Vulkanismus

This combination textbook and reference manual provides a comprehensive account of the principles, practices, and application of gravity and magnetic methods for exploring the subsurface using surface, marine, airborne, and satellite measurements. Key current topics and techniques are described, including high-resolution magnetic investigations, time-
variation gravity analysis from surface and satellite gravity measurements, absolute and gradient gravimetry, and the role of GPS in mapping gravity and magnetic fields. The book also describes the physical properties of rocks and other earth materials that are critical to the effective design, implementation and interpretation of surveys, and presents a thorough overview of digital data analysis methods used to process and interpret anomalies for subsurface information. This book is an ideal text for advanced undergraduate and graduate courses, but also serves as a reference for research academics, professional geophysicists, and managers of exploration programs that include gravity and magnetic methods. It is a valuable resource for all those interested in petroleum, engineering, mineral, environmental, geological and archeological exploration of the lithosphere.”

**Hydrothermal Mineral Deposits**

**Drainage Geochemistry**

*Handbook of Exploration Geochemistry, Volume 3: Rock Geochemistry in Mineral Exploration* focuses on the application of rock geochemistry in mineral exploration, including deposits of plutonic association, volcanic and sedimentary association, and sequence of geochemical exploration. The publication first elaborates on geochemistry in the exploration sequence, crustal abundance, geochemical behavior of elements, and problems of sampling and recognition of geochemical anomalies. Discussions focus on population partition, spatial distribution of data, abundance of elements, classification and geochemical behavior of elements, principles underlying geochemical exploration, sequence of geochemical exploration, and main types of geochemical surveys. The text then takes a look at regional scale exploration for deposits of plutonic association; regional scale exploration for vein and replacement deposits; and regional scale exploration for stratiform deposits of volcanic and sedimentary association. The book ponders on the synthesis of geochemical responses and operational conclusions, local and mine scale exploration for stratiform deposits of volcanic and sedimentary association in Cyprus, Turkey, and Oceania, New Brunswick deposits, and Precambrian, Proterozoic, and Kuroko deposits. The text is a valuable reference for researchers interested in the application of rock geochemistry in
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Mineral exploration.

Platinum-Nickel-Chromium Deposits

Applied Geochemistry: Advances in Mineral Exploration Techniques is a book targeting all levels of exploration geologists, geology students and geoscientists working in the mining industry. This reference book covers mineral exploration techniques from multiple dimensions, including the application of statistics – both principal component analysis and factor analysis - to multifractal modeling. The book explains these approaches step-by-step and gives their limitations. In addition to techniques and applications in mineral exploration, Applied Geochemistry describes mineral deposits and the theories underpinning their formation through worldwide case studies. Includes both conventional and nonconventional techniques for mineral exploration, including lithogeochemical methods. Highlights the importance and applications of multifractal models, 3D - mineral prospectivity modeling. Features case studies from mines and mineral exploration ventures around the world.

The Business of Mining

An essay on the principle of population, or, A view of its past and present effects on human happiness. With an inquiry into our prospects respecting the future removal or mitigation of the evils which it occasions. In Three Volumes. Volume 1.

Introduction to Mineralogy and Petrology

This combination of textbook and reference manual provides a comprehensive account of gravity and magnetic methods for exploring the subsurface using surface, marine, airborne and satellite measurements. It describes key current topics and techniques, physical properties of rocks and other earth materials, and digital data analysis methods used to process and interpret anomalies for subsurface information. Each chapter starts with an overview and concludes by listing key...
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concepts to consolidate new learning. An accompanying website presents problem sets and interactive computer-based exercises, providing hands-on experience of processing, modeling and interpreting data. A comprehensive online suite of full-color case histories illustrates the practical utility of modern gravity and magnetic surveys. This is an ideal text for advanced undergraduate and graduate courses and reference text for research academics and professional geophysicists. It is a valuable resource for all those interested in petroleum, engineering, mineral, environmental, geological and archeological exploration of the lithosphere.

_Historische Geologie_

_Rock Geochemistry in Mineral Exploration_

This volume describes the use of till geochemical and indicator mineral methods for mineral exploration in the glaciated terrain of Canada. The principles and examples described in this volume will have direct applications for exploration companies looking for diamonds, precious and base metals and uranium in glaciated parts of North America, northern Europe and Asia and mountainous regions of South America.

