# [Book] Characterization Of Particulate Matters And Volatile

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Production, Handling and Characterization of Particulate Materials-Henk G. Merkus 2015-11-26 This edited volume presents most techniques and methods that have been developed by material scientists, chemists, chemical engineers and physicists for the commercial production of particulate materials, ranging from the millimeter to the nanometer scale. The scope includes the physical and chemical background, experimental optimization of equipment and procedures, as well as an outlook on future methods. The books addresses issues of industrial importance such as specifications, control parameter(s), control strategy, process models, energy consumption and discusses the various techniques in relation to potential applications. In addition to the production processes, all major unit operations and characterization methods are described in this book. It differs from other books which are devoted to a single technique or a single material. Contributors to this book are acknowledged experts in their field. The aim of the book is to facilitate comparison of the different unit operations leading to optimum equipment choices for the production, handling and storage of particulate materials. An advantage of this approach is that unit operations that are common in one field of application are made accessible to other fields. The overall focus is on industrial application and the book includes some concrete examples. The book is an essential resource for students or researchers who work in collaboration with manufacturing industries or who are planning to make the switch from academia to industry.
Airborne Particulate Matter-R M Harrison 2016-08-18 The estimated health impacts and associated economic costs resulting from airborne particulate matter are substantial. Exposure to airborne fine particles ranks highly amongst preventable causes of disease. This book reviews the sources and atmospheric processes affecting airborne particulate matter and consequent impacts upon human health. Examining the latest information on the sources of particles in the atmosphere, both through direct emissions and atmospheric formation, the book also explores the methods which are used to estimate the contributions of different sources to airborne concentrations. Featuring case studies from recent assessments in Europe, the USA, China and India, the book provides a global overview of source apportionment. The health effects are reviewed in the context of the influence of sources, chemical composition and particle size upon relative toxicity. This comprehensive book is an important reference for policymakers and consultants working with pollution and human health, as well as academics working in atmospheric chemistry.
Environmental Conservation, Clean Water, Air & Soil (CleanWAS)-Muhammad Aqeel Ashraf 2017-02-15 As we embark into the 21st century, we need to address new challenges ranging from population growth, climate change, and depletion of natural resources to providing better health care, food security and peace to humankind, while at the same time protecting natural ecosystems that provide the services which allow life to flourish on Earth. To meet those challenges, profound changes are required in the way that societies conduct their everyday affairs, ways that will lead to better preservation, protection and sustainable management of natural resources with long lasting impacts. The aim of CleanWAS 2016 is to provide productive opportunities for academics and practitioners from interdisciplinary fields of Environmental Sciences to meet, share and bring expertise and ideas in related disciplines. The CleanWAS conference was first organized in the year 2012. It is an annual event organised by the International Water, Air and Soil Conservation society (INWASCON) and is supported by various Malaysian (UKM, UMS, UIAM) and Chinese universities (CUG, NKU, SYSU).
Particulate Matter-María Cruz 2013
Dynamics and Characterization of Marine Organic Matter-N. Handa 2013-03-09 Over the past decade the scientific activities of the Joint Global Ocean Flux Study (JGOFS), which focuses on the role of the oceans in controlling climate change via the transport and storage of greenhouse gases and organic matter, have led to an increased interest in the study of the biogeochemistry of organic matter. There is also a growing interest in global climate fluctuations. This, and the need for a precise assessment of the dynamics of carbon and other bio-elements, has led to a demand for an improved understanding of biogeochemical processes and the chemical characteristics of both particulate and dissolved organic matter in the ocean. A large amount of proxy data has been published describing the changes of the oceanic environment, but qualitative and quantitative estimates of the vertical flux of (proxy) organic compounds have not been well documented. There is thus an urgent need to pursue this line of study and, to this end, this book starts with several papers dealing with the primary production of organic matter in the upper ocean. Thereafter, the book goes on to follow the flux and characterization of particulate organic matter, discussed in relation to the primary production in the euphotic zone and resuspension in the deep waters, including the vertical flux of proxy organic compounds. It goes on to explain the decomposition and transformation of organic matter in the ocean environment due to photochemical and biological agents, and the reactivity of bulk and specific organic compounds, including the air-sea interaction of biogenic gases. The 22 papers in the book reflect the interests of JGOFS and will thus serve as a valuable reference source for future biogeochemical investigations of both bio-elements and organic matter in seawater, clarifying the role of the ocean in global climate change.
Particulate Matter Mass Measurement and Physical Characterization- 2004
Research Priorities for Airborne Particulate Matter-National Research Council 2004-10-22 In 1997, the U.S. Environmental Protection Agency (EPA) established regulatory standards to address health risks posed by inhaling tiny particles from smoke, vehicle exhaust, and other sources. At the same time, Congress and the EPA began a multimillion dollar research effort to better understand the sources of these airborne particles, the levels of exposure to people, and the ways that these particles cause disease. To provide independent guidance to the EPA, Congress asked the National Research Council to study the relevant issues. The result was a series of four reports on the particulate-matter research program. The first two books offered a conceptual framework for a national research program, identified the 10 most critical research needs, and described the recommended timing and estimated costs of such research. The third volume began the task of assessing initial progress made in implementing the research program. This, the fourth and final volume, gauged research progress made over a 5-year period on each of the 10 research topics. The National Research Council concludes that particulate matter research has led to a better understanding of the health effects caused by tiny airborne particles. However, the EPA, in concert with other agencies, should continue research to reduce further uncertainties and inform long-term decisions.
Research Methods: The Basics-Nicholas Walliman 2017-09-12 Research Methods: The Basics is an accessible, user-friendly introduction to the different aspects of research theory, methods and practice. This second edition provides an expanded resource suitable for students and practitioners in a wide range of disciplines including the natural sciences, social sciences and humanities. Structured in two parts – the first covering the nature of knowledge and the reasons for research, the second the specific methods used to carry out effective research and how to propose, plan, carry out and write up a research project – this book covers: • Reasons for doing a research project • Structuring and planning a research project • The ethical issues involved in research • Different types of data and how they are measured • Collecting and analysing qualitative and quantitative data in order to draw sound conclusions • Mixed methods and interdisciplinary research • Devising a research proposal and writing up the research • Motivation and quality of work. Complete with a glossary of key terms and guides to further reading, this book is an essential text for anyone coming to research for the first time.
Biophysical Characterization of Proteins in Developing Biopharmaceuticals-Damian J. Houde 2014-09-05 Biophysical Characterization of Proteins in Developing Biopharmaceuticals is concerned with the analysis and characterization of the higher-order structure (HOS) or conformation of protein based drugs. Starting from the very basics of protein structure this book takes the reader on a journey on how to best achieve this goal using the key relevant and practical

