

Advances In Orebody Modelling And Strategic Mine Planning

These proceedings consist of an overview of the in situ mining research currently being carried out by the Bureau of Mines. The following papers emphasize two general aspects of the in situ mining method: the environment and productivity. Both areas are extremely important, particularly because in situ leach mining is a relatively new mining method from a commercial point of view. Topics covered include the restoration of ground water, the selection of lixiviants, in situ mining of commodities other than uranium, in situ mining costs, the application of resistance measurements to in situ mining, an acid leach mining case history, and the use of branched boreholes for in situ mining. A bibliography of Bureau of Mines publications on in situ mining is appended. This volume comprises 43 papers under the following topics: Modelling and Planning in the New World; Modelling Orebodies and Applications; Mining Optimisation and Case Studies; Large-Scale Integrated Applications; Uncertainty Models and Recoverable Reserves; Optimisation is Moving Underground and The New World and Strategic Innovation."--pub. desc.

This book covers the main mining issues where geostatistics, a discipline founded in the 1960s to study regionalized variables measured at a limited number of points in

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space, is expected to play a role. Each chapter of the book is associated with a stage of the mining sequence, including the interpretation and geological modeling of mineral deposits, evaluation of in-situ and recoverable resources, long-term mine planning, short-term planning and ore control, geotechnics, geometallurgy and sampling. This work, featuring more than 150 illustrations, avoids the traditional laborious and crippling theoretical treatment of geostatistics and is systematically oriented toward a practical exhibition of the problems and proposed solutions. The writing is fluid and intended to involve the reader. The book is the fruit of more than 35 cumulative years of applied research by the authors, a professor at the University of Chile and a researcher at Mines ParisTech, carried out in collaboration with the Chilean company Codelco since the late 1990s. Despite focusing on copper porphyry deposits, the generalization of the methods presented to the entire mining industry is straightforward. The broad range of problems addressed, including generally neglected disciplines such as geotechnics, geometallurgy and sampling, and their practical presentation make this book unique and usable by a very wide audience – students, researchers, geologists, engineers, geotechnicians and metallurgists.

A compilation of engaging and insightful papers from the prestigious 2009 Plant Design Symposium, the volume is a sequel to Mineral Processing Plant Design, Practice, and Control, an industry standard published in 2002. Both books are indispensable texts for university-level instruction, as well as valuable guides for operators considering new

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construction, plant renovation, or expansion. You'll learn the role of innovation, how to finance and conduct feasibility studies, and how to reduce your plant's carbon footprint. This book considers the most contemporary innovations propelling the extractive industries forward while also creating new environmental and social challenges. The socio-ecological fabric of innovation in the extractive industries is considered through an integrative approach that brings together engineers, natural scientists, and social scientists—academics and practitioners—giving an empirically grounded and realistic evaluation of the innovations in this sector. It synthesizes a series of questions including: Why have these sectors been historically slow to innovate? What specific strategies can improve innovation and uptake of new technologies? What new forms of technology will shape the sector in the decades ahead? What impact will new technologies have on resource extraction and energy production? How are digital technologies changing the competitive landscape and industry architecture? How will new technologies impact sustainability of the sector and can technologies improve social performance and environmental stewardship? And more!

Advances in Energy Equipment Science and Engineering contains selected papers from the 2015 International Conference on Energy Equipment Science and Engineering (ICEESE 2015, Guangzhou, China, 30-31 May 2015). The topics covered include:- Advanced design technology- Energy and chemical engineering- Energy and environmental engineering- Energy scien

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Rock Characterisation, Modelling and Engineering Design Methods contains the contributions presented at the 3rd ISRM SINOROCK Symposium (Shanghai, China, 18-20 June 2013). The papers contribute to the further development of the overall rock engineering design process through the sequential linkage of the three themes of rock characterisation, model

The book describes all aspects of technical innovation related to the gold and silver industries, from ore identification through to processing. It includes details of comminution, pre-concentration and beneficiation, commercially available and recently developed innovative pyro and hydrometallurgical processes, including leaching processes, separation and purification, and recovery and refining. The book focuses on capital and operating cost estimation, process simulation, waste remediation and minimization. Sustainable gold and silver processes are examined with the use of clean technologies and efficient use of energy and water. Topics such as supply and demand of gold and silver, their exchange in major global markets, and the factors that influence gold and silver prices and major economic indices are discussed. Presents emerging trends and innovations in the areas of ore body knowledge, mining, processing, waste management, economics, finance and automation; Describes emerging enablers for the gold and silver industries such as digitization, automation and remote operations; Promotes breakthroughs in mining, processing, waste management, energy and water from an integrated operations perspective.

