Crop Physiology Abstracts

Carbon dioxide is the most important greenhouse gas after water vapor in the atmosphere of the earth. More than 98% of the carbon of the atmosphere-ocean system is stored in the oceans as dissolved inorganic carbon. The key for understanding critical processes of the marine carbon cycle is a sound knowledge of the seawater carbonate chemistry, including equilibrium and nonequilibrium properties as well as stable isotope fractionation. Presenting the first coherent text describing equilibrium and nonequilibrium properties and stable isotope fractionation among the elements of the carbonate system. This volume presents an overview and a synthesis of these subjects which should be useful for graduate students and researchers in various fields such as biogeochemistry, chemical oceanography, paleoceanography, marine biology, marine chemistry, marine geology, and others. The volume includes an introduction to the equilibrium properties of the carbonate system in which basic concepts such as equilibrium constants, alkalinity, pH scales, and buffering are discussed. It also deals with the nonequilibrium properties of the seawater carbonate chemistry. Whereas principle of chemical kinetics are recapitulated, reaction rates and relaxation times of the carbonate system are considered in details. The book also provides a general introduction to stable isotope fractionation and describes the partitioning of carbon, oxygen, and boron isotopes between the species of the carbonate system. The appendix contains formulas for the equilibrium constants of the carbonate system, mathematical expressions to calculate carbonate system parameters, answers to exercises and more.

NASA SP. Superseding Gardiner's "Combustion Chemistry", this is an updated, comprehensive coverage of those aspects of combustion chemistry relevant to gas-phase combustion of hydrocarbons. The book includes an extended discussion of air pollutant chemistry and aspects of combustion, and reviews elementary reactions of nitrogen, sulfur and chlorine compounds that are relevant to combustion. Methods of combustion modeling and rate coefficient estimation are presented, as well as access to databases for combustion thermochemistry and modeling.

Gas-Phase Combustion Chemistry

International Aerospace Abstracts

Lists citations with abstracts for aerospace related reports obtained from world wide sources and announces documents that have recently been entered into the NASA Scientific and Technical Information Database.

Deep Carbon

U.S. Government Research & Development Reports

As the industrial revolution that has been based on higher photosynthetic efficiencies and more utilization of fossil fuels nears its end [R. A. Ker biomass production per unit area. (2007) Even oil optimists expect energy demand to According to Times Magazine (April 30, 2007 outstrip supply. Science 317: 437], the next indus- issue), one fifth of the US corn crop is presently trial revolution will most likely need development converted into ethanol, which is considered to burn of alternate sources of clean energy. In addition cleaner than gasoline and to produce less gre- to the development of hydroelectric power, these house gases. In order to meet a target of 35 billion efforts will probably include the conversion of gallons of ethanol produced by the year 2017, the wind, sea wave motion and solar energy [Solar Day entire US corn crop would need to be turned into in the Sun (2007) Business week, October 15, pp fuel. But crops such as corn
and sugarcane cannot transfer energy into electrical energy. The most promising yield enough to produce all the needed fuel. F- of those will probably be based on the full usage thermore, even if all available starch is converted of solar energy. The latter is likely to be plentiful, but fuel, it would only produce about 10% of ful for the next 2-3 billion years. Most probably, our gasoline needs [R. F.

International journal of chemical kinetics

Physics Briefs

Tropical Forest Plant Ecophysiology

Kinetic Processes in Gases and Molecular Lasers

Monthly Catalogue, United States Public Documents

This book provides a complete systematic analysis of the processes of relaxation kinetics and the study of physical models of gas lasers. It begins by introducing the reader to the basic theory and fundamental problems in relaxation processes in gasses, and goes on to examine the new trend of physico-chemical kinetics in the field of laser emission. Finally, it presents the operating principles and physical models of all fundamental types of gas lasers.

Government Reports Annual Index

Journal of Current Laser Abstracts

Lasers and Masers

In the present monograph, we develop the kinetic theory of transport phenomena and relaxation processes in the flows of reacting gas mixtures and discuss its applications to strongly non-equilibrium conditions. The main attention is focused on the influence of non-equilibrium kinetics on gas dynamics and transport properties. Closed systems of fluid dynamic equations are derived from the kinetic equations in different approaches. We consider the most accurate approach taking into account the state-to-state kinetics in a flow, as well as simplified multi-temperature and one-temperature models based on quasi-stationary distributions. Within these approaches, we propose the algorithms for the calculation of the transport coefficients and rate coefficients of chemical reactions and energy exchanges in non-equilibrium flows; the developed techniques are based on the fundamental kinetic theory principles. The theory is applied to the modeling of non-equilibrium flows behind strong shock waves, in the boundary layer, and in nozzles. The comparison of the results obtained within the frame of different approaches is presented, the advantages of the new state-to-state kinetic model are discussed, and the limits of validity for simplified models are established. The book can be interesting for scientists and graduate students working on physical gas dynamics, aerothermodynamics, heat and mass transfer, non-equilibrium physical-chemical kinetics, and kinetic theory of gases.

