Fluid-mineral Equilibria in Hydrothermal Systems
On the Origin of the Black Pyritic Slates from the Iron
Mineral Deposits of Iron River District of
Michigan
Petrogenesis of Metamorphic Rocks
Solutions, Minerals, and Equilibria
Handbook of Soil Sciences (Two Volume Set)
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Geochemistry, Groundwater and Pollution
Thermodynamic Modeling of Geologic Materials
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Hydrochemical Balances of Freshwater Systems
Montmorillonite Genesis in Soils as Influenced by the Activities of Monosilicic Acid and Various Cations in the Matrix Solution
Water-resources
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Courses and Degrees
Mineral Equilibria at Low Temperature and Pressure
Aqueous Environmental Geochemistry
Soil Solutions, Minerals, and Equilibria
Proceedings of the Fourth International Symposium on Electrochemistry in Mineral and Metal Processing
Thermodynamics of Minerals and Melts
Sulfide Mineralogy and Geochemistry
Incomplete Solution
Physical Geography
PHREEQE
Stockholm Contributions in Geology
Petrogenesis of Metamorphic Rocks
Solutions, Minerals, and Equilibria
des minéraux et de leurs solutions aqueuses
Phosphate Minerals
Solutions, Minerals, and Equilibria
Bulletin de Minéralogie
Equilibrium Activity Diagrams
The American Journal of Science
Characterization of Metamorphism through Mineral Equilibria
SOLUTIONS, MINERALS & EQUILIBRIA
Composition of Holocene Sands of Mull and Adjacent Offshore Areas
Geochemistry
International Oxidation of Pyrite in Alkaline Solutions and Heterogeneous Equilibria of Sulfur- and Arsenic-containing Minerals in Cyanide Solutions
This book offers thorough, up-to-date coverage of controls on the chemical quality of surface and...
subsurface waters, both pristine and polluted, with an emphasis on problem-solving and practical applications. The text is appropriate for courses in aqueous geochemistry or aquatic chemistry. Desirable prerequisites are introductory courses or the equivalent in thermodynamics and solution chemistry, and in physical geology including mineralogy. Volume 61 of Reviews in Mineralogy and Geochemistry presents an up-to-date review of sulfide mineralogy and geochemistry. The crystal structures, electrical and magnetic properties, spectroscopic studies, chemical bonding, thermochemistry, phase relations, solution chemistry, surface structure and chemistry, hydrothermal precipitation processes, sulfur isotope geochemistry and geobiology of metal sulfides are reviewed. Where it is appropriate for comparison, there is brief discussion of the selenide or telluride analogs of the metal sulfides. When discussing crystal structures and structural relationships, the sulfosalt minerals as well as the sulfides are considered in some detail. Volume 10 of Reviews in Mineralogy reviews the use of a powerful probe into metamorphic process: mineral assemblages and the composition of minerals. Put very simply, this volume attempts to answer the question: "What can we learn about metamorphism through the study of minerals in metamorphic rocks?" It is not an encyclopedic summary of metamorphic mineral assemblages; instead it attempts to present basic research strategies and examples of their application. Moreover, in order to limit and unify the subject matter, it concentrates on the chemical aspects of metamorphism and regrettably ignores other important kinds of studies of metamorphic rocks and minerals conducted by structural geologists, structural petrologists, and geophysicists. Surfactants have been used for many industrial processes such as flotation, enhanced oil recovery, soil remediation and cleansing. Flotation technology itself has been used in industry since the end of the 19th century, and even today it is an important method for mineral
processing and its application range is expanding to other areas. This technology has been used in the treatment of wastewater, industrial waste materials, separation and recycling of municipal waste, and some unit processes of chemical engineering. The efficiency of all these operations depends primarily on the interactions among surfactants, solids and media. In this book, the fundamentals of solution chemistry of mineral/surfactant systems are discussed, as well as the important calculations involved. The influence of relevant physico-chemical conditions are also presented in detail. * Introduces the fundamentals of solution chemistry of mineral/surfactant systems and important calculations involved * Discusses the influence of relevant physico-chemical conditions * Presents the relationship between the molecular structure of the flotation regents of solution chemistry and its characteristics

