

Refractory Organic Substances in the Environment

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B. Hock, H.-D. Lüdemann, M. Spiteller



Refractory Organic Substances In The Environment

Emilie Sanchez

A decorative graphic consisting of a red circle with a white center, partially obscured by a white horizontal bar that extends from the left edge of the slide.

Refractory Organic Substances In The Environment:

Refractory Organic Substances in the Environment Fritz Hartmann Frimmel, Gudrun Abbt-Braun, Klaus G.

Heumann, Berthold Hock, Hans-Dietrich Lüdemann, Michael Spiteller, 2008-01-08 Refractory organic substances ROS are an essential part of the biogeochemical carbon cycle. Wherever there is life on earth there will also be ROS in the form of poorly biodegradable leftovers of organisms and as a source for new life. Furthermore, it is now beyond doubt that ROS are closely related to the carbon intensity identified as one of the driving forces in the dynamics of green house gas emission such that ROS play a key role in sustainable development. *Refractory Organic Substances in the Environment* provides the results of six years of top priority research funded by the Deutsche Forschungsgemeinschaft DFG. This research program investigated the structure and function of ROS in different parts of the environment from a chemical, physical, biological, and soil scientific point of view. It included the first systematic study of a set of reference samples from Central Europe originating from a bog, lake, soil, seepage water, groundwater, and from the wastewaters of a brown coal processing plant and a secondary effluent. Thus, this work not only highlights the structural features obtained from the application of advanced analytical tools but also the function in anthropogenically influenced aquatic systems and soils. Of special interest to students and researchers in life sciences. *Refractory Organic Substances in the Environment* F. H. Frimmel, 2000 *Biophysico-Chemical Processes*

Involving Natural Nonliving Organic Matter in Environmental Systems Nicola Senesi, Baoshan Xing, Pan Ming Huang, 2009-07-23 An up to date resource on natural nonliving organic matter. Bringing together world renowned researchers to explore natural nonliving organic matter (NOM) and its chemical, biological, and ecological importance. *Biophysico Chemical Processes Involving Natural Nonliving Organic Matter in Environmental Systems* offers an integrated view of the dynamics and processes of NOM. This multidisciplinary approach allows for a comprehensive treatment encompassing all the formation processes, properties, reactions, environments, and analytical techniques associated with the latest research on NOM. After briefly outlining the historical background, current ideas, and future prospects of the study of NOM, the coverage examines: The formation mechanisms of humic substances; Organo clay complexes; The effects of organic matter amendment; Black carbon in the environment; Carbon sequestration and dynamics in soil; Biological activities of humic substances; Dissolved organic matter; Humic substances in the rhizosphere; Marine organic matter; Organic matter in atmospheric particles. In addition to the above topics, the coverage includes such relevant analytical techniques as separation technology, analytical pyrolysis, and soft ionization mass spectrometry, nuclear magnetic resonance, EPR, FTIR, Raman, UV, visible adsorption, fluorescence, and X-ray spectroscopies, and thermal analysis. Hundreds of illustrations and photographs further illuminate the various chapters. An essential resource for both students and professionals in environmental science, environmental engineering, water science, soil science, geology, and environmental chemistry. *Biophysico Chemical Processes Involving Natural Nonliving Organic Matter in Environmental Systems* provides a unique combination of the latest

discoveries developments and future prospects in this field

Humic Matter in Soil and the Environment Kim H.

Tan, 2014-06-10 The field of humic matter research has undergone drastic changes in concepts and principles since the first edition of *Humic Matter in Soil and the Environment Principles and Controversies* was published more than a decade ago. Still the only book of its kind specifically addressing humic acid principles and controversies the Second Edition presents the newest advances in humic acid science. Eleven new and rewritten chapters replace the original nine with updated material representing modern humic acid chemistry. This includes the delineation of organic matter, humus and humic matter. The book begins by considering organic matter as a whole, describing terrestrial and aquatic organic matter. It examines humus as a mixture of humified and nonhumified organic matter, focusing also on the importance of the nonhumified fraction, plant biopolymers in their original or slightly decomposed forms as raw materials for formation of the humic fraction. The book then presents concepts of humic matter referred to as humic acid, covering a range of ideas from traditional views of biopolymers to the latest concepts based on micellar, supramolecular and nanotube chemistry. The author presents the major pathways of humification and discusses humification theories. He also examines the extraction, isolation and fractionation of humic matter. The book reviews the chemical composition and model structures of humic acids, the chemical and spectroscopic characterization of humic substances and the electrochemical properties of humic matter. It also addresses the agronomic, environmental and industrial, including pharmaceutical importance of humic matter. This revised and updated edition continues the tradition of providing comprehensive coverage of the genesis, extraction, properties and impacts of humic matter.