methods commonly employed in the biopharmaceutical industry today as well as up and coming promising methods that are now gaining increasing attention. As a general resource guide this book has been written with the intent to help today’s industrial scientists working in the biopharmaceutical industry or the scientists of tomorrow who are planning a career in this industry on how to successfully implement these biophysical methodologies. In so doing a keen focus is placed on understanding the capability of these methodologies in terms of what information they can deliver. Aspects of how to best acquire this biophysical information on these very complex drug molecules, while avoiding potential pitfalls, in order to make concise, well informed productive decisions about their development are key points that are also covered. Presents the reader with a clear understanding of the real world issues and challenges in using these methods. Highlights the capabilities and limitations of each method. Discusses how to best analyze the data generated from these methods. Points out what one needs to look for to avoid making faulty conclusions and mistakes. In total it provides a check list or road map that empowers the industrial scientists as to what they need to be concerned with in order to effectively do their part in successfully developing these new drugs in an efficient and cost effective manner.

Non-Exhaust Emissions-Fulvio Amato 2018-01-02 Non-Exhaust Emissions: An Urban Air Quality Problem for Public Health comprehensively summarizes the most recent research in the field, also giving guidance on research gaps and future needs to evaluate the health impact and possible remediation of non-exhaust particle emissions. With contributions from some of the major experts and stakeholders in air quality, this book comprehensively defines the state-of-the-art of current knowledge, gaps and future needs for a better understanding of particulate matter (PM) emissions, from non-exhaust sources of road traffic to improve public health. PM is a heterogeneous mix of chemical elements and sources, with road traffic being the major source in large cities. A significant part of these emissions come from non-exhaust processes, such as brake, tire, road wear, and road dust resuspension. While motor exhaust emissions have been successfully reduced by means of regulation, non-exhaust emissions are currently uncontrolled and their importance is destined to increase and become the dominant urban source of particle matter by 2020. Nevertheless, current knowledge on the non-exhaust emissions is still limited. This is an essential book to researchers and advanced students from a broad range of disciplines, such as public health, toxicology, atmospheric sciences, environmental sciences, atmospheric chemistry and physics, geochemistry, epidemiology, built environment, road and vehicle engineering, and city planning. In addition, European and local authorities responsible for air quality and those in the industrial sectors related to vehicle and brake manufacturing and technological remediation measures will also find the book valuable. Acts as the first book to explore the health impacts of non-exhaust emissions Authored by experts from several sectors, including academia, industry and policy Gathers the relevant body of literature and information, defining the current knowledge, gaps and future needs

