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Rock Magnetism Springer Science & Business Media
Volume 8 of Reviews in Mineralogy treats a Short Course in Kinetics, which brings together the fundamentals needed to explain field observations using kinetic data. It is hoped that this book may serve, not only as a reference for researchers dealing with the rates of geochemical processes, but also as a text in courses on geochemical kinetics. The book is organized with a rough temperature gradient in mind, i.e. low temperature kinetics at the beginning and igneous kinetics at the end. However, the topics in each chapter are general enough that they can be applied often to any geochemical domain: sedimentary,

metamorphic or igneous. The theory of kinetics operates at two complementary levels: the phenomenological and the atomistic. The former relies on macroscopic variables (e.g. temperature or concentrations) to describe the rates of reactions or the rates of transport; the latter relates the rates to the basic forces operating between the particular atomic or molecular species of any system. This book deals with both descriptions of the kinetics of geochemical processes.

[Kinetics of Geochemical Processes](#) Cambridge University Press
Rock microstructures provide clues for the interpretation of rock history. A good understanding of the physical or structural relationships of minerals and rocks is essential for making the most of more detailed chemical and isotopic analyses of minerals. Ron Vernon discusses the basic processes responsible for the wide variety of microstructures in igneous, sedimentary,

metamorphic and deformed rocks, using high-quality colour illustrations. He discusses potential complications of interpretation, emphasizing pitfalls, and focussing on the latest techniques and approaches. Opaque minerals (sulphides and oxides) are referred to where appropriate. The comprehensive list of relevant references will be useful for advanced students wishing to delve more deeply into problems of rock microstructure. Senior undergraduate and graduate students of mineralogy, petrology and structural geology will find this book essential reading, and it will also be of interest to students of materials science.

Fundamentals and Frontiers Cambridge University Press

This book is a comprehensive treatment of fine particle magnetism and the magnetic properties of rocks. Starting from atomic magnetism and magnetostatic principles, the authors explain why domains and micromagnetic structures form in ferromagnetic crystals and how these lead to magnetic memory in the form of thermal, chemical and other remanent magnetizations. This book will be of value to graduate students and researchers in geophysics and geology, particularly in paleomagnetism and rock magnetism, as well as physicists and electrical engineers interested in fine-particle magnetism and magnetic recording.

Sedimentology and Sedimentary Basins BoD - Books on Demand
Advanced textbook outlining the physical, chemical, and biological properties of sedimentary rocks through petrographic microscopy, geochemical techniques, and field study.

Earth Materials Cambridge University Press

In this book the task of summarising modern petrology I from the

genetic standpoint has been attempted. The scale of the work is small as compared with the magnitude of its subject, but it is nevertheless believed that the field has been reasonably covered. In conformity with the genetic viewpoint petrology, as contrasted with petrography, has been emphasised throughout; and purely descriptive mineralogical and petrographical detail has been omitted. Every petrologist who reads this book will recognise the author's indebtedness to Dr. A. Harker and Dr. A. Holmes, among British workers; to Prof. R. A. Daly, Dr. H. S. Washington, and Dr. N. L. Bowen, among American petrologists; and to Prof. J. H. L. Vogt, Prof. V. M. Goldschmidt, Prof. A. Lacroix, and Prof. P. Niggli, among European investigators. The emphasis laid on modern views, and the relative poverty of references to the works of the older generation of petrologists, does not imply any disrespect of the latter. It is due to recognition of the desirability of affording the petrological student a newer and wider range of reading references than is usually supplied in this class of work; for references tend to become stereotyped as well as text and illustrations. Furthermore it is believed that all that is good and living in the older work has been incorporated, consciously or unconsciously, in the newer.

Earth Materials Pearson Higher Ed

There is a large and growing need for a textbook that can form the basis for integrated classes that look at minerals, rocks, and other Earth materials. Despite the need, no high-quality book is available for such a course. Earth Materials is a wide-ranging undergraduate textbook that covers all the most important kinds of (inorganic) Earth materials. Besides traditional chapters on minerals and rocks, this book features chapters on sediments and

stratigraphy, weathering and soils, water and the hydrosphere, and mineral and energy deposits. Introductions to soil mechanics and rock mechanics are also included. This book steers away from the model of traditional encyclopedic science textbooks, but rather exposes students to the key and most exciting ideas and information, with an emphasis on thinking about Earth as a system. The book is written in such a manner as to support inquiry, discovery and other forms of active learning. All chapters start with a short topical story or vignette, and the plentiful photographs and other graphics are integrated completely with the text. Earth Materials will be interesting and useful for a wide range of learners, including geoscience students, students taking mineralogy and petrology courses, engineers, and anyone interested in learning more about the Earth as a system.

