

Aerosol Science Amp

Space science in China is one of the most active areas in modern science, and China has played a dynamic and steadily increasing role in this field since the 1960s. Until recently, however, activity in China was a mystery to the rest of the world. With the commercial importance of space, and the fact that space is now used as a "laboratory" to carry out various experiments, China has recently emerged as an important international competitor. Space Science in China provides a clear understanding of the latest research and progress in such wide-ranging areas as the development and research in solar-terrestrial science, space astronomy, geoscience, remote sensing, microgravity science, and life science.

Proceedings of the 44th Session of the International Seminars on Nuclear War and Planetary Emergencies held in Erice, Sicily. This seminar has again gathered, in 2011, over one hundred scientists in an interdisciplinary effort that has been going on for the last 31 years, to examine and analyze planetary problems which have been followed up, all year long, by the World Federation of Scientists' Permanent Monitoring Panels.

Aerosol Measurement: Principles, Techniques, and Applications Third Edition is the most detailed treatment available of the latest aerosol measurement methods. Drawing on the know-how of numerous expert contributors; it provides a solid grasp of measurement fundamentals and practices a wide variety of aerosol applications. This new edition is updated to address new and developing applications of aerosol measurement, including applications in environmental health, atmospheric science, climate change, air pollution, public health, nanotechnology, particle and powder technology, pharmaceutical research and development, clean room technology (integrated circuit manufacture), and nuclear waste management.

History and Reviews

Introduction to Aerosol Science

Aerosol Generation, Measurement, Sampling, and Analysis

NRL Review

Pharmaceutical Inhalation Aerosol Technology, Third Edition

Report of the National Science Board

This fully revised and updated third edition of Pharmaceutical Inhalation Aerosol Technology encompasses the scientific and technical foundation for the rationale, design, componentry, assembly and quality performance metrics of therapeutic inhalers in their delivery of pharmaceutical aerosols to treat symptoms or the underlying causes of disease. It focuses on the importance of pharmaceutical engineering as a foundational element of all inhaler products and their application to pulmonary drug delivery. The expanded scope considers previously unaddressed aspects of pharmaceutical inhalation aerosol technology and the patient interface by including aerosol delivery, lung deposition and clearance that are used as measures of effective dose delivery.

Acid rain, photochemistry, long-range transport of pollutants, greenhouse gas emissions and aerosols have dominated tropospheric air pollution for the last 30 years of the 20th century. At the start of the 21st century, acid rain is subject to planned improvement in Europe and North America, but is still a growing problem in Asia. Tropospheric ozone is understood much better, but the problem is still with us, and desirable levels are difficult to achieve over continental Europe. The heterogeneous chemistry that is responsible for ozone depletion in the stratosphere is now reasonably clear, but there is on-going interest in the sources and sinks of CFC (chlorofluorocarbon) replacements in the troposphere. There is also increasing interest in indoor air quality, and the origin and health implications of atmospheric particles. Perhaps most important on a global perspective, intensive research has not yet determined the relationship between greenhouse gases, aerosols and surface temperature. The climactic implications of these are now more urgent than ever. This book, the first in the Developments in Environmental Science series, consists of a collection of authoritative reviews and essays on the science and application of air pollution research at the start of this new century.

Aerosols in workplace atmospheres have been - and continue to be - a major focus of industrial hygiene. Although there are many existing texts on aerosol science and on occupational health respectively, this new book sets out to be complementary to these and to provide a link between the two fields. In particular, the central concept of worker exposure leads to a structured approach which draws together wide-ranging aspects of aerosol science within the occupational health framework. Introductory chapters are concerned with the nature and properties of aerosols, and how they are generated in the occupational environment. The book then goes on to provide a description of the fundamental mechanical properties of aerosols, in particular those mechanical properties associated with the motion of airborne particles (which govern particle transport, inhalation, deposition, sampling and control). There follows a description of the optical properties of workplace aerosols since these are important in the visual appearance of aerosols and in many aspects of measurement. The central core of the book deals with the processes which govern the nature of exposure to and the subsequent fate and effects of airborne particles, leading to a rational framework for standards, measurement and control. Finally, a chapter is added which relates what has been said about aerosols to gaseous and vapour contaminants. The book is aimed at graduate students and practitioners in industrial hygiene and other occupational (and environmental) health disciplines.