Today large numbers of geoscientists apply thermodynamic theory to solutions of a variety of problems in earth and planetary sciences. For most problems in chemistry, the application of thermodynamics is direct and rewarding. Geoscientists, however, deal with complex inorganic and organic substances. The complexities in the nature of mineralogical substances arise due to their involved crystal structure and multicomponental character. As a result, thermochemical solutions of many geological-planetological problems should be attempted only with a clear understanding of the crystal-chemical and thermochemical character of each mineral. The subject of physical geochemistry deals with the elucidation and application of physico-chemical principles to geosciences. Thermodynamics of mineral phases and crystalline solutions form an integral part of it. Developments in mineralogic thermodynamics in recent years have been very encouraging, but do not easily reach many geoscientists interested mainly in applications. This series is to provide geoscientists and planetary scientists with current information on the develop
ments in thermodynamics of mineral systems, and also provide the active researcher in this rapidly developing field with a forum through which he can popularize the important conclusions of his work. In the first several volumes, we plan to publish original contributions (with an abundant supply of back ground material for the uninitiated reader) and thoughtful reviews from a number of researchers on mineralogic thermodynamics, on the application of thermochemistry to planetary phase equilibria (including meteorites), and on kinetics of geochemical reactions. Metamorphic rocks make up the largest volume of the Earth. They systematically change their mineralogical composition as a result of tecto-thermal events. The outstanding feature of the 7th edition of this book is the large number of phase diagrams showing the stability relations among minerals and groups of minerals found in metamorphic rocks. The diagrams help to determine the pressure and temperature conditions under which a given collected set of metamorphic rocks may have formed. More than half of the chapters have been completely rewritten or revised. All figures have been edited and improved and recent advances in the field such as multiequilibria thermobarometry and pseudosections were incorporated in the text. The bibliography has been revised and extended, new research publications have also been included. Graduate students will find in depth information on the origin, significance and genesis of metamorphic rocks. The literature on the geology, chemistry, and biochemistry of phosphorus generally takes its mineralogy for granted. The incidental information on phosphate minerals given in these texts is often obsolescent and inaccurate. The few mineralogical texts that have dealt comprehensively with the phosphate minerals have now become outdated, and typically present the essential information in a manner unsuitable for nongeological readers. This volume is intended as a ready reference for workers who require good basic information on phosphate
minerals or their synthetic equivalents. The topics covered should appeal to geologists and geochemists, lithologists, environmental scientists and engineers, chemists and biochemists who have any interest in the intricate world of phosphorus. The hard tissues of many vertebrates and the many pathological calcifications consist mostly of phosphate minerals. The precipitation of these compounds also plays a major role in the ecological cycling of phosphorus, and occasionally even dominates the behavior of many trace metals in many geochemical and biological systems. Indeed, many pegmatitic phosphate minerals have acquired some notoriety because of the rarer trace metals which they tend to accumulate. With the commercialization of phosphate fertilizers since the early part of the 19th century, phosphate minerals have assumed an important role in industrial chemistry and agriculture. Clearly, the study of phosphate minerals is important from the economic, agricultural, environmental and (human and animal) health viewpoint.

