Proceedings of the 8th Pacific Rim International Conference on Advanced Materials and Processing (PRICM-8) Learn more about foundational and advanced topics in polymer thin films and coatings besides species with this powerful two-volume resource The two-volume Inorganic and Organic Thin Films: Fundamentals, Fabrication, and Applications delivers a foundational resource for current researchers and commercial users involved in the design and fabrication of thin films. The book offers newcomers to the field a thorough description of new design theory, fabrication methods, and applications of advanced thin films. Readers will discover the physics and chemistry underlying the manufacture of new thin films and coatings in this leading new resource that promises to become a handbook for future applications of the technology. This one-stop reference brings together all important aspects of inorganic and polymeric thin films and coatings, including construction, assembly, deposition, functionality, patterning, and characterization. Explorations of their applications in industries as diverse as information technology, new energy, biomedical engineering, aerospace, and oceanographic engineering round out this fulsome exploration of one of the most exciting and rapidly developing areas of scientific and industrial research today. Readers will also learn from: A comprehensive introduction to the progress of thin films and coatings as well as fundamentals in functional thin films and coatings An exploration of multi-layered magnetic thin films for electron transport control and signal sensing, including giant magnetoresistance, colossal magnetoresistance, tunneling magnetoresistance, and the quantum anomalous Hall effect An in time summary of high-quality magneto-optics, nanophotonics, spin waves and spintronics using bismuth-substituted iron garnet thin films as examples A thorough discussion of template-assisted fabrication of nanostructure thin films for ultrasensitive detection of chemicals and biomolecules A treatment of biomasa derived functional films and coatings Perfect for materials scientists and inorganic chemists, Inorganic and Organic Thin Films will also earn a place in the libraries of solid state physicists and physical chemists working in private industry, as well as polymer and surface chemists who seek to improve their understanding of thin films and coatings.

Biological Transformation Understanding how higher fungi with their spectrum of cellulolytic and ligninolytic enzymes degrade wood tissue, while labyrinthuloids and thraustochytrids further contribute to the dissolved organic matter entering the open ocean is essential to marine ecology. This work provides an overview of marine fungi including morphology and ultrastructure, phylogeny and biogeography. Biotechnology is also turning to these organisms to develop new bioactive compounds and to address problems such as decomposition of materials in the ocean and bioremediation of oil spills.
Acces PDF Advances In Marine Antifouling Coatings And Technologies Woodhead Publishing Series In Metals And Surface Engineering

Advanced Marine Coatings for Naval Vessels: Phase I. Antifouling and Fouling Release Coatings
This book provides the information on the application of nanotechnology in cleaning wastewater and the impact of microbial ecosystem to solve environmental problems has been critically reviewed in the chapters. It also gives detailed reviews about the conversion of wastewater nutrients into a biofertilizer using microalgae, as well as the applications of Biochar for heavy metal remediation from water. Most importantly, this book contains critical review on microbial fuel cells and highlights the emerging risks of bioplastics on the aquatic ecosystem.

Advances in Bacteria Research and Treatment: 2012 Edition
Awareness of the dangers of toxic components in antifouling coatings has raised interest in the potential for nontoxic alternatives. Marine organisms from bacteria to invertebrates and plants use chemicals to communicate and defend themselves. This book explores natural based antifoulants, their ecological functions, methods of characterization and possible uses in antifouling. The text takes on the challenge of identifying such compounds, designing sustainable production and incorporating them into antifouling coatings.

Advances in Contact Angle, Wettability and Adhesion
In engineering, there are often situations in which the material of the main component is unable to sustain long life or protect itself from adverse operating environments. Moreover, in some cases, different material properties such as anti-friction and wear, anti-corrosive, thermal resistive, super hydrophobic, etc. are required for the operating conditions. If those bulk components are made of such materials and possess those properties, the cost will be very high. In such cases, a practical solution is surface coating, which serves as a protective barrier to the bulk material from the adverse environment. In the last decade, with enormous effort, researchers and scientists have developed suitable materials to overcome those unfavorable operating conditions, and they have used advanced deposition techniques to enhance the adhesion and surface texturing of the coatings. Advanced Surface Coating Techniques for Modern Industrial Applications is a highly sought reference source that compiles the recent research trends in these new and emerging surface coating materials, deposition techniques, properties of coated materials, and their applications in various engineering and industrial fields. The book particularly focuses on 1) coating materials including anti-corrosive materials and nanomaterials, 2) coating methods including thermal spray and electroless disposition, and 3) applications such as surface engineering and thin film application. The book is ideal for engineers, scientists, researchers, academicians, and students working in fields like material science, mechanical engineering, tribology, chemical and corrosion science, bio-medical engineering, biomaterials, and aerospace engineering.