Science of bioterrorism

Physical Mechanisms and Their Validation

Shaping the Message, Distorting the Science

Resident Research Associateships, Postdoctoral and Senior Research Awards

Science, Standards, Instrumentation and Applications

The most comprehensive resource available on the many applications of portable spectrometers, including material not found in any other published work Portable Spectroscopy and Spectrometry: Volume Two is an authoritative and up-to-date compendium of the diverse applications for portable spectrometers across numerous disciplines. Whereas Volume One focuses on the specific technologies of the portable spectrometers themselves, Volume Two explores the use of portable instruments in wide range of fields, including pharmaceutical development, clinical research, food analysis, forensic science, geology, astrobiology, cultural heritage and archaeology. Volume Two features contributions by a multidisciplinary team of experts with hands-on experience using portable instruments in their respective areas of expertise. Organized both by instrumentation type and by scientific or technical discipline, 21 detailed

chapters cover various applications of portable ion mobility spectrometry (IMS), infrared and near-infrared (NIR) spectroscopy, Raman and x-ray fluorescence (XRF) spectroscopy, smartphone spectroscopy, and many others. Filling a significant gap in literature on the subject, the second volume of Portable Spectroscopy and Spectrometry: Features a significant amount of content published for the first time, or not available in existing literature Brings together work by authors with assorted backgrounds and fields of study Discusses the central role of applications in portable instrument development Covers the algorithms, calibrations, and libraries that are of critical importance to successful applications of portable instruments Includes chapters on portable spectroscopy applications in areas such as the military, agriculture and feed, hazardous materials (HazMat), art conservation, and environmental science Portable Spectroscopy and Spectrometry: Volume Two is an indispensable resource for developers of portable instruments in universities, research institutes, instrument companies, civilian and government purchasers, trainers, operators of portable instruments, and educators and students in portable spectroscopy courses.

Deals with aerosol sampling as an applied scientific subject, linking it to the needs of practical sampling in the real world. Provides the scientific framework necessary to appreciate the processes relevant to aerosol sampling. Discusses experimental methods that have been employed in aerosol sampler studies and identifies parameters by which sampler performance can be evaluated. Also considers sampling in relation to health effects, and how practical sampling methodology has evolved to match such criteria.

This handbook is a guide for workers in analytical chemistry who need a starting place for information about a specific instrumental technique. It gives a basic introduction to the techniques and provides leading references on the theory and methodology for an instrumental technique. This edition thoroughly expands and updates the chapters to include concepts, applications, and key references from recent literature. It also contains a new chapter on process analytical technology.

Ewing's Analytical Instrumentation Handbook, Fourth Edition

Portable Spectroscopy and Spectrometry, Applications

Science and Technology

Improved Characterization of Primary and Secondary Carbonaceous Particles

Fine Particles

Synergic Influence of Gaseous, Particulate, and Biological Pollutants on Human Health

The subject of aerosols goes back many years and enters many aspects of science and technology. Optics, heat-transfer, biology, meteorology and pollution are just a few areas where the behaviour of small particles suspended in a gas is of vital importance. More recently, with increasing concern about the consequences of accidents in nuclear reactors and the effect of global nuclear war (i.e., the nuclear winter) a great deal of work has been directed towards the dispersal of radioactive aerosols in closed containers and in the atmosphere. The purpose of the book is twofold: to give a thorough treatment of the fundamentals of aerosol behaviour with rigorous proofs and detailed derivations of the basic equations and removal mechanisms and also to give practical examples with special attention to radioactive particles and their distribution in size following a release arising from an accident with a nuclear system. This book will be useful both as a course text and as a reference source.