Materials, Transportation and Environmental Engineering II-Jimmy Chih Ming Kao 2014-09-22 Collection of selected, peer reviewed papers from the 2014 the 2nd International Conference on Materials, Transportation and Environmental Engineering (CMTEE 2014), July 30-31, 2014, Kunming, China. The 587 papers are grouped as follows: Chapter 1: Materials and Chemical Engineering and Technologies, Chapter 2: Environmental Materials, Biomaterials and Technologies, Chapter 3: Energy and Thermal Engineering, Environmental Engineering, Chapter 4: Civil and Building Engineering, Structural and Geotechnical Engineering, Applied Mechanics, Chapter 5: Research and Design of Industrial Facilities and Technologies, Chapter 6: Recent Technologies in Mechatronics, Control and Automation, Chapter 7: Communication and Information Technologies, Algorithms and Numerical Methods of Data Processing, Chapter 8: Traffic, Road and Transportation Engineering, Chapter 9: Biomedical Engineering, Chapter 10: Urban Planning, Sustainable City and Green Building Applications, Chapter 11: Management Engineering, Business and Economics Engineering, Chapter 12: New Technologies in Education and Sports

New Technologies for Emission Control in Marine Diesel Engines-Masaaki Okubo 2019-08-29 New Technologies for Emission Control in Marine Diesel Engines provides a unique overview on marine diesel engines and aftertreatment technologies that is based on the authors’ extensive experience in research and development of emission control systems, especially plasma aftertreatment systems. The book covers new and updated technologies, such as combustion improvement and after treatment, SCR, the NOx reduction method, Ox scrubber, DPF, Electrostatic precipitator, Plasma PM decomposition, Plasma NOx reduction, and the Exhaust gas recirculation method. This comprehensive resource is ideal for marine engineers, engine manufacturers and consultants dealing with the development and implementation of aftertreatment systems in marine engines. Includes recent advances and future trends of marine engines Discusses new and innovative emission technologies for marine diesel engines and their regulations Covers aftertreatment technologies that are not widely applied, such as catalysts, SCR, DPF and plasmas

Air Pollution in Eastern Asia: An Integrated Perspective-Idir Bouarar 2017-08-18 This book, written by an international group of experts from China, Europe and the USA, presents a broad and comprehensive analysis of the chemical and meteorological processes responsible for the formation of air pollutants in eastern Asia, and in particular for the development of severe pollution episodes observed primarily during winter in the northeastern part of China. With the rapid population growth, economic development and urbanization occurring in Asia, air pollution has become a major environmental problem in this part of the world. The book is organized around six distinct parts. The first part of the volume offers a general perspective on issues related to air pollution including persistent haze events in eastern and southern Asia. The second part presents an overview of air pollution sources (i.e., anthropogenic and biomass burning sources). The third part analyzes in-situ observations of chemical species in China, while the fourth part focuses on space observations of gas-phase and aerosol species. The modeling aspects are treated in the fifth part of the volume, which includes a presentation of several air quality forecast systems and an assessment of the role of urbanization on air pollution levels. Finally, the effects of air pollution on health and crop productivity in China are discussed in the last part of the book. The book also presents an integrated view of past and present situations in Asia and provides the scientific basis from which mitigation policies can be established and air quality can be improved. Audience: This book is written for scientists, educators, students, environmental managers, policy-makers and leaders in public administration and private corporations who wish to use science-based information to mitigate air pollution. The book should help decision-makers to design effective policies for air quality improvement and to successfully manage short-term air pollution episodes that substantially affect people’s quality of life and strongly impact the economy.

