Concrete Technology For A Sustainable Development In The 21st Century

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Sustainable Construction and Building Materials

Concrete Technology for Sustainable Development

With superior fire resistance, strength, and a long service life, concrete is the most widely used construction material in the world. A sustainable material, concrete is also easily and affordably reused and rehabilitated. The first book to provide an overview of sustainability and concrete, Green Building with Concrete: Sustainable Design and Construction surveys the material’s history in the green building movement and presents state-of-the-art methodologies and best practices. From the manufacturing of cement to the rehabilitation of concrete, this comprehensive book explains how concrete can be used for
sustainable design and construction. It offers insight into new technological and social developments guiding the introduction of green buildings and examines the attributes that concrete has to offer the green building movement. The text also highlights research on economic analysis—particularly life cycle costing—to provide a full picture of the economic benefits of concrete. Expert contributors from around the world offer diverse viewpoints on global sustainability. Topics covered include: Principles of sustainable design Benefits of concrete’s thermal mass Mitigation of urban heat island effects Surface runoff and the application of pervious concrete for sidewalks and parking areas Reduction of construction waste Leadership in energy and environmental design (LEED) standards Emphasizing environmental impact and occupational and consumer health and safety, this book explains how to make the most of concrete in sustainable design. Written for university and concrete industry continuing education courses, it also serves as a reference for building owners and industry professionals who recognize the value of green building.

**Cement & Concrete, Contributing to Global Sustainability**

**Smart and Multifunctional Concrete Toward Sustainable Infrastructures**

The Handbook of Sustainable Concrete and Industrial Waste Management summarizes key research trends in recycling and reusing concrete and industrial waste to reduce their environmental impact. This volume also includes important contributions in collaboration with the CRI-TEST Innovation Lab, Naples – Acerra. Part one discusses eco-friendly innovative cement and concrete and reviews key substitute materials. Part two analyzes the use of industrial waste as aggregates and the mechanical properties of concrete containing waste materials. Part three discusses differences between innovative binders, focusing on alkali-activated and geopolymer concrete. Part four provides a thorough overview of the life cycle assessment (LCA) of concrete containing industrial wastes and the impacts related to the logistics of wastes, the production of the concrete, and the management of industrial wastes. By providing research examples, case studies, and practical strategies, this book is a state-of-the-art reference for researchers working in construction materials, civil or structural engineering, and engineers working in the industry. Offers a systematic and comprehensive source of information on the latest developments in sustainable concrete; Analyzes different types of sustainable concrete and innovative binders from chemical, physical, and mechanical points of view; Includes real case studies showing application of the LCA methodology.

**Recycled Ceramics in Sustainable Concrete**

Production of Portland cement is responsible for about seven percent of the world’s greenhouse gas emissions. The pressure to
make the production of concrete more sustainable, or "greener", is considerable and increasing. This requires a wholesale shift in processes, materials and methods in the concrete industry. Pure Portland cement will need to be replaced by more complex binary, tertiary or even quaternary binders, including other types of cementitious materials. We can expect an increasing use of high performance concrete, primarily because of its high sustainability and durability. Much more attention will have to be paid to the proper curing of the concrete if we want to improve its life expectancy. Presenting the latest advances in the science of concrete this book focuses particularly on sustainability, durability, and economy. It explores the potential for increased sustainability in concrete from the initial mixing right through to its behaviour in complex structures exposed to different types of loads and aggressive environments.

**Sustainable Practices and Innovations in Civil Engineering**

Recycled Ceramics in Sustainable Concrete: Properties and Performance explores the use of novel waste materials in the construction industry as sustainable and environmentally friendly alternatives to traditional cement production technologies. It specifically focuses on using waste ceramics as a binder and aggregate replacement for concrete. It includes a lifecycle assessment Describes recycling of ceramic tile waste as fine and coarse aggregate replacement Discusses microstructure performance of sustainable concrete Evaluates performance of sustainable concrete exposed to elevated temperatures and corrosives Written for materials, chemical, and civil engineers as well as others who develop construction materials, this book provides readers with a thorough understanding of the merits of using waste ceramics to produce sustainable concrete.