CO2 in Seawater: Equilibrium, Kinetics, Isotopes

Introduction to Chemical Engineering Kinetics and Reactor Design

Non-Equilibrium Reacting Gas Flows

Shock-tube Studies of Vibrational Equilibration in Carbon Dioxide by Simultaneous Laser-absorption and Infrared-emission Measurements

Ceramic Abstracts

American Doctoral Dissertations
Atmospheric chemistry is one of the fastest growing fields in the earth sciences. Until now, however, there has been no book designed to help students capture the essence of the subject in a brief course of study. Daniel Jacob, a leading researcher and teacher in the field, addresses that problem by presenting the first textbook on atmospheric chemistry for a one-semester course. Based on the approach he developed in his class at Harvard, Jacob introduces students in clear and concise chapters to the fundamentals as well as the latest ideas and findings in the field. Jacob's aim is to show students how to use basic principles of physics and chemistry to describe a complex system such as the atmosphere. He also seeks to give students an overview of the current state of research and the work that led to this point. Jacob begins with atmospheric structure, design of simple models, atmospheric transport, and the continuity equation, and continues with geochemical cycles, the greenhouse effect, aerosols, stratospheric ozone, the oxidizing power of the atmosphere, smog, and acid rain. Each chapter concludes with a problem set based on recent scientific literature. This is a novel approach to problem-set writing, and one that successfully introduces students to the prevailing issues. This is a major contribution to a growing area of study and will be welcomed enthusiastically by students and teachers alike.

**Atmospheric Optics**

**Characterization of Reactants, Reaction Mechanisms, and Reaction Products in Atmospheric Water Droplets**

**Proceedings of the Physical Society**

Faculties, publications and doctoral theses in departments or divisions of chemistry, chemical engineering, biochemistry and pharmaceutical and/or medicinal chemistry at universities in the United States and Canada.

**Government Reports Announcements**

**Proceedings of the Physical Society, Volume 91**

**Kinetics and Catalysis**

The Second Edition features new problems that engage readers in contemporary reactor design. Highly praised by instructors, students, and chemical engineers, Introduction to Chemical Engineering Kinetics & Reactor Design has been extensively revised and updated in this Second Edition. The text continues to offer a solid background in chemical reaction kinetics as well as in material and energy balances, preparing readers with the foundation necessary for success in the design of chemical reactors. Moreover, it reflects not only the basic engineering science, but also the mathematical tools used by today's engineers to solve problems associated with the design of chemical reactors. Introduction to Chemical Engineering Kinetics & Reactor Design enables readers to progressively build their knowledge and skills by applying the laws of conservation of mass and energy to increasingly more difficult challenges in reactor design. The first one-third of the text emphasizes general principles of chemical reaction kinetics, setting the stage for the subsequent treatment of reactors intended to carry out homogeneous reactions, heterogeneous catalytic reactions, and biochemical transformations. Topics include: Thermodynamics of chemical reactions, Determination of reaction rate expressions, Elements of heterogeneous catalysis, Basic concepts in reactor design and ideal reactor models, Temperature and energy effects in chemical reactors, Basic and applied aspects of biochemical transformations and bioreactors. About 70% of the problems in this Second Edition are new. These problems, frequently based on articles culled from the research literature, help readers develop a solid understanding of the material. Many of these new problems also offer readers opportunities to use current software applications such as Mathcad and MATLAB®. By enabling readers to progressively build and apply their knowledge, the Second Edition of Introduction to Chemical Engineering Kinetics & Reactor Design remains a premier text for students in chemical engineering and a valuable resource for practicing engineers.

**EPA Publications Bibliography**

**Bibliography of Agriculture with Subject Index**

**Air Pollution Abstracts**

**Thin Films**
Metals Abstracts

Rapid Thermal and Integrated Processing

The Chloroplast

A comprehensive guide to carbon inside Earth - its quantities, movements, forms, origins, changes over time and impact on planetary processes. This title is also available as Open Access on Cambridge Core.

Bulletin of the Russian Academy of Sciences

Introduction to Atmospheric Chemistry

Metals Abstracts Index

Taking readers out of the laboratory and into the humid tropical forests, this comprehensive volume explores the most recent advances occurring in tropical plant ecophysiology. Drawing on the knowledge of leading practitioners in the field, this book synthesizes a broad range of information on the ways in which tropical plants adapt to their environment and demonstrate unique physiological processes. This book is arranged into four sections which cover resource acquisition, species interactions, ecophysiological patterns within and among tropical forest communities, and the ecophysiology of forest regeneration. These sections describe plant function in relation to ecology across a wide spectrum of tropical forest species and growth forms. How do different species harvest and utilize resources from heterogeneous tropical environments? How do patterns of functional diversity reflect the overwhelming taxonomic and morphological diversity of tropical forest plants? Such fundamental questions are examined in rich detail. To illuminate the discussions further, every chapter in this book features an agenda for future research, extensive cross referencing, timely references, and the integration of ecophysiology and the demography of tropical species where the data exist. Tropical Forest Plant Ecophysiology provides plant scientists, botanists, researchers, and graduate students with important insights into the behavior of tropical plants. Biologists and foresters interested in tropical ecology and plant physiological ecologists will also benefit from this authoritative and timely resource.

Ecology Abstracts

Directory of Graduate Research

Government Reports Announcements & Index

References and abstracts to international literature (mostly journal articles). Classified arrangement. Subject, author, and source indexes. Ser. 1, 1974: 8256 references.

Scientific and Technical Aerospace Reports

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