Mineralogy Springer

This textbook provides a basic understanding of the formative processes of igneous and metamorphic rock through quantitative applications of simple physical and chemical principles. The book encourages a deeper comprehension of the subject by explaining the petrologic principles rather than simply presenting the student with petrologic facts and terminology. Assuming knowledge of only introductory college-level courses in physics, chemistry, and calculus, it lucidly outlines mathematical derivations fully and at an elementary level, and is ideal for intermediate and advanced courses in igneous and metamorphic petrology. The end-of-chapter quantitative problem sets facilitate student learning by working through simple applications. They also introduce several widely-used thermodynamic software programs for calculating igneous and metamorphic phase

equilibria and image analysis software. With over 350 illustrations, this revised edition contains valuable new material on the structure of the Earth's mantle and core, the properties and behaviour of magmas, recent results from satellite imaging, and more.

Cambridge University Press

This book presents a translation and update of the classic German textbook of Mineralogy and Petrology that has been published for decades. It provides an introduction to mineralogy, petrology, and geochemistry, discussing the principles of mineralogy, including crystallography, chemical bonding, and physical properties, and the genesis of minerals in a didactic and understandable way. Illustrated with numerous figures and tables, it also features several sections dedicated to the genesis of mineral resources. The textbook reflects the authors' many years of experience and is ideal for use in lectures on mineralogy and petrology.

[A Pictorial Guide to Metamorphic Rocks in the Field](#) Cambridge University Press

Introduction to Mineralogy and Petrology presents the essentials of both disciplines through an approach accessible to industry professionals, academic researchers, and students. Mineralogy and petrology stand as the backbone of the geosciences. Detailed knowledge of minerals and rocks and the process of formation and association are essential for practicing professionals and advanced students. This book is designed as an accessible, step-by-step guide to exploring, retaining, and implementing the core concepts of mineral and hydrocarbon exploration, mining, and extraction. Each topic is fully supported

by working examples, diagrams and full-color images. The inclusion of petroleum, gas, metallic deposits and economic aspects enhance the book's value as a practical reference for mineralogy and petrology. Authored by two of the world's premier experts, this book is a must for any young professional, researcher, or student looking for a thorough and inclusive guide to mineralogy and petrology in a single source. Authored by two of the world's experts in mineralogy and petrology, who have more than 70 years of experience in research and instruction combined Addresses the full scope of the core concepts of mineralogy and petrology, including crystal structure, formation and grouping of minerals and soils, definition, origin, structure and classification of igneous, sedimentary and metamorphic rocks Features more than 150 figures, illustrations, and color photographs to vividly explore the fundamental principles of mineralogy and petrology Offers a holistic approach to both subjects, beginning with the formation of geologic structures followed by the hosting of mineral deposits and concluding with the exploration and extraction of lucrative, usable products to improve the health of global economies

Petrology Cambridge University Press

Igneous and metamorphic petrology has over the last twenty years expanded rapidly into a broad, multifaceted and increasingly quantitative science. Advances in geochemistry, geochronology, and geophysics, as well as the appearance of new analytical tools, have all contributed to new ways of thinking about the origin and evolution of magmas, and the processes driving metamorphism. This book is designed to give students a balanced and comprehensive coverage of these new advances,

as well as a firm grounding in the classical aspects of igneous and metamorphic petrology. The emphasis throughout is on the processes controlling petrogenesis, but care is taken to present the important descriptive information so crucial to interpretation. One of the most up-to-date synthesis of igneous and metamorphic petrology available. Emphasis throughout on latest experimental and field data. Igneous and metamorphic sections can be used independently if necessary.

Petrography to Petrogenesis Macmillan College

The fourth volume in this series consists of eleven chapters. The first five deal with more theoretical aspects of the kinetics and mechanisms of meta morphic reactions, and the next six consider the interdependence of deformation and metamorphism. All papers deal with natural processes that inter act on various time scales and with different degrees of mass and heat transfer. Consequently, many fundamental axioms of metamorphic petrology and structural geology are questioned both for their accuracy and their usefulness. In raising such questions, most contributors have pointed to ways in which the answers could be forthcoming from appropriate experimental studies or observations on natural materials. In their discussion of how order/disorder can influence mineral assemblages, Carpenter and Putnis emphasize that metastable crystal growth is common in metamorphic systems and state 'there may be some reluctance (among many earth scientists) to accept that significant departures from equilibrium could occur.' On the basis of presented evidence, they question whether reactions ever occur close to an equilibrium boundary. The necessity for pressure or temperature overstepping is also required by nucleation rate theory. In any

case, the degree of order is severely influenced by these kinetic effects in igneous, sedimentary, and metamorphic environments. *Fiftieth Anniversary Perspectives* Cambridge University Press This process-oriented book combines optical mineralogy with petrography and petrology. It covers all rock types. It focuses on the study of the behavior of rocks in response to geological processes. In addition to covering common igneous, metamorphic, and sedimentary rocks, it also examines weathered, hydrothermally altered, and low-temperature precipitative and deformed rocks. It covers all rock types that relate to the fields of hydrogeology, environmental geology, economic geology, neotectonics, earth science, seismology, and geologic engineering. Incorporates numerous high-quality photographs, including 8 pages of color photos.