**Proceedings of the International Workshop on Sustainable Development and Concrete Technology, Beijing, China, May 20-21, 2004**

Cement-based concrete has excellent properties as a construction material, and the raw materials of cement rocks, and limestone and clay are bountiful. Yet its production generates high quantities of CO2, making it a potentially unsustainable material. However, there are no alternatives to concrete and steel as basic methods for development of soci

**Sulfur Concrete for the Construction Industry**

**Cement & Concrete, Contributing to Global Sustainability**

Sustainable Concrete Made with Ashes and Dust from Different Sources: Materials, Properties and Applications focuses on...
individual materials, addressing material characterization, their role in the strength and durability of construction materials, and structural applications. Each chapter reflects the current state-of-the-art in terms of the effective and efficient use of the material. Types of ashes covered are Coal Fly Ash, Coal Bottom Ash, Bagasse Ash, MSW Ash, Red Mud, Waste Marble Dust, Sewage Sludge Ash, and Cement Kiln Dust. This book is useful for civil engineers in the design and development of sustainable concrete by utilizing such types of ashes and researchers involved in the design and formulation of new cementitious materials. Focuses on different types of ashes derived from various sources for use in the development of sustainable concrete. Discusses the economic and environmental impacts, normative restrictions, and implementation in codes and standards related to the use of these by-products/wastes in concretes. Includes coverage of the impact of dust from construction and demolition wastes.

Sustainable Construction

Developed as a more detailed follow-up to a 2009 briefing document, Building Sustainable Pavement with Concrete, this guide provides a clear, concise, and cohesive discussion of pavement sustainability concepts and of recommended practices for maximizing the sustainability of concrete pavements. The intended audience includes decision makers and practitioners in both owner-agencies and supply, manufacturing, consulting, and contractor businesses. Readers will find individual chapters with the most recent technical information and best practices related to concrete pavement design, materials, construction, use/operations, renewal, and recycling. In addition, they will find chapters addressing issues specific to pavement sustainability in the urban environment and to the evaluation of pavement sustainability. Development of this guide satisfies a critical need identified in the Sustainability Track (Track 12) of the Long-Term Plan for Concrete Pavement Research and Technology (CP Road Map). The CP Road Map is a national research plan jointly developed by the concrete pavement stakeholder community, including Federal Highway Administration, academic institutions, state departments of transportation, and concrete pavement-related industries. It outlines 12 tracks of priority research needs related to concrete pavements. CP Road Map publications and other operations support services are provided by the National Concrete Pavement Technology Center at Iowa State University. For details about the CP Road Map, see www.cproadmap.org/index.cfm.

High Performance Concrete

Concrete Technology Forum

Concrete technology for a sustainable development in the 21st century focuses on the problems and challenges for the concrete industry today and in the future with particular emphasis on environmental consciousness. Primary topics include: the
improvement of concretes service life to ease technical and economical problems and the waste of natural resources; environmentally friendly concrete production including new production methods and recycling materials; and actually using concrete to solve environmental problems, for example through the containment of hazardous waste. The book is the result of the international workshop held in Lofoton, Norway. With very select contributions from the most distinguished international professional experts, this book provides a basic framework and guidelines for national and international bodies.

**The Sustainable Use of Concrete**

Illustrates the Global Relevance of Sustainability. Applicable to roads, bridges, and other elements of the infrastructure, Green Building with Concrete: Sustainable Design and Construction, Second Edition provides an overview of all available information on the role of concrete in green building. A handbook offering viewpoints from worldwide experts.

**Sustainable Concrete Solutions**

The proceedings of this major international symposium held in November 1998, provide an overview of developments in the use of concrete aggregate in the construction industry. The current disposal of wastes and industrial residues to landfill is no longer considered sustainable. More governments throughout the world are implementing policies actively promoting the recycling of these materials, indeed, recycling of concrete as an aggregate offers an environmentally responsible and economically viable route to convert this waste to a valuable resource.

**Supplementary Cementing Materials**

**Sustainability of Concrete**

**3D Concrete Printing Technology**

**Twelfth International Conference on Recent Advances in Concrete Technology and Sustainability Issues**
Sustainable Construction Materials: Sewage Sludge Ash, part of a series of five, aims to promote the use of sustainable construction materials. It is different from the norm, with its uniqueness lying in the development of a data matrix sourced from over 600 publications and contributed by 1107 authors from 442 institutions in 48 countries from 1970 to 2016, all focusing on the subject of sewage sludge ash as a construction material, and systematically analyzing, evaluating, and modeling the information for use in cement, concrete, ceramics, geotechnics, and road pavement applications. Related environmental issues, case studies, and standards are also discussed. The book helps users avoid repetitive research and save valuable resources, giving them more latitude to explore new research to progress the use of sustainable construction materials. It is structured in an incisive and easy to digest manner. As an excellent reference source, the book is particularly suited for researchers, academics, design engineers, specifiers, contractors, developers, and certifying and regulatory authorities who seek to promote sustainability within the construction sector. Provides an extensive source of valuable database information supported by an exhaustive and comprehensively organized list of globally published literature spanning 40-50 years, up to 2016, with 5000 references Offers an analysis, evaluation, repackaging, and modeling of existing knowledge, encouraging more responsible use of waste materials in construction Presents a wealth of knowledge for use in many sectors relating to the construction profession