_Mineral Deposits, Exploration and Ore-reserve Estimation_

_Mineral Exploration_

_Platinum-Nickel-Chromium Deposits: Geology, Exploration, and Reserve Base is the first reference book to combine information on the discovery of numerous minerals within existing deposits. This book recognizes the close affinity and great natural coexistence of platinum, palladium, chromium, nickel, copper, gold, and silver hosted by unique_
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stratigraphy (mafic-ultramafic intrusive of layered ingenious complex) in a diverse structural set up. The chapters are organized in a logical sequence of introductory physical and chemical properties, demand-supply scenario, price trend, substitution-recycling and uses of these metals, stratigraphy and host rocks, geochemistry, global distribution of existing deposits in six mega continents, genetic system, reserves-resources overview, common characteristic features aiding as exploration guides for new targets, hazards, and sustainable development. This reference book is a must for students, research scholars, teachers, and professional explorers in economic geology, geography, and allied subjects. Presents over 150 full color illustrations including maps, diagrams, and charts Illustrates the key concepts in a clear and informative manner Authored by one of the world’s leading geoscientists Provides unique coverage of high value mineral deposits through an approach accessible to industry professionals, academic researchers, and students alike

The Business of Mining

The book introduces essential concept of mineral exploration, mine evaluation and resource assessment of the discovered mineral deposit to students, beginners and professionals. The book is divided into nine chapters which will help the readers to incorporate the concepts of search for mineral deposits and understand the chances of success. The book discusses the fundamental details like composition of earth and mineral resources, formation of rock and mineral deposits, and the attempt to search for ore deposits to advance applications of remote sensing in mineral exploration. It also covers the details on how to conduct system of survey, evaluation, and how to arrive at a decision to open and carryout further exploration in the operating mine. The book shall be of great interest to geologists and mining community.

Mineral Exploration: Practical Application

Mineral Exploration
Introduction to Mineralogy and Petrology, Second Edition presents the essentials in an approach that is accessible to industry professionals, academic researchers and students. The book emphasizes the relationship between rocks and minerals, from the structures created during rock formation straight through to the economics of mineral deposits. While petrology is classified on the lines of geological evolution and rock formation, mineralogy speaks to physical and chemical properties, uses and global occurrences. The book's primary goal is for the reader to identify minerals in all respects, including host-rocks and mineral deposits, mineral-exploration, resources, extraction processes, and their further usage. To help provide a comprehensive analysis across ethical and socioeconomic dimensions, a separate chapter describes the hazards associated with minerals, rock and mineral industries, and the consequences to humanity that includes remedies and case studies. Addresses the full scope of 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 250 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 that is followed by the hosting of mineral deposits and the exploration and extraction of lucrative, usable products that improve the health of global economies. Includes new content on minerals and petrology in extraterrestrial environments and case studies on hazards in the mining industry.

**Mineral Resources**

**The Business of Mining**

Twelve years of research at CSIRO and over 500 case histories have demonstrated the viability and cost-effectiveness of an important new approach to mineral exploration, i.e. the use of lead isotopes. Written specifically for those working in the mineral industry, this is the first book to provide an up-to-date state-of-the-art review of lead isotopes in mineral exploration. Beginning with an historical review on suggested uses of lead isotopes in mineral exploration, the author then outlines the theoretical aspects of lead isotopes and illustrates that the method is based on well-known principles of...
radioactive decay, from which isotopic signatures for different styles of mineralization are derived. The varying isotopic signatures are then introduced. The major part of the book details over 40 case histories for base and precious metals, uranium and tin using sampling media such as sulfides, gossans, soils, weathered bedrock, vegetation and groundwaters. Advantages and disadvantages of each are discussed. To assist the exploration geologist, one chapter is devoted to the application of the method to an actual exploration program, including interpretation.

**Lead Isotopes in Mineral Exploration**

This book is intended primarily for exploration geologists and post graduate students attending specialist courses in mineral exploration. Exploration geologists are engaged not only in the search for new mineral deposits, but also in the extension and re-assessment of existing ones. To succeed in these tasks, the exploration geologist is required to be a "generalist" of the Earth sciences rather than a specialist. The exploration geologist needs to be familiar with most aspects of the geology of ore deposits, and detailed knowledge as well as experience play an all important role in the successful exploration for mineral commodities. In order to achieve this, it is essential that the exploration geologist be up to date with the latest developments in the evolution of concepts and ideas in the Earth sciences. This is no easy task, as thousands of publications appear every year in an ever increasing number of journals, periodicals and books. For this reason it is also difficult, at times, to locate appropriate references on a particular mineral deposit type, although this problem is alleviated by the existence of large bibliographic data bases of geological records, abstracts and papers on computers. During my teaching to explorationists and, indeed, during my years of work as an explorationist, the necessity of having a text dealing with the fundamental aspects of hydrothermal mineral deposits has always been compelling. Metallic mineral deposits can be categorised into three great families, namely: (I) magmatic; (2) sedimentary and residual; (3) hydrothermal.