Impacts of Shipping on Marine Fauna
Biofouling is a costly problem, and it is encountered in a wide spectrum of technical systems, ranging from the shipping industry, power industry, water purification, automobile industry, paint and pharmaceuticals, to the microelectronics and food industries. Micro- and macroorganisms attach to surfaces and accumulate there, forming biofilms that cause interferences - a fundamentally natural process. Usually, a medical paradigm is applied: kill biofilms and the problem is solved. This leads to excessive biocide use. However, the success of this strategy is very limited; furthermore it leads to equipment damage and environmental pollution. Simply trying to kill the fouling organisms is clearly not seen as a successful strategy while cleaning is put forward as much more important. In this book, strategies to prevent adhesion, to mitigate the extent and effects of biofouling, and to detect and remove fouling layers are presented. Holistic approaches to the fouling process are elaborated, taking into account options such as nutrient limitation, repellent and easy-to-clean surfaces for fouling layer limitation, and replacing biocides with more environmentally friendly methods - in other words: learning how to live with fouling biofilms without suffering the damage they can do.

Submersible Technology
Sulfur-Containing Marine Bioactives
A practical guide to polymer coatings that covers all aspects from materials to applications
Polymer Coatings is a practical resource that offers an overview of the fundamentals to the synthesis, characterization, deposition methods, and recent developments of polymer coatings. The text includes information about the different polymers and polymer networks in use, resins for solvent- and water-based coatings, and a variety of additives. It presents deposition methods that encompass frequently used mechanical and electrochemical approaches, in addition to the physical-chemical aspects of the coating process. The author covers the available characterization methods including spectroscopic, morphological, thermal and mechanical techniques. The comprehensive text also reviews developments in selected technology areas such as electrically conductive,
anti-fouling, and self-replenishing coatings. The author includes insight into the present status of the research field, describes systems currently under investigation, and draws our attention to be explored systems. This important text: • Offers a thorough overview of polymer coatings and their applications • Covers different classes of materials, deposition methods, coating processes, and ways of characterization • Contains a text that is designed to be accessible and helps to apply the acquired knowledge immediately • Includes information on selected areas of research with imminent application potential for functional coatings Written for chemists in industry, materials scientists, polymer chemists, and physical chemists, Polymer Coatings offers a text that contains the information needed to gain an understanding of the characterization and applications of polymer coatings.

Guidelines for the Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species Many creatures use adhesive polymers and structures to attach to inert substrates, to each other, or to other organisms. This is the first major review that brings together research on many of the well-known biological adhesives dealing with bacteria, fungi, algae, and marine and terrestrial animals. As we learn more about their molecular and mechanical properties we begin to understand why they adhere so well and with this comes broad applications in areas such as medicine, dentistry, and biotechnology.

Advanced Surface Coating Techniques for Modern Industrial Applications

Marine and Industrial Biofouling The marine environment has been, and continues to be, a fruitful source of novel chemical compounds that are not found in terrestrial and freshwater organisms. Many of these substances show potential biomedical applications, which could lead to development of new pharmaceutical products. Research on the utilization of natural products from marine organisms is growing by leaps and bounds; one important reason why being that, investigators, through new diving technologies, are becoming able to explore at greater depths. Studies of these marine natural products include investigations of neuronal membrane-active toxins, ion channel blockers, antitumor and antiviral agents, and anti-inflammatory molecules. This volume is the sixth in the ongoing series.

Environment and Sustainable Development " deals with the dynamics of liquid-filled projectiles which are known to behave in an unpredictable manner in flight."--Pref.

Recent Advances in Marine Biotechnology A comprehensive, global review of the impact ships have on the environment, covering pollutant discharges, non-pollutant impacts and international legislation.

Marine Fungi This book reviews the need for marine conservation, summarizes general measures for ocean and coastal conservation, and explains the rationale for establishing marine protected areas. The second half of the book is essentially a guideline for designing and implementing protected areas in order to make them viable and long-lasting in their effectiveness.