**Sustainable Concrete Made with Ashes and Dust from Different Sources**

Sustainable Construction Materials: Municipal Incinerated Bottom Ash discusses the global use of virgin aggregates and CO2 polluter Portland cement. Given the global sustainability agenda, much of the demand for these two sets of materials can be substantially reduced through the appropriate use of waste materials, thereby conserving natural resources, energy and CO2 emissions. Realistically, this change can only be realized and sustained through engineering ingenuity and new concepts in design. Although a great deal of research has been published over the last 50 years, it remains fragmented and ineffective. This book develops a single global knowledge-base, encouraging greater use of selected waste streams. The focus of massive systematic reviews is to encourage the uptake of recycled secondary materials (RSM) by the construction industry and guide researchers to recognize what is already known regarding waste. Provides an extensive source of valuable database information, supported by an exhaustive list of globally-based published literature over the last 40-50 years Offer an analysis, evaluation, repackaging and modeling of existing knowledge on sustainable construction practices Provides a wealth of knowledge for use in many sectors relating to the construction profession

**Concrete and Sustainability**

Microwave Technology: A Powerful Technique The first book to combine microwave-assisted heating technology and concrete
technology (covering production, demolition, and recycling), Microwave-Assisted Concrete Technology: Production, Demolition and Recycling explains the underlying concepts and fundamentals involved in the microwave-assisted heating of concrete. While most books on microwave heating focus on the behavior of microwaves, this text centers on the response of materials subjected to microwaves, and specifically concentrates on materials used in the concrete industry. A ready reference for the design of microwave-based equipment, the book describes how microwave-assisted heating technology may be harnessed in the production, demolition, and recycling of concrete. It covers microwave-assisted applications, the design concepts of microwave heating systems (generators and applicators) used in microwave-assisted concrete-processing methods, and process control techniques used to monitor the condition of concrete during the heating process. Learn How to use the Microwave-Assisted Heating Process for Industry The book is written from the perspective of modern practitioners in the construction industry, and addresses the technological, scientific, and environmental issues involved in replacing conventional approaches with microwave heating. The authors categorize the applications of microwave heating in concrete technology into three areas: microwave-assisted accelerated curing of concrete, microwave-assisted selective demolition and drilling of concrete, and the microwave-assisted recycling of concrete. They discuss sustainability and the environmental impact of incorporating sustainable concrete production, demolition, and recycling using microwave-assisted heating technologies, and environmentally friendly microwave heating applications. This text covers: The basics of concrete-microwave field interactions Microwave-assisted concrete technologies for use in the production, demolition, and recycling of concrete as well as the control mechanisms required to ensure the efficiency of these methods The design of microwave heating applicators Microwave-Assisted Concrete Technology: Production, Demolition and Recycling does not require a familiarity with electromagnetism science and can be easily understood by civil engineers as well as by readers with little or no engineering background.

Green Building with Concrete

Over the past two decades concrete has enjoyed a renewed level of research and testing, resulting in the development of many new types of concrete. Through the use of various additives, production techniques and chemical processes, there is now a great degree of control over the properties of specific concretes for a wide range of applications. New theories, models and testing techniques have also been developed to push the envelope of concrete as a building material. There is no current textbook which brings all of these advancements together in a single volume. This book aims to bridge the gap between the traditional concrete technologies and the emerging state-of-the-art technologies which are gaining wider use.

Sustainable Construction Materials

The challenges facing humanity in the 21st century include climate change, population growth, overconsumption of
resources, overproduction of waste and increasing energy demands. For construction practitioners, responding to these challenges means creating a built environment that provides accommodation and infrastructure with better whole-life performance using lower volumes of primary materials, less non-renewable energy, wasting less and causing fewer disturbances to the natural environment. Concrete is ubiquitous in the built environment. It is therefore essential that it is used in the most sustainable way so practitioners must become aware of the range of sustainable concrete solutions available for construction. While sustainable development has been embedded into engineering curricula, it can be difficult for students and academics to be fully aware of the innovations in sustainable construction that are developed by the industry. Sustainable Concrete Solutions serves as an introduction to and an overview of the latest developments in sustainable concrete construction. It provides useful guidance, with further references, to students, researchers, academics and practitioners of all construction disciplines who are faced with the challenge of designing, specifying and constructing with concrete.