Particulate Emissions from Vehicles-Peter Eastwood 2008-04-15 The public health risks posed by automotive particulate emissions are well known. Such particles are sufficiently small to reach the deepest regions of the lungs; and moreover act as carriers for many potentially toxic substances. Historically, diesel engines have been singled out in this regard, but recent research shows the need to consider particulate emissions from gasoline engines as well. Already implicated in more than one respiratory disease, the strongest evidence in recent times points to particle-mediated cardiovascular disorders (strokes and heart attacks). Accordingly, legislation limiting particulate emissions is becoming increasingly stringent, placing great pressure on the automotive industry to produce cleaner vehicles - pressure only heightened by the ever-increasing number of cars on our roads. Particulate Emissions from Vehicles addresses a field of increased international interest and research activity; discusses the impact of new legislation globally on the automotive industry; and explains new ways of measuring particle size, number and composition that are currently under development. The expert analysis and summary of the state-of-the-art, which encompasses the key areas of combustion performance, measurement techniques and toxicology, will appeal to R&D practitioners and engineers working in the automotive industry and related mechanical fields, as well as postgraduate students and researchers of engine technology, air pollution and life/ environmental science. The public health aspects will also appeal to the biomedical research community.

Air Quality Monitoring and Forecasting-Pius Lee 2018-04-27 This book is a printed edition of the Special Issue "Air Quality Monitoring and Forecasting" that was published in Atmosphere

Current Air Quality Issues-Farhad Nejadkoorki 2015-10-21 Air pollution is thus far one of the key environmental issues in urban areas. Comprehensive air quality plans are required to manage air pollution for a particular area. Consequently, air should be continuously sampled, monitored, and modeled to examine different action plans. Reviews and research papers describe air pollution in five main contexts: Monitoring, Modeling, Risk Assessment, Health, and Indoor Air Pollution. The book is recommended to experts interested in health and air pollution issues.

Proceedings of the 15th International Conference on Man–Machine–Environment System Engineering-Shengzhao Long 2015-09-05 This research topic was first established in China by Professor ShengZhao Long in 1981, with direct support from one of the greatest modern Chinese scientists, XueSen Qian. In a letter to ShengZhao Long from October 22nd, 1993, XueSen Qian wrote: “You have created a very important modern science subject and technology in China!” MMESE primarily focuses on the relationship between Man, Machine and Environment, studying the optimum combination of man-machine-environment systems. In this system, “Man” refers to working people as the subject in the workplace (e.g. operators, decision-makers); “Machine” is the general name for any object controlled by Man (including tools, machinery, computers, systems and technologies), and “Environment” describes the specific working conditions under which Man and Machine interact (e.g. temperature, noise, vibration, hazardous gases etc.). The three goals of optimization are to ensure safety, efficiency and economy. These proceedings are an academic showcase of the best papers selected from more than 400 submissions, introducing readers to the top research topics and the latest developmental trends in the theory and application of MMESE. These proceedings are interdisciplinary studies on the concepts and methods of physiology, psychology, system engineering, computer science, environment science, management, education, and other related disciplines. Researchers and professionals who study an interdisciplinary subject crossing above disciplines or researchers on MMESE subject will be mainly benefited from these proceedings.