Engineering Failure Analysis Serves as a guide for seasoned researchers and students alike, who wish to learn about the cross-fertilization between biology and materials that is driving this emerging area of science This book covers the most relevant topics in basic research and those having potential technological applications for the field of biopolymer brushes. This area has experienced remarkable increase in development of practical applications in nanotechnology and biotechnology over the past decade. In view of the rapidly growing activity and interest in the field, this book covers the introductory features of polymer brushes and presents a unifying and stimulating overview of the theoretical aspects and emerging applications. It immerses readers in the historical perspective and the frontiers of research where our knowledge is increasing steadily—providing them with a feeling of the enormous potential, the multiple applications, and the many up-and-coming trends behind the development of macromolecular interfaces based on the use of polymer brushes. Polymer and Biopolymer Brushes: Fundamentals and Applications in Materials offers chapters on: Functionalization of Surfaces Using Polymer Brushes; Polymer Brushes by ATRP and Surface-Mediated RAFT Polymerization for Biological Functions; Electro-Induced Copper Catalyzed Surface Modification with Monolayer and Polymer Brush; Polymer Brushes on Flat and Curved Substrates; Biomimetic Anchors for Antifoiling Polymer Brush Coating; Glycopolymer Brushes Presenting Sugars in Their Natural Form; Smart Surfaces Modified with Phenylboronic Acid-Containing Polymer Brushes; DNA Brushes; Polymer Brushes as Interfacial Materials for Soft Metal Conductors and Electronics; and more. Presents a comprehensive theory/simulation section that will be valuable for all readers Includes chapters not only on the biological applications of polymer brushes but also on biological systems that resemble polymer
Polymer and Biopolymer Brushes: Fundamentals and Applications in Materials is aimed at both graduate students and researchers new to this subject as well as scientists already engaged in the study and development of polymer brushes.


Advances in Marine Biology Chapter contents include information on: Stress analysis – strengths and limitations of traditional theoretical approaches to FRP laminate design against failure; stress corrosion cracking behavior of materials; failure analysis and durability issues.

Biofouling Advances in Bacteria Research and Treatment / 2012 Edition is a ScholarlyEditions™ eBook that delivers timely, authoritative, and comprehensive information about Bacteria. The editors have built Advances in Bacteria Research and Treatment / 2012 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Bacteria 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 Advances in Bacteria Research and Treatment / 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/.

Polymer and Biopolymer Brushes Recent instances of bioinvasion, such as the emergence of the zebra mussel in the American Great Lakes, generated a demand among marine biologists and ecologists for groundbreaking new references that detail how organisms colonize hard substrates, and how to prevent damaging biomass concentrations. Marine Biofouling: Colonization Processes a

Biological Adhesives This book presents these important facts: a) The mechanism of anionic polymerization, a more than 50-year challenge in polymer chemistry, has now become better understood; b) Precise synthesis of many polymers with novel architectures (triblock, multi-block, graft, exact graft, comb, cyclic, many armed stars with multi-components, dendrimer-like hyper-branched, and their structural mixed (co)polymers, etc.) have been advanced significantly; c) Based on such polymers, new morphological and self-organizing nano-objects and supra molecular assemblies have been created and widely studied and are considered nanodevices in the fields of nano science and technology; d) New high-tech and industrial applications for polymeric materials synthesized by anionic polymerization have been proposed. These remarkable developments have taken place in the last 15 years. Anionic polymerization continues to be the only truly living polymerization system (100 % termination free under appropriate conditions) and consequently the only one with unique capabilities in the synthesis of well-defined (i.e., precisely controlled molecular weight, nearly mono-disperse molecular weight distribution, structural and compositional homogeneity) complex macromolecular architectures. This book, with contributions from the world’s leading specialists, will be useful for all researchers, including students, working in universities, in research organizations, and in industry.
Antifouling Paint Biocides Effective coatings are essential to counteract the effects of corrosion and degradation of exposed materials in high-temperature environments such as gas turbine engines.thermal barrier coatings reviews the latest advances in processing and performance of thermal barrier coatings, as well as their failure mechanisms. Part one reviews the materials and structures of thermal barrier coatings. Chapters cover both metallic and ceramic coating materials as well as nanostructured coatings. Part two covers established and advanced processing and spraying techniques, with chapters on the latest advances in plasma spraying and plasma vapour deposition as well as detonation gun spraying. Part three discusses the performance and failure of thermal barrier coatings, including oxidation and hot-corrosion, non-destructive evaluation and new materials, technologies and processes. With its distinguished editors and international team of contributors, Thermal barrier coatings is an essential reference for professional engineers in such industries as energy production, aerospace and chemical engineering as well as academic researchers in materials. Reviews the latest advances in processing and performance of thermal barrier coatings, as well as their failure mechanisms. Explores the materials and structures of thermal barrier coatings incorporating cover both metallic and ceramic coating materials as well as nanostructured coating. Assesses established and advanced processing and spraying techniques, including plasma vapour deposition and detonation gun spraying.