**Principles of Mineral Processing**

This valuable reference book is unique in its coverage of examples from the geological sciences, many centred on
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applications to mineral exploration. The underlying principles of GIS are stressed and emphasis placed on the analysis and modelling of spatial data with applications to site selection and potential mapping. The book commences with a definition of GIS and describes a case study of mapping mineral potential. The ways in which spatial data are organized with models (raster, vector, relational) are discussed and data structures, such as quadtrees and topological structures are introduced. Data input including digitizing, geographic projections and conversions is covered together with output (visualization, representation of colour and spatial query). Spatial data transformations are dealt with thoroughly and attention is paid to map analysis and modelling as related to single maps, map pairs and multiple maps respectively. Methods of quantifying the associations between pairs of maps are emphasized. Finally, examples of landfill site selection and mineral potential mapping illustrate the application of map algebra for combining maps and tables with models, employing Boolean logic, index weighting, fuzzy logic and probability methods such as weights of evidence. There is an extensive glossary of terms, and references accompany each chapter. Contains 40 pages of colour illustrations.

**Introduction to Mineralogy and Petrology**

The Business of Mining complete set of three Focus books provides readers with a holistic all-embracing appraisal of the analytical tools available for assessing the economic viability of prospective mines. Each volume has a discrete focus. This third volume commences with "Our Earth, its Minerals and Ore Bodies", followed by a review of mineral exploration and sampling of mineral deposits. It continues with detailed sections covering the reporting of mineral resources and reserves in Australia, and concludes with the basic principles and application of the various methods of estimating the in-situ mineral resources and ore reserves. The books were written primarily for undergraduate applied geologists, mining engineers and extractive metallurgists and those pursuing course-based postgraduate programs in mineral economics. However, the complete series will also be an extremely useful reference text for practicing mining professionals as well as for consultant geologists, mining engineers or primary metallurgists.

**ENCYCLOPAEDIA OF METHODS IN MINERAL EXPLORATION AND MINING**
"This third volume of the Business of Mining set commences with "Our Earth, its Minerals and Ore Bodies", followed by a review of mineral exploration and sampling of mineral deposits. It continues with detailed sections covering the reporting of mineral resources and reserves in Australia, and concludes with the basic principles and application of the various methods of estimating the in-situ mineral resources and ore reserves. The books were written primarily for undergraduate applied geologists, mining engineers and extractive metallurgists and those pursuing course-based postgraduate programs in mineral economics"--

Mineral Exploration and Development Act of 1993

Designed for an introductory course in remote sensing, this highly regarded text offers 28 pages with color photos, Sabins trademark clarity, and comprehensive coverage. The first chapter vividly introduces the major remote sensing systems and the interactions between electromagnetic energy and materials that are the basis for remote sensing. Six following chapters describe the major imaging systems. After a digital image-processing chapter, Sabins devotes the rest of the text to descriptions of practical applications of remote sensing to environmental monitoring, oil and mineral exploration, land-use and geographic information systems, and natural hazards.

Gravity and Magnetic Exploration

This comprehensive textbook covers all major topics related to the utilization of mineral resources for human activities. It begins with general concepts like definitions of mineral resources, mineral resources and humans, recycling mineral resources, distribution of minerals resources across Earth, and international standards in mining, among others. Then it turns to a classification of mineral resources, covering the main types from a geological standpoint. The exploration of mineral resources is also treated, including geophysical methods of exploration, borehole geophysical logging, geochemical methods, drilling methods, and mineral deposit models in exploration. Further, the book addresses the evaluation of mineral resources, from sampling techniques to the economic evaluation of mining projects (i.e. types and density of sampling, mean grade definition and calculation, Sichel’s estimator, evaluation methods – classical and
geostatistical, economic evaluation – NPV, IRR, and PP, estimation of risk, and software for evaluating mineral resources). It subsequently describes key mineral resource exploitation methods (open pit and underground mining) and the mineral processing required to obtain saleable products (crushing, grinding, sizing, ore separation, and concentrate dewatering, also with some text devoted to tailings dams). Lastly, the book discusses the environmental impact of mining, covering all the aspects of this very important topic, from the description of diverse impacts to the environmental impact assessment (EIA), which is essential in modern mining projects.