Current Topics in Public Health-Alfonso J. Rodriguez-Morales 2013-05-15 Public Health is regarded as the basis and cornerstone of health, generally and in medicine. Defined as the science and art of preventing disease, prolonging life and promoting health through the organized efforts and informed choices of society, organizations, public and private, communities and individuals, this discipline has been renewed by the incorporation of multiple actors, professions, knowledge areas and it has also been impacted and promoted by multiple technologies, particularly - the information technology. As a changing field of knowledge, Public Health requires evidence-based information and regular updates. Current Topics in Public Health presents updated information on multiple topics related to actual areas of interest in this growing and exciting medical science, with the conception and philosophy that we are working to improve the health of the population, rather than treating diseases of individual patients, taking decisions about collective health care that are based on the best available, current, valid and relevant evidence, and finally within the context of available resources. With participation of authors from multiple countries, many from developed and developing ones, this book offers a wide geographical perspective. Finally, all these characteristics make this book an excellent update on many subjects of world public health.
Air Pollution Modeling and its Application XXVI-Clemens Mensink 2019-11-23 Current developments in air pollution modeling are explored as a series of contributions from researchers at the forefront of their field. This newest contribution on air pollution modeling and its application is focused on local, urban, regional and intercontinental modeling; emission modeling and processing; data assimilation and air quality forecasting; model assessment and evaluation; atmospheric aerosols. Additionally, this work also examines the relationship between air quality and human health and the effects of climate change on air quality. This work is a collection of selected papers presented at the 36th International Technical Meeting on Air Pollution Modeling and its Application, held in Ottawa, Canada, May 14-18, 2018. The book is intended as reference material for students and professors interested in air pollution modeling at the graduate level as well as researchers and professionals involved in developing and utilizing air pollution models.
Health Risks of Indoor Exposure to Particulate Matter-National Academies of Sciences, Engineering, and Medicine 2016-09-26 The U.S. Environmental Protection Agency (EPA) defines PM as a mixture of extremely small particles and liquid droplets comprising a number of components, including "acids (such as nitrates and sulfates), organic chemicals, metals, soil or dust particles, and allergens (such as fragments of pollen and mold spores)". The health effects of outdoor exposure to particulate matter (PM) are the subject of both research attention and regulatory action. Although much less studied to date, indoor exposure to PM is gaining attention as a potential source of adverse health effects. Indoor PM can originate from outdoor particles and also from various indoor sources, including heating, cooking, and smoking. Levels of indoor PM have the potential to exceed outdoor PM levels. Understanding the major features and subtleties of indoor exposures to particles of outdoor origin can improve our understanding of the exposureâ€"response relationship on which ambient air pollutant standards are based. The EPA's Indoor Environments Division commissioned the National Academies of Sciences, Engineering, and Medicine to hold a workshop examining the issue of indoor exposure to PM more comprehensively and considering both the health risks and possible intervention strategies. Participants discussed the ailments that are most affected by particulate matter and the attributes of the exposures that are of greatest concern, exposure modifiers, vulnerable populations, exposure assessment, risk management, and gaps in the science. This report summarizes the presentations and discussions from the workshop.
Monitoring of Particulate Matter in Ambient Air Around Waste Facilities- 2004-01-01
Total-Reflection X-Ray Fluorescence Analysis and Related Methods-Reinhold Klockenkämper 2015-01-27 Providing an accessible introduction into the use of Total-Reflection X-ray Fluorescence (TXRF) Analysis, both from a theoretical point of view and for practical applications, this new edition ofTotal-Reflection X-Ray Fluorescence Analysis is completely updated and enlarged to emphasize new methods and techniques. Written to enable students and scientists to evaluate the suitability of a TXRF method for their specific needs, the text provides an overview to the physical fundamentals and principles of Total-Reflection X-ray Fluorescence (TXRF) Analysis, explains instrumentation and setups, and describes applications in a great variety of disciplines.
Handbook on Characterization of Biomass, Biowaste and Related By-products-Ange Nzihou 2020-02-17 This book provides authoritative information, techniques and data necessary for the appropriate understanding of biomass and biowaste (understood as contaminated biomass) composition and behaviour while processed in various conditions and technologies. Numerous techniques for characterizing biomass, biowaste and by-product streams exist in literature. However, there lacks a reference book where these techniques are gathered in a single book, although such information is in increasingly high demand. This handbook provides a wealth of characterization methods, protocols, standards, databases and references relevant to various biomass, biowaste materials and by-products. It specifically addresses sampling and preconditioning methods, extraction techniques of elements and molecules, as well as biochemical, mechanical and thermal characterization methods. Furthermore, advanced and innovative methods under development are highlighted. The characterization will allow the analysis, identification and quantification of molecules and species including biomass feedstocks and related conversion products. The characterization will also provide insight into physical, mechanical and thermal properties of biomass and biowaste as well as the resulting by-products.
Measurement, Analysis and Remediation of Environmental Pollutants-Tarun Gupta 2019-10-08 This book discusses contamination of water, air, and soil media. The book covers health effects of such contamination and discusses remedial measures to improve the situation. Contributions by experts provide a comprehensive discussion on the latest developments in the detection and analysis of contaminants, enabling researchers to understand the evolution of these pollutants in real time and develop more accurate source apportionment of these pollutants. The contents of this book will be of interest to researchers, professionals, and policy makers alike.
Review of the Department of Defense Enhanced Particulate Matter Surveillance Program Report-National Research Council 2010-08-23 Soldiers deployed during the 1991 Persian Gulf War were exposed to high concentrations of particulate matter (PM) and other airborne pollutants. Their exposures were largely the result of daily windblown dust, dust storms, and smoke from oil fires. On returning from deployment, many veterans complained of persistent respiratory symptoms. With the renewed activity in the Middle East over the last few years, deployed military personnel are again exposed to dust storms and daily windblown dust in addition to other types of PM, such as diesel exhaust and particles from open-pit burning. On the basis of the high concentrations observed and concerns about the potential health effects, DOD designed and implemented a study to characterize and quantify the PM in the ambient environment at 15 sites in the Middle East. The endeavor is known as the DOD Enhanced Particulate Matter Surveillance Program (EPMSP). The U.S. Army asked the National Research Council to review the EPMSP report. In response, the present evaluation considers the potential acute and chronic health implications on the basis of information presented in the report. It also considers epidemiologic and health-surveillance data collected by the USACHPPM, to assess potential health implications for deployed personnel, and recommends methods for reducing or characterizing health risks.
Silver Nanoparticles-Khan Maaz 2018-07
Marine Environmental Impact of Seawater Desalination-Nurit Kress 2019-03-15 Marine Environmental Impact of Seawater Desalination: Science, Management and Policy combines existing studies with the personal research of the author into a unified work describing the effects of seawater desalination on marine environments. In particular, the book identifies knowledge gaps and recommends future research paths that may be taken. The book covers the current and emerging desalination processes, how environmental factors impact desalination operations and the historical and potential impacts of seawater desalination on the marine environment. This book is ideal as a reference for engineers and developers working towards mitigation and prevention of environmental impacts. In addition, scientists and researchers in environmental studies programs, as well as regulators and decision makers will find the data presented in the book to be useful as a guide for building and operating desalination plants. Provides a multidisciplinary approach to help readers understand the environmental impact of seawater desalination on the marine environment Presents environmental effects based on real data, helping the reader improve processes and mitigate effects Includes possible future effects, thus directing the reader towards important research issues
Microencapsulation in the Food Industry-Anilkumar G. Gaonkar 2014-06-30 Microencapsulation is being used to deliver everything from improved nutrition to unique consumer sensory experiences. It’s rapidly becoming one of the most important opportunities for expanding brand potential. Microencapsulation in the Food Industry: A Practical Implementation Guide is written for those who see the potential benefit of using microencapsulation but need practical insight into using the technology. With coverage of the process technologies, materials, testing, regulatory and even economic insights, this book presents the key considerations for putting microencapsulation to work. Application examples as well as online access to published and issued patents provide information on freedom to operate, building an intellectual property portfolio, and leveraging ability into potential in licensing patents to create produce pipeline. This book bridges the gap between fundamental research and application by combining the knowledge of new and novel processing techniques, materials and selection, regulatory concerns, testing and evaluation of materials, and application-specific uses of microencapsulation. Practical applications based on the authors’ more than 50 years combined industry experience Focuses on application, rather than theory Includes the latest in processes and methodologies Provides multiple "starting point" options to jump-start encapsulation use
Chemical Abstracts- 2002