**Sustainable Construction Materials**

This book is an attempt to consolidate the published research related to the use of Supplementary Cementing Materials in cement and concrete. It comprises of five chapters. Each chapter is devoted to a particular supplementing cementing material. It is based on the literature/research findings published in journals/conference proceedings, etc. Topics covered in the book are; coal fly ash, silica fume (SF), granulated blast furnace slag (GGBS), metakaolin (MK), and rice husk ash (RHA). Each chapter contains introduction, properties of the waste material/by-product, its potential usage, and its effect on the properties of fresh and hardened concrete and other cement based materials.

**Sustainable Construction Materials**

**Handbook of Sustainable Concrete and Industrial Waste Management**

This book presents the latest research advances and findings in the field of smart/multifunctional concretes, focusing on the principles, design and fabrication, test and characterization, performance and mechanism, and their applications in infrastructures. It also discusses future challenges in the development and application of smart/multifunctional concretes, providing useful theory, ideas and principles, as well as insights and practical guidance for developing sustainable infrastructures. It is a valuable resource for researchers, scientists and engineers in the field of civil-engineering materials and infrastructures.
Towards a Sustainable Concrete Technology with the Use of Fly Ash

Sustainable Construction Materials: Recycled Aggregate focuses on the massive systematic need that is necessary to encourage the uptake of recycled and secondary materials (RSM) in the construction industry. This book is the fifth and the last of the series on sustainable construction materials and like the previous four, it is also different to the norm. Its uniqueness lies in using the newly developed, Analytical Systemisation Method, in building the data-matrix sourced from 1413 publications, contributed by 2213 authors from 965 institutions in 67 countries, from 1977 to 2018, on the subject of recycled aggregate as a construction material, and systematically analysing, evaluating and modelling this information for use of the material as an aggregate concrete and mortar, geotechnics and road pavement applications. Environmental issues, case studies and standards are also discussed. The work establishes what is already known and can be used to further progress the use of sustainable construction materials. It can also help to avoid repetitive research and save valuable resources. The book is structured in an incisive and easy to digest manner and is particularly suited for researchers, academics, design engineers, specifiers, contractors, and government bodies dealing with construction works. Provides an exhaustive and comprehensively organized list of globally-based published literature spanning 5000 references Offers an analysis, evaluation, repackaging and modeling of existing knowledge that encourages more responsible use of waste materials Provides a wealth of knowledge for use in many sectors relating to the construction profession, including academia, research, practice and adoption of RSM

Advanced Materials and Sustainability in Civil Engineering

Sustainable Concrete Made with Ashes and Dust from Different Sources: Materials, Properties and Applications focuses on individual materials, addressing material characterization, their role in the strength and durability of construction materials, and structural applications. Each chapter reflects the current state-of-the-art in terms of the effective and efficient use of the material. Types of ashes covered are Coal Fly Ash, Coal Bottom Ash, Bagasse Ash, MSW Ash, Red Mud, Waste Marble Dust, Sewage Sludge Ash, and Cement Kiln Dust. This book is useful for civil engineers in the design and development of sustainable concrete by utilizing such types of ashes and researchers involved in the design and formulation of new cementitious materials. Focuses on different types of ashes derived from various sources for use in the development of sustainable concrete Discusses the economic and environmental impacts, normative restrictions, and implementation in codes and standards related to the use of these by-products/wastes in concretes Includes coverage of the impact of dust from construction and demolition wastes

Sustainable Light Concrete Structures

Document from the year 2015 in the subject Environmental Sciences, grade: 8.44, course: M.Tech., language: English
Concrete Technology for a Sustainable Development in the 21st Century

Concrete is the most widely used construction material for infrastructure needs in the Asian region and in the world. Unfortunately, the concrete industry is one of the largest consumers of natural resources and energy, and is responsible for large emissions of carbon dioxide that is one of the greenhouse gases responsible for global warming. It is imperative that the concrete industry must be in an active role of balancing the infrastructure needs and the protection of environment. This work presents a summary of some recent research closely associated with the sustainable development of concrete technology. The research projects include study and analysis of: - Causes of deterioration of concrete structures, problems at construction sites that causes early deterioration of concrete structures. In addition to above this book also presents some environmentally-friendly and sustainable concrete technology including the use of supplementary cementing materials (SCM), recycling concrete and other materials, enhancement of service life of concrete structures. Emerging technologies that have the potential to significantly contribute to sustainable concrete industry and barriers against reuse are presented at the end of book.