Until the 1980s, researchers studied and measured only the physical properties of aerosols. Since the 80s, however, interest in the physicochemical properties of aerosols has grown tremendously. Scientists in environmental hygiene, medicine, and toxicology have recognized the importance held by the chemical composition and properties of aerosols and the interactions of inhaled, "bad" aerosols. This book offers the first comprehensive treatment of modern aerosol analytical methods, sampling and separation procedures, and environmental applications, and offers critical reviews of the latest literature. This important field has developed rapidly in the last 15 years, but until now, no book effectively summarized or analyzed the existing research. Analytical Chemistry of Aerosols reviews procedures, techniques, and trends in the measurement and analysis of atmospheric aerosols. With contributions from acknowledged, international experts, the book discusses various methods of bulk analysis, single particle analysis, and the analysis of special aerosol systems, including fibrous and bacterial aerosols. Absorption-Based Post-Combustion Capture of Carbon Dioxide provides a comprehensive and authoritative review of the use of absorbents for post-combustion capture of carbon dioxide. As fossil fuel-based power generation technologies are likely to remain key in the future, at least in the short- and medium-term, carbon capture and storage will be a critical greenhouse gas reduction technique. Post-combustion capture involves the removal of carbon dioxide from flue gases after fuel combustion, meaning that carbon dioxide can then be compressed and cooled to form a safely transportable liquid that can be stored underground. Provides researchers in academia and industry with an authoritative overview of the amine-based methods for carbon dioxide capture from flue gases and related processes Editors and contributors are well known experts in the field

Presents the first book on this specific topic

Climate Sensitivity to Radiative Perturbations

Life Cycles and Effects on Air Quality and Climate

Opportunities for Research Tenable at the National Institute for Occupational Safety and Health ...

Proceedings [of A] Symposium on Fine Particles, Minneapolis, Minnesota, May 1975

FIRE Science Results 1989

Nuclear Science Abstracts

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.

This Proceedings Book collects the conference articles and abstracts presented at RICTA 2014, the 2nd Iberian Meeting on Aerosol Science and Technology (also named Reunión Ibérica de Ciencia y Tecnología de los Aerosoles), held during July 7-9, 2014, in Tarragona, Spain. RICTA 2014 is the second Portuguese-Spanish meeting on Aerosol Science and Technology. Like the previous RICTA congress held in 2013 in Évora, Portugal, RICTA 2014 is the continuation of the successful RECTA, Reunión Española de Ciencia y Tecnología de Aerosoles, conferences, which have been held in Spain since 2007. RICTA 2014 has been organized by the Droplets, interfaces, and flows (DEW) Research Laboratory of the Universitat Rovira i Virgili, with the collaboration of the Asociación Española de Ciencia y Tecnología de los Aerosoles (AECyTA). The congress was held at the Campus Catalunya of the Universitat Rovira i Virgili. As in previous editions of RICTA and RECTA, the participation of young researchers has been encouraged, with the organization of the

5th Summer School on Aerosol Science and Technology, as well as awards for the best poster and PhD thesis. This book comprises three parts: the Conference Program, the Conference Articles, and the Conference Abstracts.

Aerosol Science and Technology: History and Reviews captures an exciting slice of history in the evolution of aerosol science. It presents in-depth biographies of four leading international aerosol researchers and highlights pivotal research institutions in New York, Minnesota, and Austria. One collection of chapters reflects on the legacy of the Pasadena smog experiment, while another presents a fascinating overview of military applications and nuclear aerosols. Finally, prominent researchers offer detailed reviews of aerosol measurement, processes, experiments, and technology that changed the face of aerosol science. This volume is the third in a series and is supported by the American Association for Aerosol Research (AAAR) History Working Group, whose goal is to produce archival books from its symposiums on the history of aerosol science to ensure a lasting record. It is based on papers presented at the Third Aerosol History Symposium on September 8 and 9, 2006, in St. Paul, Minnesota, USA.

DIY Projects from the Pages of Make:

Atmospheric Aerosols

Media Strategies to Influence Science Policy : Hearing Before the Subcommittee on Investigations and Oversight, Committee on Science and Technology, House of Representatives, One Hundred Tenth Congress, First Session, March 28, 2007

Theory and Practice : with Special Applications to the Nuclear Industry

Space Science in China

Aerosol Science for Industrial Hygienists

Bioaerosols, sampling and characterization -- Sources and transport of microbial aerosols -- Impacts of microbial aerosols on atmospheric processes -- Impacts of bioaerosols on human health and environment