Marine Protected Areas and Ocean Conservation This book reviews the development of antifouling surfaces and materials for both land and marine environments, with an emphasis on marine anti biofouling. It explains the differences and intrinsic relationship between antifouling in land and marine environments, which are based on superhydrophobicity and superhydrophilicity respectively. It covers various topics including biomimetic antifouling and self-cleaning surfaces, grafted polymer brushes and micro/nanostructure surfaces with antifouling properties, as well as marine anti biofouling. Marine anti biofouling includes both historical biocidal compounds (tributyltin, copper and zinc) and current green, non-toxic antifouling strategies. This book is intended for those readers who are interested in grasping the fundamentals and applications of antifouling. Feng Zhou is a professor at the State Key Laboratory of Solid Lubrication, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences.

Environmental Impact of Ships This book provides excellent techniques for detecting and evaluating biofilms: sticky films on materials that are formed by bacterial activity and produce a range of industrial and medical problems such as corrosion, sanitary problems, and infections. Accordingly, it is essential to control biofilms to establish appropriate countermeasures, from both industrial and medical viewpoints. This book offers valuable, detailed information on these countermeasures. It also discusses the fundamentals of biofilms, relates various substrates to biofilms, and presents a variety of biofilm reactors. However, the most important feature of this book (unlike others on the market) is its clear focus on addressing the practical aspects from an engineering viewpoint. Therefore, it offers an excellent practical guide for engineers and researchers in various fields, and can also be used as a great academic textbook.

Biology and Management of Invasive Quagga and Zebra Mussels in the Western United States. Sulfur is an essential element for all living organisms and is required by algae, plants, fungi, animals, and humans for growth and development. It is present in a variety of biomolecules involved in many biological functions, including the maintenance of cell redox homeostasis, defense, and detoxifying processes. The alteration of sulfur compound metabolism may lead to human diseases as well as plant and animal pathologies. The marine environment, which is characterized by a high biodiversity of species and a great chemical diversity, represents a great potential source of bioactive sulfur molecules. A broad range of biologically active sulfur compounds with unique structures and pharmacological properties have been reported to occur in marine organisms, from amino acids to different sulfated derivatives. Great attention is also focused on sulfur metabolites in the marine microbial world in relation to the global sulfur cycle. The aim of this Special Issue is to present existing knowledge and recent studies on sulfur-containing marine bioactive compounds in different biological systems. Attention is also focused on metabolites active at the ecological level.

Anionic Polymerization Biofouling (the colonisation of an interface by a diverse array of organisms) is almost always a problem where it occurs, as it negatively affects surfaces, the materials that they are made from and the structures that they form, and can even destroy them. This comprehensive book covers in detail in its first section the processes involved in marine, freshwater and medical biofouling including coverage of settlement by larvae and spores, biofouling community processes, epibiosis (biofouling on living organisms) and microbial fouling, including biofilms deleterious to human health. The book’s second
Biofilms, Bioadhesion, Corrosion, and Biofouling This new volume of Advances in Marine Biology contains reviews on a wide range of important subjects such as: long-term oceanographic and ecological research in the western English Channel; marine biofouling on fish farms and its remediation; interactions between behaviour and physical forcing in the control of horizontal transport of decapod crustacean larvae; comparison of marine copepod outfluxes: nature, rate, fate and role in the carbon and nitrogen cycles. Advances in Marine Biology have been providing in-depth and up-to-date reviews on all aspects of Marine Biology since 1963 -- over 40 years of outstanding coverage! The series is well-known for both its excellence of reviews as well as the strength of its thematic volumes devoted to a particular field in detail, such as 'The Biochemical Ecology of Marine Fishes' and 'Molluscan Radiation'. Radiation'. Series Encompasses 40 Years of Coverage Up-to-date Reviews on Wide-Ranging Topics