**Variational Principles for Transient Electromagnetics and Their Applications to the Exploration of Deep-seated Mineral Deposits**

In this era of economic liberalisation and globalisation, mineral sector in India and many other developing countries have been opened up. Now multinational and transnational companies are coming to India and other developing countries, and Indian companies are going to other countries for investing in the mineral sector. The book explains lucidly with the help of simple diagrams and models innovated by the author himself, the nuances of the practical applications of the theories and concepts of the activities relating mineral development. Starting with an introduction to the subject of Mineral Economics, the book goes on to cover a wide gamut of topics from mineral demanded followed by mineral exploration to business and trade in minerals and a glimpse into the future of the mineral industry in a logical sequence. The book is not a mere compilation of facts but in-depth analyses of the principles underlying them, which the managers and executives concerned with mining industries and mineral businesses should be aware of. It is the culmination of the author's long experience of handling various kinds of problems and queries of public and interaction with industries during a 32-year long professional life in Government as a mineral economist.

**Die Genese der metamorphen Gesteine**
Lectures and Thoughts on Mineral Economics

The Principles and Application of Geoelectrochemical Sampling for Mineral Exploration and Environmental Testing

Annotation Comprehensive reference examines all aspects of mineral processing from the handling of raw materials to separation strategies to the remediation of waste products. Shows how developments in engrg., chemistry, computer science, and environmental science contribute to the ultimate goal of producing minerals and metals economically from ores.

Exploration and Mining Geology

Drift Exploration in Glaciated Terrain

This is the completely revised edition of a book which was published in 1978 and, such was its popularity, was sold out within two years. It was described as "An excellent compilation and condensation of a vast field of literature and experience in economic geology. Clear illustrations, charts and tables punctuate the text material very nicely Valuable for all economic geologists and resource developers." (Choice). The material is illustrated by 215 text figures and 76 tables, and is presented in two parts. The first part covers the geological background of the genesis of mineral deposits as a clue to new discoveries, and the methods of geological, geochemical and geophysical prospecting. The second part concerns sampling, documentation and computation of ore reserves and economic assessment of mineral deposits. This new edition has been very extensively revised and brought up to date. This holds true particularly for the chapters on geochemical and geophysical methods, the use of photo-geology and satellite imagery, oil and gas prospecting, exploration of underwater
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minerals, the application of the principles of global tectonics in prospecting for deposits, and the evaluation of reserves. These new or thoroughly revised chapters comprise almost half of the entire text.

Remote Sensing

Mineral Exploration: Principles and Applications, Second Edition, presents an interdisciplinary approach on the full scope of mineral exploration. Everything from grass root discovery, objective base sequential exploration, mining, beneficiation, extraction, economic evaluation, policies and acts, rules and regulations, sustainability, and environmental impacts is covered. Each topic is presented using theoretical approaches that are followed by specific applications that can be used in the field. This new edition features updated references, changes to rules and regulations, and new sections on oil and gas exploration and classification, air-core drilling, and smelting and refining techniques. This book is a key resource for both academics and professionals, offering both practical and applied knowledge in mineral exploration. Offers important updates to the previous edition, including sections on the cyclical nature of mineral industry, exploration for oil and gas, CHIM-electro-geochemical survey, air-core drilling, classification of oil and gas resources, smelting, and refining technologies Presents global case studies that allow readers to quickly apply exploration concepts to real-world scenarios Includes 385 illustrations and photographs to aid the reader in understanding key procedures and applications

Prospecting and Exploration of Mineral Deposits

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.

MINERAL EXPLORATION AND MINING

Principles and Applications of Photogeology

Using the concepts and practices of applied geology as its central theme, here is a balanced and comprehensive treatment of the geological, geochemical, geophysical, and economic elements of exploration and mining. Offers an overview of the methods and aims in mineral exploration and production and gives coverage of the geologic principles of ore deposits and the geomorphic environment. Deals with "hard" minerals and the nonfluid sources of materials and energy in the continental masses and in ocean basins. This edition has been expanded to include recent advances in applications of satellite imagery, lithogeochemical surveys, isotope geochemistry, and other developments in the field. Also covers current uses of computers in mineral exploration programs. Features case histories, a current references section, and financial data.