The book provides a comprehensive account of the important field of aerosol sampling as it is applied to the measurement of aerosols that are ubiquitous in occupational and living environments, both indoor and outdoor. It is written in four parts: Part A (8 chapters) describes the current knowledge of the physical science that underpins the process of aerosol sampling. Part B (4 chapters) presents the basis of standards for aerosols, including in particular the link with human exposure by inhalation. Part C (8 chapters) covers the development of practical aerosol sampling instrumentation, and how technical designs and methods have evolved over the years in order that aerosol sampling may be carried out in a manner matching the health-related and other criteria that have been proposed as parts of standards. Finally Part D (3 chapters) describes how a wide range of aerosol sampling instruments have performed when they have been applied in the field in both occupational and ambient atmospheric environments, including how different instruments, nominally intended to measure the same aerosol fraction, compare when used side-by-side in the real world. The book is intended to draw together all that is known about aerosol sampling - about the science and across a very wide range of applications - for the benefit of researchers and practitioners in occupational and environmental health and hygiene, aerosol scientists and engineers, as well as graduate-level students in these fields. In addition, the text will be of interest to environmental and occupational epidemiologists, atmospheric scientists, and occupational and environmental health policy specialists, including all those around the world engaged in the processes of setting standards for airborne particulate contaminants.

Synergic Influence of Gaseous, Particulate, and Biological Pollutants on Human Health is a unique merger of two divergent parts. The first part is a presentation of the existing knowledge on the characteristics of basic air pollutants and their documented impact on human health. The focus is on the main gaseous, airborne particles (including fiber particles) and biological pollutants. The first part is a literature review conducted by the authors who are actively engaged in studying the described pollutants. The second part contains a study of methods used for the evaluation and prognosis of health effects to exposure to particular pollutants. Most of the chapters of this book go beyond the well-documented, solid facts and contain the authors' own evaluation of the utility and limitations of particular methods, as well as their suggestions for further studies. The reader who manages to wade through this part is sure to understand that the main drawback of the described methods is the impossibility to precisely assess the health effects of exposure to the combination of a few/many air pollutants, while one of the biggest problems is the effect of synergy. The last chapters of the book focus on the attempts to consider the effect of synergy and the analysis of the tedious work of many researchers to construct the tools enabling, to some extent, the prognosis of the health effects of simultaneous exposure to many air pollutants. The book also reveals the synergism of pollutants and social problems, reinforcing the adverse health effect of the population living not only in highly industrialized areas, but also in postindustrial areas. According to the authors, the construction of suitable tools which would at least partially allow for the evaluation of the collective impact of social factors and the

conglomerate of the air pollutants on health of particular communities constitutes a great challenge and may inspire the readers to think deeply on this subject. This book is an invaluable volume for air protection professionals and PhD students, environmental engineers, environmental health researchers, and public health policy makers.

Microbiology of Aerosols

Handbook of Respiratory Protection

Aerosol Measurement

Aerosol Science

2nd Iberian Meeting on Aerosol Science and Technology

Review

Forrest M. Mims is a revered contributor to Make: magazine, where his popular columns about science-related topics and projects for Makers are evergreen treasures. Collected together here for the first time, these columns range from such simple projects as building an LED tracker for hand-launched night rockets to such challenging builds as transforming strings of data into unique musical compositions. A variety of photography and imaging projects are featured, including an ultra-sensitive twilight photometer that measures the elevation of layers of dust, smoke, and smog from around 3,000 feet to the top of the stratosphere at 31 miles! Most of the projects can be done with a collection of simple electronic components, such as LEDs, transistors, resistors, and batteries. To inspire and motivate readers, the book also includes profiles of such famous Makers as President Thomas Jefferson and Microsoft co-founder Paul Allen.

Fine Particles: Aerosol Generation, Measurement, Sampling, and Analysis is a collection of technical papers presented at the Symposium on Fine Particles held in Minneapolis, Minnesota, on May 28-30, 1975. The symposium aims to explore the developments in instrumentation and experimental techniques for aerosol studies. This book is organized into four parts encompassing 34 chapters that focus on fine particles below about 3.5 μm in diameter. Part I presents the research and development in Europe and Japan on fine particles and aerosols, as well as the aerosol standards development work at the Particle Technology Laboratory, University of Minnesota. This part also includes calibration studies on condensation nuclei counters and the diffusion battery. Significant chapters in Part II are devoted to the common techniques for generation of aerosols of various sizes, from fine particles to monodisperse aerosols. This part further looks into the equipment limitations and problems in producing fine particle aerosols for life testing air cleaning systems and for weather modification experimentation. Part III describes the techniques and equipment used for size-selective aerosol sampling in terms of the design principles applied, the correspondence between design and performance of specific samplers, their applicability to field conditions, and their ability to satisfy sampler acceptance criteria. Part IV deals first with the methods for determination of aerosol properties, including their optical, electrical, and spectral properties. Other chapters examine the principles, mode of operation, and application of processes and instruments for aerosol studies.