Introduction to Mineralogy and Petrology McGraw-Hill Science, Engineering & Mathematics

The second half of the past century witnessed a remarkable paradigm shift in approach to the understanding of igneous rocks. Global literature records a change from a classical petrographic approach to emphasis on mineral chemistry, trace element characteristics, tectonic setting, phase relations, and theoretical simulation of magma generation and evolution processes. This book contains contributions by international experts in different fields of igneous petrology and presents an overview of recent developments. This book is dedicated to the late Dr Mihir K. Bose, former professor of the Department of Geology, Presidency College, Calcutta, India, who actively participated in the development of this new global view of igneous petrology.

Sedimentary Petrology Springer Science & Business Media

This textbook is a complete rewrite, and expansion of Hugh Rollinson's highly successful 1993 book *Using Geochemical Data: Evaluation, Presentation, Interpretation*. Rollinson and Pease's new book covers the explosion in geochemical thinking over the past three decades, as new instruments and techniques have come online. It provides a comprehensive overview of how modern geochemical data are used in the understanding of geological and petrological processes. It covers major element, trace element, and radiogenic and stable isotope geochemistry. It explains the potential of many geochemical techniques, provides examples of their application, and emphasizes how to interpret the resulting data. Additional topics covered include the critical statistical analysis of geochemical data, current geochemical techniques, effective display of geochemical data, and the application of data in problem solving and identifying petrogenetic processes within a geological context. It will be invaluable for all graduate students, researchers, and professionals using geochemical techniques.

An Introduction to the Science of Rocks John Wiley & Sons

Structured in the form of a dichotomous key, comparable to those widely used in botany, the mineral key provides an efficient and systematic approach to identifying rock-forming minerals in thin-section. This unique approach covers 150 plus of the most commonly encountered rock-forming minerals, plus a few rarer but noteworthy ones. Illustrated in

Introduction to Mineralogy and Petrology John Wiley & Sons

This fully revised and updated edition introduces the reader to sedimentology and stratigraphic principles, and provides tools for

the interpretation of sediments and sedimentary rocks. The processes of formation, transport and deposition of sediment are considered and then applied to develop conceptual models for the full range of sedimentary environments, from deserts to deep seas and reefs to rivers. Different approaches to using stratigraphic principles to date and correlate strata are also considered, in order to provide a comprehensive introduction to all aspects of sedimentology and stratigraphy. The text and figures are designed to be accessible to anyone completely new to the subject, and all of the illustrative material is provided in an accompanying CD-ROM. High-resolution versions of these images can also be downloaded from the companion website for this book at: www.wiley.com/go/nicholssedimentology.

Igneous and Metamorphic Petrology CRC Press

The *Evolution of the Igneous Rocks*, by N. L. Bowen, appeared in 1928 and had a profound influence on later generations of petrologists. Drawing on his series of lectures at Princeton University in the spring of 1927, Dr. Bowen identified, outlined, and applied the principles of physical chemistry relevant to petrological processes. Whereas the major petrochemical questions he discussed are still relevant today, the answers appear to change with time. The purpose of the present volume is to provide an updated view of those questions, in the light of almost fifty years of accumulated observations, using the principles Bowen set forth. Originally published in 1979. The Princeton Legacy Library uses the latest print-on-demand technology to again make available previously out-of-print books from the distinguished backlist of Princeton University Press. These editions preserve the original texts of these important

books while presenting them in durable paperback and hardcover editions. The goal of the Princeton Legacy Library is to vastly increase access to the rich scholarly heritage found in the thousands of books published by Princeton University Press since its founding in 1905.

The Field Description of Igneous Rocks Elsevier

Key concepts in mineralogy and petrology are explained alongside beautiful full-color illustrations, in this concisely written textbook.

Essentials of Igneous and Metamorphic Petrology John Wiley & Sons

One of four volumes which provides a good understanding of the mode of occurrence, geological setting and phosphogenesis of the world's phosphate resources.

Petrography of Igneous and Metamorphic Rocks IWA Publishing

Sedimentology is a core discipline of earth and environmental sciences. It enquires the origins, transport and deposition of mineral sediment on the Earth's surface. The subject is a link between positive effects arising from the building of relief by tectonics and the negative action of denudation in drainage catchments and tectonic subsidence in sedimentary basins. The author addresses the principles of the subject, emphasising the advantages of a general science approach and the importance of understanding modern processes.

Sedimentology and Sedimentary Basins is not an encyclopaedia, but attempts to stimulate interdisciplinary thought across the whole subject area and related disciplines. The book has been designed to meet the needs of earth and environmental science undergraduates.