Defining the Wind-Scott Huler 2007-12-18 “Nature, rightly questioned, never lies.” —A Manual of Scientific Enquiry, Third Edition, 1859 Scott Huler was working as a copy editor for a small publisher when he stumbled across the Beaufort Wind Scale in his Merriam Webster Collegiate Dictionary. It was one of those moments of discovery that writers live for. Written centuries ago, its 110 words launched Huler on a remarkable journey over land and sea into a fascinating world of explorers, mariners, scientists, and writers. After falling in love with what he decided was “the best, clearest, and most vigorous piece of descriptive writing I had ever seen,” Huler went in search of Admiral Francis Beaufort himself: hydrographer to the British Admiralty, man of science, and author—Huler assumed—of the Beaufort Wind Scale. But what Huler discovered is that the scale that carries Beaufort’s name has a long and complex evolution, and to properly understand it he had to keep reaching farther back in history, into the lives and works of figures from Daniel Defoe and Charles Darwin to Captains Bligh, of the Bounty, and Cook, of the Endeavor. As hydrographer to the British Admiralty it was Beaufort’s job to track the information that ships relied on: where to lay anchor, descriptions of ports, information about fortification, religion, and trade. But what came to fascinate Huler most about Beaufort was his obsession for observing things and communicating to others what the world looked like. Huler’s research landed him in one of the most fascinating and rich periods of history, because all around the world in the mid-eighteenth and nineteenth centuries, in a grand, expansive period, modern science was being invented every day. These scientific advancements encompassed not only vast leaps in understanding but also how scientific innovation was expressed and even organized, including such enduring developments as the scale Anders Celsius created to simplify how Gabriel Fahrenheit measured temperature; the French-designed metric system; and the Gregorian calendar adopted by France and Great Britain. To Huler, Beaufort came to embody that passion for scientific observation and categorization; indeed Beaufort became the great scientific networker of his time. It was he, for example, who was tapped to lead the search for a naturalist in the 1830s to accompany the crew of the Beagle; he recommended a young naturalist named Charles Darwin. Defining the Wind is a wonderfully readable, often humorous, and always rich story that is ultimately about how we observe the forces of nature and the world around us. From the Hardcover edition.