Respiratory protection includes devices and management techniques for keeping people safe from hazardous materials. This handbook presents the state-of-the-art in respiratory protection technology as well as best management practices for work centers. Included are topics relevant to industry, government, and healthcare that provide guidance and tools for ensuring the best possible protection for workers. Most books on this topic are at least 20 years old. Research, technology and management techniques have advanced over the past two decades. This new handbook is needed to provide updated information relevant to today's occupational needs for industrial hygiene and safety professionals.

is the federal government prepared? : hearing before the Committee on Science, House of Representatives, One Hundred Seventh Congress, first session, December 5, 2001

Science and the Challenges Ahead

Forrest Mims' Science Experiments

National Science Board

Air Pollution Science for the 21st Century

Technology and Applications

The myriad ways in which colour and light have been adapted and applied in the art, architecture, and material culture of past societies is the focus of this interdisciplinary volume. Light and colour's iconographic, economic, and socio-cultural implications are considered by established and emerging scholars including art historians, archaeologists, and conservators, who address the variety of human experience of these sensory phenomena. In today's world it is the norm for humans to be surrounded by strong, artificial colours, and even to see colour as perhaps an inessential or surface property of the objects around us. Similarly, electric lighting has provided the power and ability to illuminate and manipulate environments in increasingly unprecedented ways. In the context of such a saturated experience, it becomes difficult to identify what is universal, and what is culturally specific about the human experience of light and colour. Failing to do so, however, hinders the capacity to approach how they were experienced by people of centuries past. By means of case studies spanning a broad historical and geographical context and covering such diverse themes as architecture, cave art, the invention of metallurgy, and medieval manuscript illumination, the contributors to this volume provide an up-to-date discussion of these themes from a uniquely interdisciplinary perspective. The papers range in scope from the meaning of colour in European prehistoric art to the technical art of the glazed tiles of the Shah mosque in Isfahan. Their aim is to explore a multifarious range of evidence and to evaluate and illuminate what is a truly enigmatic topic in the history of art and visual culture.

Current climate models diverge in their assessment of global warming that will result from the

anthropogenic increase in trace gases. This is because they differ in their representation of the hydrological cycle (water vapour, clouds, snow and sea ice, soil moisture) and because a direct validation in terms of sensitivity is not possible. Indirect methods and approaches are therefore necessary to verify the models efficiently. The book provides an overview on different validation approaches. The use of satellite data is particularly stressed.

Aerosols influence many areas of our daily life. They are at the core of environmental problems such as global warming, photochemical smog and poor air quality. They can also have diverse effects on human health, where exposure occurs in both outdoor and indoor environments. However, aerosols can have beneficial effects too; the delivery of drugs to the lungs, the delivery of fuels for combustion and the production of nanomaterials all rely on aerosols. Advances in particle measurement technologies have made it possible to take advantage of rapid changes in both particle size and concentration. Likewise, aerosols can now be produced in a controlled fashion. Reviewing many technological applications together with the current scientific status of aerosol modelling and measurements, this book includes: • Satellite aerosol remote sensing • The effects of aerosols on climate change • Air pollution and health • Pharmaceutical aerosols and pulmonary drug delivery • Bioaerosols and hospital infections • Particle emissions from vehicles • The safety of emerging nanomaterials • Radioactive aerosols: tracers of atmospheric processes With the importance of this topic brought to the public's attention after the eruption of the Icelandic volcano Eyjafjallajökull, this book provides a timely, concise and accessible overview of the many facets of aerosol science.

Aerosol Science and Technology

The GLOBE Program Teacher's Guide

Prepared for U. S. Environmental Protection Agency, Office of Research and Development

Role of Science in the Third Millennium, the - International Seminar on Planetary Emergencies 44Th Session

GLOBE Program Teacher's Guide

Colour and Light in Ancient and Medieval Art