Introduction to Mineralogy and Petrology
This work is a translation of the revised and considerably supplemented edition of A.L. Kovalevsky's well-known monograph on biogeochemical methods of prospecting for minerals. The approach is essentially practical. Principles of the formation of biogeochemical haloes for 14 elements are discussed and practical results of biogeochemical prospecting for molybdenum and sulphide deposits are presented. An excellent chapter on methodology tells exactly how to undertake the tasks in view, including sample preparation and analysis, interpretation of data and the combination of biogeochemical techniques with other procedures. Perhaps the most important contribution made by this book is the principle of selection of suitable biosamples whose elemental content is proportional to that of the substrate. This book will be of immeasurable assistance to the practical field worker engaged in biogeochemical prospecting. It will also be of interest to geologists, geochemists, geophysicists and specialists in related areas in both academic and industrial spheres.

Methoden Der Sedimentologie

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
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**Geographic Information Systems for Geoscientists**

**Gravity and Magnetic Exploration**

*Mineral Exploration: Principles and Applications, Second Edition, presents an interdisciplinary approach to addressing the full scope of mineral exploration: from grass root discovery, objective base sequential exploration, mining, beneficiation, and extraction, to economic evaluation, Policies and Acts, rules and regulations, sustainability, and environmental impacts. Each topic is presented first using theoretical approaches, followed by specific applications that can be used in the field. The new edition features updated references, changes to rules and regulations associated with Policies and Acts, as well as new sections on oil and gas exploration and classification, air-core drilling, and smelting and refining techniques. Mineral Exploration: Principles and Applications, 2e, is a key resource for both academics and professionals, offering both practical and applied knowledge in mineral exploration. Offers important updates to the previous edition, including sections on the cyclical nature of mineral industry, exploration for oil and gas, CHIM-electro-geochemical survey, air-core drilling, classification of oil and gas resources, and smelting and refining technologies. Presents case studies - including new global studies - that allow readers to quickly apply exploration concepts to real-world scenarios in the field. Includes more than 150 illustrations and full-color photographs to aid the reader in understanding key procedures and applications*

**Biogeochemical Exploration for Mineral Deposits**
**Mineral Exploration and Development Act of 1993**

The Business of Mining complete set of three Focus books provides readers with a holistic all-embracing appraisal of the analytical tools available for assessing the economic viability of prospective mines. Each volume has a discrete focus. This third volume commences with "Our Earth, its Minerals and Ore Bodies", followed by a review of mineral exploration and sampling of mineral deposits. It continues with detailed sections covering the reporting of mineral resources and reserves in Australia, and concludes with the basic principles and application of the various methods of estimating the in-situ mineral resources and ore reserves. The books were written primarily for undergraduate applied geologists, mining engineers and extractive metallurgists and those pursuing course-based postgraduate programs in mineral economics. However, the complete series will also be an extremely useful reference text for practicing mining professionals as well as for consultant geologists, mining engineers or primary metallurgists.

**Applied Geochemistry**

The considerable exploration success achieved by geochemistry over the last several decades - and still continuing - has provided both the basis and rationale for the Handbook of Exploration Geochemistry series, including Volume 6, Drainage Geochemistry in Mineral Exploration. With contributions from 25 experts of truly global professional experience in drainage geochemistry, this book is a thorough appraisal of the state of the art in the use of surface and subsurface waters, stream and lake sediments, heavy minerals for mineral exploration in tropical rain forests, temperate glaciated terrains, mountain chains, arid deserts and regions of agricultural and industrial pollution. Additional attention is given to gold and uranium exploration, and to the growing role of drainage geochemistry as a multi-purpose environmental mapping technique with applications in human health studies, ore deposit modelling and pollution monitoring. It comprises 16 chapters, more than 250 figures and a bibliography of some 1600 references. This book is the most extensive and detailed single work on the principles and applications of drainage geochemistry in mineral exploration blending both theoretical considerations and practical implementations.
An Essay On the Principle of Population, As It Affects the Future Improvement of Society


Salt Tectonics in Sedimentary Basins

The Business of Mining complete set of three Focus books provides readers with a holistic all-embracing appraisal of the analytical tools available for assessing the economic viability of prospective mines. Each volume has a discrete focus. This third volume commences with "Our Earth, its Minerals and Ore Bodies", followed by a review of mineral exploration and sampling of mineral deposits. It continues with detailed sections covering the reporting of mineral resources and reserves in Australia, and concludes with the basic principles and application of the various methods of estimating the in-situ mineral resources and ore reserves. The books were written primarily for undergraduate applied geologists, mining engineers and extractive metallurgists and those pursuing course-based postgraduate programs in mineral economics. However, the complete series will also be an extremely useful reference text for practicing mining professionals as well as for consultant geologists, mining engineers or primary metallurgists.

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