This publication includes 82 technical papers presented at Rocscience International Conference (RIC) 2021, held online on April 20 and 21, 2021. Rocscience created this event to bring geotechnical academics, researchers and practitioners together to exchange ideas as part of celebrating 25 years of the company's existence. The papers in these proceedings

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were from keynotes, panel discussions and papers, selected after careful review of over 100 technical submissions delivered at RIC 2021. The technical papers were grouped into sessions based on their subject areas. The conference aimed to stimulate discussions that could help the industry work towards overcoming geotechnical engineering limitations today. It also sought to foster creative thinking that will advance the current states of the art and practice. The keynote addresses, panel discussions and technical presentations tried to examine geotechnical problems and situations from fresh perspectives. RIC 2021 hopes that the proceedings will continue to enrich our thinking and contribute to achieving a critical mass of change in our practices and approaches. We look forward to significant improvements in our industry.

This book presents is a collection of papers in the field of strategic mine planning, including orebody modelling, mine planning optimization and the optimization of mining complexes. The work includes papers (a) describing the newest technologies and related research; and (b) applications of a range of related technologies in diverse industrial applications elaborating upon the state of the art in the field.

Advances in Orebody Modelling and Strategic Mine Planning 1 Old and New Dimensions in a Changing World

Developments in Geographic Information Technology have raised the expectations of users. A static map is no longer enough; there is now demand for a dynamic representation. Time is of great importance when operating on real world geographical phenomena, especially when these are dynamic. Researchers in the field of Temporal Geographical Infor

This volume celebrates the invaluable work of the authors in the fields of architectural

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design and theory, urban planning, design and engineering, landscape planning and design, novel constructional materials and functional materials, analysis and technology.

Distribution related problems. Variogram related problems. Block variances. Estimation variance. Kriging. Recoverable reserves. Applied simulation. Classification of ore reserves. Check samples and duplicates.

Developments in Geomathematics, 2: Geostatistical Ore Reserve Estimation focuses on the methodologies, processes, and principles involved in geostatistical ore reserve estimation, including the use of variogram, sampling, theoretical models, and variances and covariances. The publication first takes a look at elementary statistical theory and applications; contribution of distributions to mineral reserves problems; and evaluation of methods used in ore reserve calculations. Concerns cover estimation problems during a mine life, origin and credentials of geostatistics, precision of a sampling campaign and prediction of the effect of further sampling, exercises on grade-tonnage curves, theoretical models of distributions, and computational remarks on variances and covariances. The text then examines variogram and the practice of variogram modeling. Discussions focus on solving problems in one dimension, linear combinations and average values, theoretical models of isotropic variograms, the variogram as a geological features descriptor, and the variogram as the fundamental function in error computations. The manuscript ponders on statistical problems in sample preparation,

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orebody modeling, grade-tonnage curves, ore-waste selection, and planning problems, the practice of kriging, and the effective computation of block variances. The text is a valuable source of data for researchers interested in geostatistical ore reserve estimation.

This book presents a collection of papers on topics in the field of strategic mine planning, including orebody modeling, mine-planning optimization and the optimization of mining complexes. Elaborating on the state of the art in the field, it describes the latest technologies and related research as well as the applications of a range of related technologies in diverse industrial contexts.

The Office of Industrial Technologies (OIT) of the U. S. Department of Energy commissioned the National Research Council (NRC) to undertake a study on required technologies for the Mining Industries of the Future Program to complement information provided to the program by the National Mining Association. Subsequently, the National Institute for Occupational Safety and Health also became a sponsor of this study, and the Statement of Task was expanded to include health and safety. The overall objectives of this study are: (a) to review available information on the U.S. mining industry; (b) to identify critical research and development needs related to the exploration, mining, and processing of coal, minerals, and metals; and (c) to examine the federal contribution to research and development in mining processes.

