) bionics design, (ii) bio-inspired construction, and (iii) bio-materials. Chapters in each section address the most recent advances in our knowledge about the desired and expected relationship between humans and nature and its use in bio-inspired buildings. Readers will also be introduced to new concepts relevant to bionics, biomimicry, and biomimetics. Section (i) presents research concepts based on information gained from the direct observation of nature and its applications for human living. Section (ii) is devoted to 'artificial construction' of the Earth. This section addresses issues on geopolymers, materials that resemble the structure of soils and natural rocks; procedures that reduce damage caused by earthquakes in natural construction, the development of products from vegetable resins and construction principles using bamboo. The last section takes a look into the future towards the improvement of human living conditions. Bio-Inspired Materials offers readers - having a background in architecture, civil engineering and systems biology - a **Biopolymers And Biotech Admixtures For Eco Efficient Construction Materials** Woodhead Publishing Series In Civil And Structural Engineering Pdf upload Dona m Ferguson

building which is a key part of addressing the environmental concerns of current times.

**Cost-Effective Energy Efficient Building Retrofitting** Fernando Pacheco-Torgal 2017-01-03 Cost-Effective Energy Efficient Building Retrofitting: Materials, Technologies, Optimization and Case Studies provides essential knowledge for civil engineers, architects, and other professionals working in the field of cost-effective energy efficient building retrofitting. The building sector is responsible for high energy consumption and its global demand is expected to grow as each day there are approximately 200,000 new inhabitants on planet Earth. The majority of electric energy will continue to be generated from the combustion of fossil fuels releasing not only carbon dioxide, but also methane and nitrous oxide. Energy efficiency measures are therefore crucial to reduce greenhouse gas emissions of the building sector. Energy efficient building retrofitting needs to not only be technically feasible, but also economically viable. New building materials and advanced technologies already exist, but the knowledge to integrate all active components is still scarce and far from being widespread among building industry stakeholders. Emphasizes cost-effective methods for the refurbishment of existing buildings, presenting state-of-the-art technologies Includes detailed case studies that explain various methods and Net Zero Energy Explains optimal analysis and prioritization of cost effective strategies

**Nanocomposites-Advanced Materials for Energy and Environmental Aspects** Mohammad Ehtisham Khan 2023-01-25 Nanocomposites-Advanced Materials for Energy and Environmental Aspects provides a brief introduction to metal oxides. The book then discusses novel fabrication methodologies and eco-friendly methods for using a broad range of metal oxide-based nanocomposites in innovative ways. Key aspects include fundamental characteristics of environmentally sustainable fabrication of materials  
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for solar power, power generation and the textiles industries.

Commercialization and economic aspects that are currently of major significance are also discussed in detail. The book represents an important information resource for material scientists and engineers to create the next generation of products and devices for energy and environmental applications. Metal and metal oxide-based nanocomposites are at the heart of some of the most exciting developments in the field of energy and environmental research. They have exceptional properties and are utilized in electronic and environmental sensing devices, for energy storage, electrode materials, fuel cells, membranes, and more. Covers fabrication, standard characterization and photocatalytic mechanism for a wide range of applications Includes broad ranging metal and metal oxide-based applications covering environmental, energy, electronics, oil, gas, water treatment and sensing Evaluates dye consumption in the textiles industries and the energy related research that will determine options for sustainable and transformational opportunities

Bio-Based Polymers for Engineered Green Materials Gianluca Tondi

2020-05-20 With daily signals, Nature is communicating us that its unconscious wicked exploitation is no more sustainable. Our socio-economic system focuses on production increasing without considering the consequences. We are intoxicating ourselves on a daily bases just to allow the system to perpetuate itself. The time to switch into more natural solutions is come and the scientific community is ready to offer more natural product with comparable performance then the market products we are used to deal with. This book collects a broad set of scientific examples in which research groups from all over the world, aim to replace fossil fuel-based solutions with biomass derived materials. In here, some of the most innovative developments in the field of bio-materials are reported

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biomass valorization to the synthesis of high performing bio-based materials.