An International Butyltin Measurement Methods Intercomparison Global awareness of environmental issues has resulted in the emergence of economically and environmentally friendly bio-based materials free from the traditional side effects of synthetics. This book delivers an overview of the advancements made in the development of natural biorenewable resources-based materials, including processing methods and potential applications in green composites. Biorenewable polymers are a special class of natural material found in nature, such as natural fibers, wheat straw, rice husk, and saw dust. In addition to offering renewable feedstocks, natural biorenewable materials are compostable, recyclable, edible, and more energy efficient to process than plastic. Green Composites from Natural Resources covers various kinds of cellulosic biofibers, such as: hemp fibers, jute, saccharum ciliare fibers, pine needles, grewia optiva fibers, sisal fibers, eulaliopsis binata flax fibers, coconut fibers, eulaliopsis binata bagasse fibers, rice husk saw dust, wood flour straw with scopes for the utilization of natural resources-based materials as potential replacements for traditional petroleum feedstocks on the rise, more scientists and researchers are exploring new composite materials based on biorenewable resources. This book provides information on more eco-friendly and sustainable alternatives to synthetic polymers and discusses the present state and growing utility of green materials from natural resources.

Green Composites from Natural Resources This report describes the first phase of a long-term program aimed at establishing a facility that can address protective coatings research needs of the Department of Defense using the latest in combinatorial materials chemistry high-throughput discovery and evaluation methodology. The protective coatings application being addressed is environmentally compliant antifouling and fouling release coating for Navy ships. The objectives of Phase I were to: (1) initiate research on novel antifouling and fouling release coatings, and (2) develop and implement a facility for combinatorial high throughputs experimentation (C) for polymer materials and marine coating design, development, and evaluation. Both objectives were accomplished. The first groups of coatings, containing novel bound biocides on a silicone backbone and prepared through conventional synthesis methods, had several formulations that gave promising results during tests at ONR-supported test sites.

Ecotoxicology of Antifouling Biocides Biology and Management of Invasive Quagga and Zebra Mussels in the Western United States is a synthesis of the biology and management of invasive mussels from scientists and managers working on invasive quagga and zebra mussels in the western United States. Invasive dreissenid mussels have spread throughout southwestern United States at unprecedented speeds, and present a unique threat to native ecosystems. This book documents the efforts, both successful and unsuccessful, of
Individuals and agencies other dreissenid mussels invaded the West. Although the book is designed specifically for scientists and managers fighting invasive mussels in western United States, it offers an opportunity for scientists and lake managers worldwide to compare successful strategies relevant to their unique situation. It includes guidance documents and protocols related to early detection, prevention, regulation, monitoring, and control of these invasive pests in the West. It compares quagga and zebra mussels in the western United States with those mussels colonizing the Great Lakes and European waters.

Advances in Marine Antifouling Coatings and Technologies

Environmental Biotechnology Vol. 1

Marine biofouling can be defined as the undesirable accumulation of microorganisms, algae and animals on structures submerged in seawater. From the dawn of navigation, marine biofouling has been a major problem for shipping in such areas as reduced speed, higher fuel consumption and increased corrosion. It also affects industries using off-shore structures such as oil and gas production and aquaculture. Growing concerns about the environmental impact of antifouling coatings has led to major new research to develop more environmentally-friendly alternatives. Advances in marine antifouling coatings and technologies summarizes this wealth of research and its practical implications. This book is divided into four sub-sections which discuss: marine fouling organisms and their impact, testing and development of antifouling coatings, developments in chemically-active marine antifouling technologies, and new surface approaches to the control of marine biofouling. It provides an authoritative overview of the recent advances in understanding the biology of fouling organisms, the latest developments on antifouling screening techniques both in the field and in the laboratory, research on safer active compounds and the progress on nontoxic coatings with tailor-made surface properties. With its distinguished editors and international team of contributors, Advances in marine antifouling coatings and technologies is a standard reference for manufacturers of marine antifouling solutions, the shipping industry, oil and gas producers, aquaculture and other industries using offshore structures, and academics researching this important area.

Assesses marine antifouling organisms and their impact, including a historical review and directions for future research Discusses developments in antifouling coatings examining chemically-active and new surface approaches Reviews the environmentally friendly alternative of safer active compounds and the progress of non-toxic compounds

Marine Biofouling

As part of a series focusing on how marine biotechnology offers possibilities for using marine organisms for restoring degraded ecosystems, protecting public health, and improving seafood production, this volume reviews recent advances in knowledge of the attachment mechanisms of organisms that fashion biofilms; how these films affect biofouling and ship hull corrosion; and the hope of controlling barnacles through neuroregulators. Most of the 13 chapters discuss potential biocontrol applications derived from the antifouling properties of such marine products as dogfish egg cases, zebra mussels, and seagrasses.