The studies of Earth's history and of the physical and chemical properties of the

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substances that make up our planet, are of great significance to our understanding both of its past and its future. The geological and other environmental processes on Earth and the composition of the planet are of vital importance in locating and harnessing its resources. This book is primarily written for research scholars, geologists, civil engineers, mining engineers, and environmentalists. Hopefully the text will be used by students, and it will continue to be of value to them throughout their subsequent professional and research careers. This does not mean to infer that the book was written solely or mainly with the student in mind. Indeed from the point of view of the researcher in Earth and Environmental Science it could be argued that this text contains more detail than he will require in his initial studies or research.

Mathematics—Advances in Research and Application: 2012 Edition is a ScholarlyEditions™ eBook that delivers timely, authoritative, and comprehensive information about Mathematics. The editors have built Mathematics—Advances in Research and Application: 2012 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Mathematics in this eBook to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Mathematics—Advances in Research and Application: 2012 Edition has been produced by the world's leading scientists, engineers, analysts, research

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This special volume offers a snapshot of the latest developments in mineral exploration, in particular, geophysical, geochemical, and computational methods. It reflects the cutting-edge applications of geophysics and geochemistry, as well as novel technologies, such as in artificial intelligence and hyperspectral exploration, methods that have profoundly changed how exploration is conducted. This special volume is a representation of these cutting-edge and pioneering methods to consider and conduct exploration, and should serve both as a valuable compendium of the most innovative exploration methodologies available and as a foreshadowing of the form of future exploration. As such, this volume is of significant importance and would be useful to any exploration geologist and company

The gold processing industry is experiencing change. As free-milling and oxide ores become depleted, more complex polymetallic and refractory ores are being processed, coupled with increasing pressure for stricter environmental

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compliance. Recent years have also seen a steady reduction in mineral processing and metallurgy graduates and a gradual loss of older operating experience. A contribution to documenting current and future best practice in gold ore processing seems timely. The focus of this volume is on advances in current gold plant operation, from conception to closure; chapters also cover innovations at the bench and pilot-scale level that would be expected to find commercial application at some stage. Sufficient coverage is also given to the chemistry and engineering aspects. The general principle behind the structure of the volume is that of flowsheeting based on unit operations and applied to a mineralogical classification of gold ore types. From concept to closure, this book covers all unit operations, mineralogies and processes that are relevant to dealing with today's complex orebodies. Practical experience is vital to the successful development, operation and closure of any operation. The 42 chapters have been contributed by a total of 66 authors and co-authors who are experts from countries spanning the globe, and representing exhaustive practical knowledge covering many disciplines relevant to gold processing. * Current best practice as elucidated by a select panel of experts in the field * Innovations at the bench and pilot-scale level that would be expected to find commercial application at some stage *

Mineralogical-based approach to flowsheeting

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This book presents the latest, innovative research findings on P2P, Parallel, Grid, Cloud, and Internet Computing. It gathers the Proceedings of the 12th International Conference on P2P, Parallel, Grid, Cloud and Internet Computing, held on November 8–10, 2017 in Barcelona, Spain. These computing technologies have rapidly established themselves as breakthrough paradigms for solving complex problems by enabling the aggregation and sharing of an increasing variety of distributed computational resources at large scale. Grid Computing originated as a paradigm for high-performance computing, offering an alternative to expensive supercomputers through different forms of large-scale distributed computing, while P2P Computing emerged as a new paradigm after client-server and web-based computing and has shown to be useful in the development of social networking, B2B (Business to Business), B2C (Business to Consumer), B2G (Business to Government), B2E (Business to Employee), and so on. Cloud Computing has been defined as a “computing paradigm where the boundaries of computing are determined by economic rationale rather than technical limits”. Cloud computing has quickly been adopted in a broad range of application domains and provides utility computing at large scale. Lastly, Internet Computing is the basis of any large-scale distributed computing paradigm; it has very rapidly developed into a flourishing field with an enormous impact on

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today's information societies, serving as a universal platform comprising a large variety of computing forms such as Grid, P2P, Cloud and Mobile computing. The aim of the book "Advances on P2P, Parallel, Grid, Cloud and Internet Computing" is to provide the latest findings, methods and development techniques from both theoretical and practical perspectives, and to reveal synergies between these large-scale computing paradigms.