Global Sources of Local Pollution-National Research Council 2010-02-15 Recent advances in air pollution monitoring and modeling capabilities have made it possible to show that air pollution can be transported long distances and that adverse impacts of emitted pollutants cannot be confined to one country or even one continent. Pollutants from traffic, cooking stoves, and factories emitted half a world away can make the air we inhale today more hazardous for our health. The relative importance of this "imported" pollution is likely to increase, as emissions in developing countries grow, and air quality standards in industrial countries are tightened. Global Sources of Local Pollution examines the impact of the long-range transport of four key air pollutants (ozone, particulate matter, mercury, and persistent organic pollutants) on air quality and pollutant deposition in the United States. It also explores the environmental impacts of U.S. emissions on other parts of the world. The book recommends that the United States work with the international community to develop an integrated system for determining pollution sources and impacts and to design effective response strategies. This book will be useful to international, federal, state, and local policy makers responsible for understanding and managing air pollution and its impacts on human health and well-being.

Particulate Products-Henk G. Merkus 2013-11-19 Particulate products make up around 80% of chemical products, from all industry sectors. Examples given in this book include the construction materials, fine ceramics and concrete; the delicacies, chocolate and ice cream; pharmaceutical, powders, medical inhalers and sun screen; liquid and powder paints. Size distribution and the shape of the particles provide for different functionalities in these products. Some functions are general, others specific. General functions are powder flow and require – at the typical particulate concentrations of these products – that the particles cause adequate rheological behavior during processing and/or for product performance. Therefore, this book addresses particle packing as well as its relation to powder flow and rheological behavior. Moreover, general relationships to particle size are discussed for e.g. color and sensorial aspects of particulate products. Product-specific functionalities are often relevant for comparable product groups. Particle size distribution and shape provide, for example, the following functionalities: - dense particle packing in relation to sufficient strength is required in concrete construction, ceramic objects and pharmaceutical tablets - good sensorial properties (mouthfeel) to chocolate and ice cream - effective dissolution, flow and compression properties for pharmaceutical powders - adequate hiding power and effective coloring of paints for protection and the desired esthetical appeal of the objects - adequate protection of our body against sun light by sunscreen - effective particle transport and deposition to desired locations for medical inhalers and powder paints. Adequate particle size distribution, shape and porosity of particulate products have to be achieved in order to reach optimum product performance. This requires adequate management of design and development as well as sufficient knowledge of the underlying principles of physics and chemistry. Moreover, flammability, explosivity and other health hazards from powders, during handling, are taken into account. This is necessary, since great risks may be involved. In all aspects, the most relevant parameters of the size distribution (and particle shape) have to be selected. In this book, experts in the different product fields have contributed to the product chapters. This provides optimum information on what particulate aspects are most relevant for behavior and performance within specified industrial products and how optimum results can be obtained. It differs from other books in the way that the critical aspects of different products are reported, so that similarities and differences can be identified. We trust that this approach will lead to improved optimization in design, development and quality of many particulate products.

Atmospheric Aerosols-Claudio Tomasi 2017-03-20 The book describes the morphological, physical and chemical properties of aerosols from various natural and anthropogenic sources to help the reader better understand the direct role of aerosol particles in scattering and absorbing short- and long-wave radiation.

Indoor Pollutants-National Research Council 1981-01-01 Discusses pollution from tobacco smoke, radon and radon progeny, asbestos and other fibers, formaldehyde, indoor combustion, aeropathogens and allergens, consumer products, moisture, microwave radiation, ultraviolet radiation, odors, radioactivity, and dirt and discusses means of controlling or eliminating them.