Inorganic and Organic Thin Films

The global population is expected to rise to 9.8 billion by the year 2050 – with everyone ultimately striving for prosperity. New methods must therefore be found to achieve more efficient production. Research to date shows that the biological inventory that has evolved: its products, processes, principles and tools, can spur modern technology. The development of technological innovations based on biological concepts, with the goal of particularly innovative and sustainable value creation, today is collectively known as “biological transformation”. It results in highly functional products with striking properties that can be both manufactured and utilized in a resource-saving way. In terms of taking responsibility of the good of all people, biological transformation is therefore a path that applied research will have to take. The Fraunhofer-Gesellschaft has recognized the developmental technology potential of biological transformation and sees it as its task not only to drive the relevant research forward, but also to promote public awareness of the topic.

Thermal Barrier Coatings

Focusing on a variety of coatings, this book provides detailed discussion on preparation, novel techniques, recent developments, and design theories to present the advantages of each function and provide the tools for better product performance and properties. • Presents advantages and benefits of properties and applications of the novel coating types • Includes chapters on specific and novel coatings, like nanocomposite, surface wettability tunable, stimuli-responsive, anti-fouling, antibacterial, self-healing, and structural coloring • Provides detailed discussion on recent developments in the field as well as current and future perspectives • Acts as a guide for polymer and materials researchers in optimizing polymer coating properties and increasing product performance
These Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species (hereafter 'the Guidelines') are intended to provide a consistent approach to the management of biofouling. As scientific and technological advances are made, the Guidelines will be refined to enable the risk to be more adequately addressed. Port States, Flag States, coastal States and other parties that can assist in mitigating the problems associated with biofouling should exercise due diligence to implement the Guidelines to the maximum extent possible.

Liquid-filled Projectile Design Global society in the 21st century is facing challenges of improving the quality of air, water, soil and the environment and maintaining the ecological balance. Environmental pollution, thus, has become a major global concern. The modern growth of industrialization, urbanization, modern agricultural development and energy generation has resulted in the indiscriminate exploitation of natural resources for fulfilling human desires and needs, which has contributed in disturbing the ecological balance on which the quality of our environment depends. Human beings, in the truest sense, are the product of their environment. The man-environment relationship indicates that pollution and deterioration of the environment have a social origin. The modern technological advancements in chemical processes/operations have generated new products, resulting in new pollutants in such abundant levels that they are above the self-cleaning capacity of the environment. One of the major issues in recent times is the threat to human lives due to the progressive deterioration of the environment from various sources. The impact of the pollutants on the environment will be significant when the accumulated pollutants load will exceed the carrying capacity of the receiving environment. Sustainable development envisages the use of natural resources, such as forests, land, water and fisheries, in a sustainable manner without causing changes in our natural world. The Rio de Janeiro-Earth Summit, held in Brazil in 1992, focused on sustainable development to encourage respect and concern for the use of natural resources in a sustainable manner for the protection of the environment. This book will be beneficial as a source of educational material to post-graduate research scholars, teachers and industrial personnel for maintaining the balance in the use of natural sources for sustainable development.

Recent Advances in Marine Biotechnology, Vol. 6

Functional Polymer Coatings Organotin compounds, used as antifouling biocides since 1960, are chemical compounds that act as endocrine disrupters. It is not known how organotin compounds cause hormone disturbance, however, and many questions remain about their effect on aquatic organisms. Studies on organotin compounds have recently evolved, with many new findings reported. Following a worldwide ban on organotin compounds in 2008, alternative compounds will mainly be used, with the potential for coastal areas to become contaminated, causing, among other effects, cholinesterase inhibition in aquatic organisms. Use of alternative compounds must be controlled to avoid such errors. These and other findings are described and concisely summarized in this book, providing a useful reference in countries where alternative biocides are being considered. Included are studies on the effects on marine organisms, making this book an excellent aid to experts in environmental chemistry, to government organizations, and to students.

Formation and Control of Biofilm in Various Environments Contamination of the aquatic environment by antifouling compounds has been a topic of increasing importance during the last few years. This book describes advances in antifouling paint biocides, and provides thorough evaluation of research and information on occurrence and levels, environmental fate, analytical techniques and methods for the monitoring and control, environmental modeling, ecotoxicological effects and risk assessment placing emphasis on the knowledge acquired over the last decade.

Antifouling Compounds PRICM-8 features the most prominent and largest-scale interactions in advanced materials and processing in the Pacific Rim region. The conference is unique in its intrinsic nature and architecture which crosses many traditional discipline and cultural boundaries. This is a comprehensive collection of papers from the 15 symposia presented at this event.