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 lithochemical 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

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Advances in Near-surface Seismology and Ground-penetrating Radar (SEG Geophysical Developments Series No. 15) is a collection of original papers by renowned and respected authors from around the world. Technologies used in the application of near-surface seismology and ground-penetrating radar have seen significant advances in the last several years. Both methods have benefited from new processing tools, increased computer speeds, and an expanded variety of applications. This book, divided into four sections--"Reviews," "Methodology," "Integrative Approaches," and "Case Studies"--captures the most significant cutting-edge issues in active areas of research, unveiling truly pertinent studies that address fundamental applied problems. This collection of manuscripts grew from a core group of papers presented at a post-convention workshop, "Advances in Near-surface Seismology and Ground-penetrating Radar," held during the 2009 SEG Annual Meeting in Houston, Texas. This is the first cooperative publication effort between the near-surface communities of SEG, AGU, and EEGS. It will appeal to a large and diverse audience that includes researchers and practitioners inside and outside the near-surface geophysics community. --Publisher description.

"The 36 chapters are based on the 2006 SME symposium"--Page 4 de la couverture.

This book provides readers with a timely snapshot of human factors research and methods

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fostering a better integration of technologies and humans during the whole manufacturing cycle, giving a special emphasis to the quality and safety of the industrial environment for workers, the efficiency of the manufacturing processes itself, the quality of the final product, and its distribution to and use by the customers. It discusses timely issues relating to the automation of the manufacturing processes, and the challenges imposed by the implementation of industry 4.0, additive manufacturing and 3D printing technologies. Contributions cover a range of industrial sectors, such as the automotive, health and constructions ones, highlighting both organizational and engineering solutions fostering sustainability, globalization, customization, workers' well-being and consumers' satisfaction, among other issues. Based on the AHFE 2021 Conferences on Human Aspects of Advanced Manufacturing, Advanced Production Management and Process Control, and Additive Manufacturing, Modeling Systems and 3D Prototyping, held virtually on 25-29 July, 2021, from USA, this book, which merges ergonomic research and technical know-how in the field of manufacturing and product design, addresses a wide range of engineers, designers and professionals, dealing with the integration of technologies and humans in the factories of the future.

This Open Access handbook published at the IAMG's 50th anniversary, presents a compilation of invited path-breaking research contributions by award-winning geoscientists who have been instrumental in shaping the IAMG. It contains 45 chapters that are categorized broadly into five parts (i) theory, (ii) general applications, (iii) exploration and resource estimation, (iv) reviews, and (v) reminiscences covering related topics like mathematical geosciences, mathematical morphology, geostatistics, fractals and multifractals, spatial statistics, multipoint geostatistics,

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compositional data analysis, informatics, geocomputation, numerical methods, and chaos theory in the geosciences.

The advancement of human civilization has been intimately associated with the exploitation of raw materials. In fact the distinction of the main historical eras is based on the type of raw materials used. Hence, passage from the Paleolithic and Neolithic Age to the Bronze Age is characterized by the introduction of basic metals mainly copper, zinc and tin in human activities; the Iron Age is marked by the use of iron as the predominant metal. The use of metals has increased and culminated with the industrial revolution in the mid-eighteenth century, which marked the onset of the industrial age in the western world. Since then the importance of metals has gradually been surpassed by industrial minerals in the industrialized countries. Industrial minerals are raw materials used by industry for their physical and/or chemical properties. Characterization of industrial minerals is important for their assessment and can be demanding and often complicated. This new volume, co-published by the European Mineralogical Union and the Mineralogical Society of Great Britain & Ireland, is based on papers presented at an EMU-Erasmus IP School which was held in the Technical University of Crete, Chania, Greece. The aim of the School was to describe advances in some of the analytical methods used to characterize industrial minerals and to propose additional methods which are currently not used for this purpose.

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