Environmental Approach to Remediate Refractory Pollutants from Industrial Wastewater Treatment Plant

Maulin P. Shah, Nidhi Shah, 2024-05-04 *Environmental Approach to Remediate Refractory Pollutants from Industrial Wastewater Treatment Plants* discusses the emerging trends in the bioremediation of hazardous pollutants found in wastewater, including the fate of pollutants produced after the treatment process, both at the laboratory scale and at the industrial scale. Describing a broad area of biological processes and water research, considered key components for advanced water purification, it also includes the desalination technologies that remove, reduce or neutralize water contaminants that threaten human health. Exploring the unique biological aspects of the wastewater treatment process, the book highlights the advantages they provide for engineering applications in industry, with each chapter covering a different biological-based approach, examining the basic principles, practical applications, recent breakthroughs and associated limitations. Covering advancements in biological treatments, advanced oxidation techniques and membrane technology to remove water pollutants, this book will be of interest to all those working in bioremediation-related fields. Describes emerging technologies in industrial pollutants removal from wastewater. Includes applications in treatment, remediation, sensing and pollution prevention processes. Discusses impacts on long-term quality, availability and viability of water.

Scientific and Technical

Aerospace Reports, 1994-07

Treatise on Geochemistry, 2013-10-19 This extensively updated new edition of the widely

acclaimed Treatise on Geochemistry has increased its coverage beyond the wide range of geochemical subject areas in the first edition with five new volumes which include the history of the atmosphere geochemistry of mineral deposits archaeology and anthropology organic geochemistry and analytical geochemistry In addition the original Volume 1 on Meteorites Comets and Planets was expanded into two separate volumes dealing with meteorites and planets respectively These additions increased the number of volumes in the Treatise from 9 to 15 with the index appendices volume remaining as the last volume Volume 16 Each of the original volumes was scrutinized by the appropriate volume editors with respect to necessary revisions as well as additions and deletions As a result 27% were republished without major changes 66% were revised and 126 new chapters were added In a many faceted field such as Geochemistry explaining and understanding how one sub field relates to another is key Instructors will find the complete overviews with extensive cross referencing useful additions to their course packs and students will benefit from the contextual organization of the subject matter Six new volumes added and 66% updated from 1st edition The Editors of this work have taken every measure to include the many suggestions received from readers and ensure comprehensiveness of coverage and added value in this 2nd edition The esteemed Board of Volume Editors and Editors in Chief worked cohesively to ensure a uniform and consistent approach to the content which is an amazing accomplishment for a 15 volume work 16 volumes including index volume

Handbook of Elemental Speciation II, 2005-09-01 Written by an internationally recognized group of editors and contributors Handbook of Elemental Speciation Volume 2 provides a comprehensive cross disciplinary presentation of the analytical techniques involved in speciation Comprehensive coverage of key elements and compounds in situ Addresses the analysis and impact of these elements and compounds e g arsenic lead copper iron halogens etc in food the environment clinical and occupational health Detailed methodology and data are reported as well as regulatory limits Includes general introduction on the impact in these key areas

Handbook of Environmental Fate and Exposure Data for Organic Chemicals Philip H. Howard, 1989-04-30 This 5 volume set allows you to assess the health and environmental effects of chemicals by determining the routes of exposure of the chemical to sensitive organisms Environmental Fate and Exposure of Organic Chemicals provides relevant facts on how individual chemicals behave in the environment and how humans and environmental organisms are exposed to the chemicals during their production rise transport and disposal Each chemical is prepared by one of the best known organizations in environmental fate and exposure and is peer reviewed by a panel of expert scientists The information on each chemical includes all experimental values and references for physical properties all chemical fate studies and all available monitoring data and interpretative summaries

Use of Humic Substances to Remediate Polluted Environments: From Theory to Practice Irina V. Perminova, Kirk Hatfield, Norbert Hertkorn, 2006-04-07 Effective remediation of polluted environments is a priority in both Eastern and Western countries In the U S and Europe remediation costs generally exceed the net economic value of the land As a result scientists and engineers on both sides of the Atlantic have aggressively tried to develop novel

technologies to meet regulatory standards at a fraction of the costs In situ remediation shows considerable promise from both technical and economic perspectives In situ technologies that deploy natural attenuating agents such as humic substances HS may be even more cost effective Numerous studies have shown humics capable of altering both the chemical and the physical speciation of the ecotoxins and in turn attenuate potential adverse environmental repercussions Furthermore the reserves of inexpensive humic materials are immense Which suggests HS portend great promise as inexpensive amendments to mitigate the environmental impacts of ecotoxins and as active agents in remediation To elucidate emerging concepts of humics based remediation technologies we organized the NATO Advanced Research Workshop ARW entitled Use of humates to remediate polluted environments from theory to practice held on September 23-29 2002 in Zvenigorod Russia see the web site <http://www.mgumus.chem.msu.ru/arw>

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