Concrete Technology for a Sustainable Development in the 21st Century

Cement-based concrete has excellent properties as a construction material, and the raw materials of cement—rocks, and limestone and clay—are bountiful. Yet its production generates high quantities of CO2, making it a potentially unsustainable material. However, there are no alternatives to concrete and steel as basic methods for development of socioeconomic infrastructure at this time. Highlighting sustainability issues in the construction industry, The Sustainable Use of Concrete presents guidelines on how to move toward sustainable concrete construction. The book begins by clarifying the historic background and meaning of sustainability, after which it outlines areas that need to be considered in connection with sustainability in the concrete and construction field. It examines environmental, social and cultural, and economic aspects, then considers an evaluation system of sustainability. The authors include various tools and ISO standards, and then explore technologies for sustainability, with case studies and examples that promote understanding of current technologies. Although the construction sector, in the broadest sense, has come to recognize that infrastructure development over the past two centuries has been unsustainable, it has been slow to adjust. Comprehensive information and relevant practical guidance are very scarce. This book lays out a roadmap for creating a human-friendly and safe environment with low environmental burden.

Sustainable Concrete Made with Ashes and Dust from Different Sources

Linking theory to practice, this book provides a better fundamental understanding of Portland cement and hydraulic binders which is necessary to make better concrete. It has been clearly demonstrated that concrete durability is closely linked to its water/binder ratio and proper curing during the first week after casting. In this rigorously presented work, Pierre-Claude Aïtcin explains the complexity of the hydration reaction and how to make, use and cure durable and sustainable concrete. This
book also details the problems with Portland cement composition at present and outlines the concept of an ideal hydraulic binder which is technically and ecologically efficient, as well as being long-lasting and robust. Binders for Durable and Sustainable Concrete is a practical and innovative reference text which will be particularly relevant to engineers and chemists working in the Portland cement, concrete and admixture industries. This book will also be of interest to academics and graduate-level students in Civil Engineering departments who specialize in Portland cement and concrete technology.

**Advanced Concrete Technology**

**Reuse of Concrete for Sustainable Development**

The book presents new technologies for easy and economical construction of light concrete structures saving materials and CO2. The new super-light technology allows a designer to place forces, where it is optimal, and save material everywhere else. The book also supports this “Direct Engineering” principle with a number of new details and structural principles. The new pearl-chain technology makes it possible to design optimal shapes such as arches, vaults, cupolas, floating tunnels, and shells etc. from inexpensive, and mass-produced components. The new super-light deck-elements presented in the book are now produced in six factories in Denmark, Finland, and USA, and the number is increasing. The book will be of interest for all structural engineers, who would like to save materials, CO2 and optimize their structures, for students learning about the new technologies, and for contractors and architects, who want to investigate new building technologies.

**Sustainable Construction Materials**

Concrete technology for a sustainable development in the 21st century focuses on the problems and challenges for the concrete industry today and in the future with particular emphasis on environmental consiousness. Primary topics include: the improvement of concretes service life to ease technical and economical problems and the waste of natural re

**The Sustainable Use of Concrete**

This book is the fourth, in the series of five, on sustainable construction materials and like the previous three, it is also different to the norm. Its uniqueness lies in using the newly developed, Analytical Systemisation Method, in building the data-matrix sourced from 751 publications, contributed by 1402 authors from 513 institutions in 51 countries, from 1970 to 2017, on the subject of processed waste glass (glass cullet) as a construction material, and systematically analysing, evaluating and
modelling this information for use of glass cullet as cement, aggregate or filler in concrete, ceramics, geotechnics and road
pavement applications. Environmental issues, case studies and standards are also discussed. The work establishes what is
already known and can be used to further progress the use of sustainable construction materials. It can also help to avoid
repetitive research and save valuable resources. The book is structured in an incisive and easy to digest manner and is
particularly suited for researchers, academics, design engineers, specifiers, contractors, and government bodies dealing with
construction works. Provides an extensive source of valuable database information, supported by an exhaustive list of globally-
based published literature over the last 40-50 years Offer an analysis, evaluation, repackaging and modeling of existing
knowledge on sustainable construction practices Provides a wealth of knowledge for use in many sectors relating to the
construction profession