Atmospheric Impacts of the Oil and Gas Industry-Eduardo P Olaguer 2016-11-22 Atmospheric Impacts of the Oil and Gas Industry provides the most up-to-date scientific and technological methods available to quantify oil and gas industry emissions and atmospheric impacts in a manner that is relevant to the development of, compliance with, and enforcement of effective policy and regulations. The book offers a concise survey of these methods to facilitate the implementation of solutions that promote sustainable energy production. Part I covers a technical and descriptive summary of air quality and global change issues relevant to the oil and gas industry, with Part II summarizing state-of-the-art methods pertaining to the analysis and solution of the problems identified in the earlier section. Examples of state-of-the-art methods covered include real-time monitoring with chemical ionization mass spectrometry, drone-mounted mini-lasers and gas cells, tomographic remote sensing, inverse modeling of emissions, 3D fluid, chemical, and transport models, and contemporary control technologies, such as flare minimization, oxidation catalysts, and vapor recovery. In addition, field studies, policy-relevant modeling assessments, and regulatory decisions from multiple geographic regions are presented, providing readers best practices from real world applications. Addresses major environmental issues of concern as a result of the oil and gas industry Reflects a balanced, objective view that is based on scientific principles Provides a wide geographical perspective Presents a rigorous and comprehensive scientific basis for crafting solutions to air quality problems created by the oil and gas industry

Program of Energy Research and Development at Environment Canada, 2001-2003-Program of Energy Research and Development (Canada) 2004 The Program of Energy Research & Development (PERD) is a federal program that focusses specifically on Canadian energy issues and their impact. PERD funds energy research & development interests in 12 departments. Environment Canada is a key player in PERD, leading the delivery of environmental science & technology specific to energy issues. This publication first indicates how Environment Canada's energy research & development activities jointly benefit both departmental & PERD mandates. It then describes the department's involvement in PERD over 2001-03 at the project level by profiling PERD projects in six sectors: oil & gas, transportation, buildings & communities, industry, electricity, and climate change. For each project, information is included on objectives, methodology, goals, outputs, successes, and funding.

Ultrafine Particles in the Atmosphere-L. M. Brown 2003-01-01 Following the recognition that airborne particulate matter, even at quite modest concentrations, has an adverse effect on human health, there has been an intense research effort to understand the mechanisms and quantify the effects. One feature that has shone through is the important role of ultrafine particles as a contributor to the adverse effects of airborne particles. In this volume, many of the most distinguished researchers in the field provide a state-of-the-art overview of the scientific and medical research on ultrafine particles. Readership: Graduate students, academics, researchers, industrial scientists and engineers.

The Ongoing Challenge of Managing Carbon Monoxide Pollution in Fairbanks, Alaska-National Research Council 2002-09-22 Carbon monoxide (CO) is a toxic air pollutant produced largely from vehicle emissions. Breathing CO at high concentrations leads to reduced oxygen transport by hemoglobin, which has health effects that include impaired reaction timing, headaches, lightheadedness, nausea, vomiting, weakness, clouding of consciousness, coma, and, at high enough concentrations and long enough exposure, death. In recognition of those health effects, the U.S. Environmental Protection Agency (EPA), as directed by the Clean Air Act, established the health-based National Ambient Air Quality Standards (NAAQS) for CO in 1971. Most areas that were previously designated as "nonattainment" areas have come into compliance with the NAAQS for CO, but some locations still have difficulty in attaining the CO standards. Those locations tend to have topographical or meteorological characteristics that exacerbate pollution. In view of the challenges posed for some areas to attain compliance with the NAAQS for CO, congress asked the National Research

Council to investigate the problem of CO in areas with meteorological and topographical problems. This interim report deals specifically with Fairbanks, Alaska. Fairbanks was chosen as a case study because its meteorological and topographical characteristics make it susceptible to severe winter inversions that trap CO and other pollutants at ground level.
Public Health Consequences of E-Cigarettes-National Academies of Sciences, Engineering, and Medicine 2018-05-18 Millions of Americans use e-cigarettes. Despite their popularity, little is known about their health effects. Some suggest that e-cigarettes likely confer lower risk compared to combustible tobacco cigarettes, because they do not expose users to toxicants produced through combustion. Proponents of e-cigarette use also tout the potential benefits of e-cigarettes as devices that could help combustible tobacco cigarette smokers to quit and thereby reduce tobacco-related health risks. Others are concerned about the exposure to potentially toxic substances contained in e-cigarette emissions, especially in individuals who have never used tobacco products such as youth and young adults. Given their relatively recent introduction, there has been little time for a scientific body of evidence to develop on the health effects of e-cigarettes. Public Health Consequences of E-Cigarettes reviews and critically assesses the state of the emerging evidence about e-cigarettes and health. This report makes recommendations for the improvement of this research and highlights gaps that are a priority for future research.
Particle Size Characterization of Contaminants in Wastewater-Audrey Dale Levine 1985

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