**Construction Biotechnology** Volodymyr Ivanov 2016-10-20 This book presents the first comprehensive text on construction biomaterials and bioprocesses. It details aspects of construction biotechnology, a new interdisciplinary area involving applications of environmental and industrial microbiology and biotechnology in geotechnical and civil engineering. It also critically reviews all existing and potential construction biotechnology processes. It discusses a number of topics including the biotechnological production of new construction materials such as self-healing concrete, construction biocomposites, construction bioplastics, and biotechnological admixtures to cement. It also addresses construction-related processes like biocementation, bioclogging, soil surface fixation and biosealing, microbial cements and grouts, the biocoating of construction material surfaces, the microbiology and biosafety of the construction environment, the prevention of biocorrosion as well as biodeterioration and biofouling in civil engineering. Biomediated precipitation of calcium, magnesium, and iron compounds as carbonates, phosphates, sulphides, and silicate minerals in soil for its clogging and strengthening are considered from geotechnical, chemical, and microbiological points of view. It offers an overview of the basic microbiology that will enable civil engineers to perform the construction biogeochemical processes. Design principles and considerations for different field implementations are discussed from a practical point of view. The book can be used as a textbook for graduate and senior undergraduate students in biotechnology, civil engineering and environmental engineering as well as a reference book for researchers and practitioners working in this new interdisciplinary area.

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**Materials** Fernando Pacheco-Torgal  
2016-01-11 Since 1930 more than 100,000 new chemical compounds have been developed and insufficient information exists on the health assessment of 95 percent of these chemicals in which a relevant percentage are used in construction products. For instance Portland cement concrete, the most used material on the Planet (10.000 million tons/year that in the next 40 years will increase around 100 %) currently used in around 15% of total concrete production contains chemicals used to modify their properties, either in the fresh or hardened state. Biopolymers are materials that are developed from natural resources. They reduce dependence on fossil fuels and reduce carbon dioxide emissions. There is a worldwide demand to replace petroleum-based materials with renewable resources. Currently bio-admixtures represent just a small fraction of the chemical admixtures market (around 20%) but with environmental awareness for constituents in construction materials generally growing (the Construction Products Regulation is being enforced in Europe since 2013), the trend towards bio-admixtures is expected to continue. This book provides an updated state-of-the-art review on biopolymers and their influence and use as admixtures in the development of eco-efficient construction materials. Provides essential knowledge for researchers and producers working on the development of biopolymer-modified construction materials Discusses the various types of biopolymers currently available, their different production techniques, their use as bio-admixtures in concretes and mortars and applications in other areas of civil engineering such as soil stability, wood preservation, adhesives and coatings All contributions are made from leading researchers, who have intensive involvement in the design and use of biopolymers in construction materials

**Functional Foods** Navnidhi Chhikara  
2022-02-23, Functional Foods  
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on new and emerging food engineering processes, Functional Foods, the second volume in the groundbreaking new series, "Bioprocessing in Food Science," is an essential reference on the modeling, quality, safety, and technologies associated with food processing operations today. Functional Foods, the second volume in series, "Bioprocessing in Food Science," is an up-to-date, comprehensive volume covering the preparation, processes and health benefits of functional foods. Written and edited by a team of experts in the field, this important new volume provides readers extensive knowledge about different types of traditional and commercially available functional foods from different sources, such as milk, meat, cereals, millets and fruits and vegetables. The main objective of this book is to disseminate knowledge about the recent technologies developed in the field of functional foods to students, researchers, and industry professionals. This will enable them to make crucial decisions regarding the adoption, implementation, economics, and constraints of the different technologies. As the demand for healthy food is increasing, manufacturers are searching for new possibilities for occupying a growing share in the rapidly changing food market. Covering the use of conventional and non-conventional sources, prebiotics, probiotics and many other topics, with emphasis on their functionality in food systems, this volume also provides insights on the specific packaging requirements for functional foods with maximum illustrations of how to enhance shelf life and create superior quality products. The authors and editors discuss the need for regulatory frameworks, government bodies, guidelines, and their challenges within the context of the functional food market. Whether for the veteran engineer or scientist, the student, or a manager or other technician working in the field, this volume is a must-have for any library. This outstanding new volume: Discusses an overview of functional foods including global regulations,

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legislations and packaging requirements Provides knowledge of functional ingredients and health benefits of functional foods from different plants, animals, and microbes sources Acquaints the readers about technological aspects for functional ingredients delivery Addresses the basic to advanced aspects of different functional foods, combining the requirements, health benefits and regulations, showcasing the development of functional food products with potential functional benefits Audience: Process and chemical engineers, chemists, engineers in other disciplines, managers, researchers, scientists, students,

and teachers working in the field of food engineering and processing **Advanced Functional Textiles and Polymers** Shahid Ul-Islam 2019-11-12 This book on advanced functional textiles and polymers will offer a comprehensive view of cutting-edge research in newly discovered areas such as flame retardant textiles, antimicrobial textiles, insect repellent textiles, aroma textiles, medical-textiles, smart textiles, and nano-textiles etc. The second part the book provides innovative fabrication strategies, unique methodologies and overview of latest novel agents employed in the research and development of functional polymers.