**Concrete Technology for a Sustainable Development in the 21st Century**

A complete review of the fast-developing topic of high performance concrete (HPC) by one of the leading researchers in the
field. It covers all aspects of HPC from materials, properties and technology, to construction and testing. The book will be
valuable for all concrete technologists and construction engineers wishing to take advantage of the re

**Microwave-Assisted Concrete Technology**

This book discusses the detailed concepts of concrete and its development with pros and cons. Besides, the significance of
various industrial wastes as partial replacements with concrete ingredients such as cement and aggregates are discussed. The
creation of cement contributes to around 7% of carbon emissions into the atmosphere leading to greenhouse effect and global
warming. Similarly, the wastes generated from various industries such as thermal, steel, ceramic, marble, paper and etc. shows
the impact on atmosphere and leads to air pollution and land pollution. Thus, it is essential to focus on these wastes to use them
in a profitable manner without compromising the current needs. This book discusses a few examples on studies of using various
industry wastes as partial replacement of cement in concrete

**Sustainable Concrete Pavements**

This book sheds light on recent advances in sustainable construction and building materials with special emphasis on the
characterization of natural and composite hydraulic mortars, advanced concrete technology, green building materials, and
application of nanotechnology to the improvement of the design of building materials. The book covers in detail the
characterization of natural hydraulic lime mortars, a decade of research on self-healing concrete, biocomposite cement binding
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process and performance, development of sustainable building materials from agro-industrial wastes, applications of sugarcane biomass ash for developing sustainable construction materials, oil-contaminated sand: sources, properties, remediation, and engineering applications, oil shale ash addition effect in concrete to freezing/thawing, connection node design and performance optimization of girders, functionally graded concrete structures, cumulative tensile damage and consolidation effects on fracture properties of sandstone, key performance criteria influencing the selection of construction methods used for the fabrication of building components in the Middle East, fly ash as a resource material for the construction industry, degradation monitoring systems for a building information modeling maintenance approach, durability of composite-modified asphalt mixtures based on inherent and improved performance, and bitumen and its modifiers.

**Sustainable Development in Concrete Technology**

This is a detailed and accessible examination of the properties, behaviour, and uses of sulfur cement and concrete in the construction industry. It discusses the basic properties and behaviour of sulfur cement and concrete materials, evaluates new sulfur market applications, and much more.

**Binders for Durable and Sustainable Concrete**

3D Concrete Printing Technology provides valuable insights into the new manufacturing techniques and technologies needed to produce concrete materials. In this book, the editors explain the concrete printing process for mix design and the fresh properties for the high-performance printing of concrete, along with commentary regarding their extrudability, workability and buildability. This is followed by a discussion of three large-scale 3D printings of ultra-high performance concretes, including their processing setup, computational design, printing process and materials characterization. Properties of 3D-printed fiber-reinforced Portland cement paste and its flexural and compressive strength, density and porosity and the 3D-printing of hierarchical materials is also covered. Explores the factors influencing the mechanical properties of 3D printed products out of magnesium potassium phosphate cement material Includes methods for developing Concrete Polymer Building Components for 3D Printing Provides methods for formulating geopolymers for 3D printing for construction applications

**Green Building with Concrete**

Concrete is by far the most common building material— accounting for twice the volume of all other such materials combined. With such a huge global economic impact, the industry has a correspondingly considerable responsibility to use it sustainably. Written by experts who pioneered research into environmental issues and concrete, Concrete and Sustainability examines the
sustainability issues of the world’s main construction material and proposes attainable solutions. It provides a complete overview of the topic and tackles the complexity of the challenges from different angles. This book offers new data regarding the social and economic importance of concrete and proposes a discussion centered on a holistic approach in terms of resource availability, technical viability, economic feasibility, and environmental compatibility. The authors attribute a growing worldwide concern and understanding of sustainability issues, and an increased focus on climate change as the catalyst in this process. Instead of offering detailed technical advice or recommendations on sustainable issues, they provide examples showcasing sustainability efforts taking place in the concrete environment worldwide. The book includes examples and ideas for solutions from a large number of countries from across the globe. It presents a holistic and more complete overview of the emission and absorption topic, takes a look at the challenges from a combined old and new world viewing platform and offers an exploration of issues from a social and economic perspective. Concrete and Sustainability details the various rules and regulations that the industry is facing, discusses the various environmental challenges, and explores its impact. As emission, absorptions, and recycling have been the most central elements of discussion in the cement and concrete environment so far, these topics each receive their own chapters. This book also discusses other issues of concern within the various platforms in the industry, as well as future developments, and provides a comprehensive reference list.