V knjigi Incomplete Solution: Weathering of Cave Walls and the Production, Transport and Deposition of Carbonate Fines (Nepopolno raztpaljanje: preperevanje jamskih sten in nastajanje, transport in odlaganje karbonatnih delcev) je prikazano preperevanje sten jamskih rovov na krasu. Predstavljeno je dogajanje v apnencih in dolomitih med raztpaljanjem, kakšno je to raztpaljanje in zakaj se kamnine ne raztopijo popolnoma. This book represents a revision and expansion of an earlier set of diagrams for temperatures from 25 to 300 C along the equilibrium vapor-liquid curve for H2O (Helgeson, Brown, 2 and Leeper, 1969). The activity diagrams summarized in the following pages were generated over a six year period from 1977 to 1983 in the Laboratory of Theoretical Geochemistry (otherwise known as Prediction Centra!) at the University of California, Berkeley. They represent the culmination of research efforts to generate a comprehensive and internally consistent set of thermodynamic data and equations for
minerals, gases, and aqueous solutions at high pressures and temperatures. Among the many who contributed to the successful completion of this book, we are especially indebted to David Kirkham, John Walther, and George Flowers, who wrote program SUPCRT, Tom Brown, who created program DIAGRAM, and Eli Messinger, who generated the Tektronix plot routine to construct the diagrams. Ken Jackson and Terri Bowers both devoted an enormous amount of time and effort over the past six years to produce the diagrams in the following pages; some of which went through many stages of revision. Consequently, they appear as senior authors of this volume. It should be mentioned in this regard that their equal dedication to the project made it necessary to determine their order of authorship by flipping a coin. Based on a university course, this book provides an exposition of a large spectrum of geological, geochemical and geophysical problems that are amenable to thermodynamic analysis. It also includes selected problems in planetary sciences, relationships between thermodynamics and microscopic properties, particle size effects, methods of approximation of thermodynamic properties of minerals, and some kinetic ramifications of entropy production. The textbook will enable graduate students and researchers alike to develop an appreciation of the fundamental principles of thermodynamics, and their wide ranging applications to natural processes and systems. Volume 17 of Reviews in Mineralogy is based on a short course, entitled "Thermodynamic Modeling of Geological Materials: Minerals, Fluids and Melts," October 22-25, 1987, at the Wickenburg Inn near Phoenix, Arizona. Contents: Thermodynamic Analysis of Phase Equilibria in Simple Mineral Systems Models of Crystalline solutions Thermodynamics of Multicomponent Systems Containing Several Solid Solutions Thermodynamic Model for Aqueous Solutions of Liquid-like Density Models of Mineral Solubility in Concentrated Brines with Application to Field Observations Calculation of the Thermodynamic
Metamorphic rocks are one of the three classes of rocks. Seen on a global scale they constitute the dominant material of the Earth. The understanding of the petrogenesis and significance of metamorphic rocks is, therefore, a fundamental topic. There are, of course, many different possible ways to lecture on this theme. This book addresses rock metamorphism from a relatively pragmatic viewpoint. It has been written for the senior undergraduate or graduate student who needs practical knowledge of how to interpret various groups of minerals found in metamorphic rocks. The book is also of interest for the non-specialist and non-petrologist professional who is interested in learning more about the geological messages that metamorphic mineral assemblages are sending, as well as pressure and temperature conditions of formation. The book is organized into two parts. The first part introduces the different types of metamorphism, defines some names, terms and graphs used to describe metamorphic rocks, and discusses principal aspects of metamorphic processes. Part I introduces the causes of metamorphism on various scales in time and space, and some principles of chemical reactions in rocks that accompany metamorphism, but without treating these principles in detail, and presenting the thermodynamic basis for quantitative analysis of reactions and their equilibria in metamorphism. Part I also presents concepts of metamorphic grade or intensity of metamorphism, such as the metamorphic-facies
An evolving, living organic/inorganic covering, soil is in dynamic equilibrium with the atmosphere above, the biosphere within, and the geology below. It acts as an anchor for roots, a purveyor of water and nutrients, a residence for a vast community of microorganisms and animals, a sanitizer of the environment, and a source of raw materials for coBased on Mineral equilibria at low temperature and pressure, by R.M. Garrels, published in 1960. Building on the success of its 1993 predecessor, this second edition of Geochemistry, Groundwater and Pollution has been thoroughly re-written, updated and extended to provide a complete and authoritative account of modern hydrogeochemistry. Offering a quantitative approach to the study of groundwater quality and the interaction of water, minerals, gases, pollutants and microbes, this book shows how physical and chemical theory can be applied to explain observed water qualities and variations over space and time. Integral to the presentation, geochemical modelling using PHREEQC code is demonstrated, with step-by-step instructions for calculating and simulating field and laboratory data. Numerous figures and tables illustrate the theory, while worked examples including calculations and theoretical explanations assist the reader in gaining a deeper understanding of the concepts involved. A crucial read for students of hydrogeology, geochemistry and civil engineering, professionals in the water sciences will also find inspiration in the practical examples and modeling templates. Volume 26 of Reviews in Mineralogy provides a multidisciplinary review of our current knowledge of contact metamorphism. As in any field of endeavor, we are provided with new questions, thereby dictating future directions of study. Hopefully, this volume will provide inspiration and direction for future research on contact metamorphism. The Mineralogical Society of America sponsored the short course on Contact Metamorphism, October 17-19, 1991, at the Pala Mesa
Resort, Fallbrook, California, prior to its annual meeting with the Geological Society of America.

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