

ROCK BLASTING and EXPLOSIVES ENGINEERING

Per-Anders Persson

*Professor of Mining Engineering and
Director, Research Center for Energetic Materials
New Mexico Institute of Mining and Technology
Socorro, New Mexico, U.S.A.*

Roger Holmberg

*Vice President and Technical Director
Nitro Nobel AB
Gyttorp, Sweden*

Jaimin Lee

*Senior Research Scientist
Agency for Defense Development
Taegon, Korea*



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Rock Blasting and Explosives Engineering Per-Anders Persson, Roger Holmberg, Jaimin Lee, 2018-05-04 *Rock Blasting and Explosives Engineering* covers the practical engineering aspects of many different kinds of rock blasting. It includes a thorough analysis of the cost of the entire process of tunneling by drilling and blasting in comparison with full face boring. Also covered are the fundamental sciences of rock mass and material strength, the thermal decomposition, burning, shock initiation and detonation behavior of commercial and military explosives and systems for charging explosives into drillholes. Functional descriptions of all current detonators and initiation systems are provided. The book includes chapters on flyrock, toxic fumes, the safety of explosives and even explosives applied in metal working as a fine art. Fundamental in its approach, the text is based on the practical industrial experience of its authors. It is supported by an abundance of tables, diagrams and figures. This combined textbook and handbook provides students, practitioners and researchers in mining, mechanical, building, construction, geological and petroleum engineering with a source from which to gain a thorough understanding of the constructive use of explosives.

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Theory and Technology of Rock Excavation for Civil Engineering Dingxiang Zou, 2016-11-21 This book summarizes the technical advances in recent decades and the various theories on rock excavation raised by scholars from different countries including China and Russia. It not only focuses on rock blasting but also illustrates a number of non-blasting methods such as mechanical excavation in detail. The book consists of 3 parts: Basic Knowledge, Surface Excavation and Underground Excavation. It presents a variety of technical methods and data from diverse sources in the book, making it a valuable theoretical and practical reference resource for engineers, researchers and postgraduates alike.

Forensic Investigation of Explosions, Second Edition Alexander Beveridge, 2011-11-02 Now in its second edition *Forensic Investigation of Explosions* draws on the editor's 30 years of explosives casework experience, including his work on task forces set up to investigate major explosives incidents. Dr Alexander Beveridge provides a broad

multidisciplinary approach assembling the contributions of internationally recognized experts who present the definitive reference work on the subject Topics discussed include The physics and chemistry of explosives and explosions The detection of hidden explosives The effect of explosions on structures and persons Aircraft sabotage investigations Explosion scene investigations Casework management The role of forensic scientists Analysis of explosives and their residues Forensic pathology as it relates to explosives Presentation of expert testimony With nearly 40 percent more material this new edition contains revised chapters and several new topics including A profile of casework management in the UK Forensic Explosives Laboratory one of the world's top labs with a discussion of their management system training procedures and practical approaches to problem solving Properties and analysis of improvised explosives An examination of the Bali bombings and the use of mobile analytical techniques and mobile laboratories The collection analysis and presentation of evidence in vehicle borne improvised explosive device cases as evidenced in attacks on US overseas targets This volume offers valuable information to all members of prevention and post blast teams Each chapter was written by an expert or experts in a specific field and provides well referenced information underlying best practices that can be used in the field laboratory conference room classroom or courtroom

Numerical Modeling of Explosives and Propellants Charles L. Mader, 2007-10-18 Major advances both in modeling methods and in the computing power required to make those methods viable have led to major breakthroughs in our ability to model the performance and vulnerability of explosives and propellants In addition the development of proton radiography during the last decade has provided researchers with a major new experimental tool for studying explosive and shock wave physics Problems that were once considered intractable such as the generation of water cavities jets and stems by explosives and projectiles have now been solved Numerical Modeling of Explosives and Propellants Third Edition provides a complete overview of this rapidly emerging field covering basic reactive fluid dynamics as well as the latest and most complex methods and findings It also describes and evaluates Russian contributions to the experimental explosive physics database which only recently have become available This book comes with downloadable resources that contain FORTRAN and executable computer codes that operate under Microsoft Windows Vista operating system and the OS X operating system for Apple computers Windows Vista and MAC compatible movies and PowerPoint presentations for each chapter Explosive and shock wave databases generated at the Los Alamos National Laboratory and the Russian Federal Nuclear Centers Charles Mader's three pronged approach through text computer programs and animations imparts a thorough understanding of new computational methods and experimental measuring techniques while also providing the tools to put these methods to effective use

Highwall Mining John Loui Porathur, Pijush Pal Roy, Baotang Shen, Shivakumar Karekal, 2017-07-06 This comprehensive technical book on highwall mining covers theory and practice coupled with practical examples and design aspects It contains eight extensive chapters elaborating broad spectrum functionalities of highwall mining and its operational aspects covering world scenario economic potential methods of coal extraction design

methodology including empirical web pillar design numerical modelling for stress analysis safety factor for web pillars panel and barrier design small and large scale numerical modelling multiple seam interaction and design coal web pillar strength equivalent width concept laboratory testing new web pillar strength formula effect of weak bands in coal seam slope stability safety and ground monitoring hazards and regulatory requirements case examples norms and guidelines for practice It also summarizes the results of research carried out by the CSIR Central Institute of Mining and Fuel Research CSIR CIMFR India and the Commonwealth Scientific and Industrial Research Organisation CSIRO Australia on the subject The book will equip readers in understanding the complex multiple seam scenarios for highwall mining and its design for maximum coal recovery from any given site with better economics which will aid the mining companies in extracting locked up coal following the safety norms to avoid hazards and minimise instability issues A large number of case studies is included to illustrate the application of numerical modelling for prior estimation and viability of highwall mining operations under varying geominig conditions The book will be of interest to professionals and academics in the field of mining engineering specifically but will also interest civil geomechanical and geological engineers as well as rock mechanics professionals Energetic Polymers

How Ghee Ang, Sreekumar Pisharath, 2012-03-26 This up to date overview provides the latest information on the performance sensitivity strength and processability aspects of propellants and explosive formulations with the nature of polymer binder plasticizer as the variable factor Apart from applications this monograph explores the principles behind energetic polymers while discussing the synthetic routes and energetic characteristics of individual family of energetic polymers Furthermore a number of case studies illustrate the role of energetic polymers on enhancing the performance of formulations as compared to their inert counterparts The emphasis is on safety throughout with practical guidance on how to safely handle and formulate energetic polymer based formulations With the advent of a new generation of energetic polymers this book is relevant to industry and defense organizations as well as for academic research **Portsmouth Harbor and Piscataqua**

River, New Hampshire and Maine Navigation Improvement Project, 2015 Flyrock in Surface Mining Autar K. Raina, 2023-07-24 This book provides a comprehensive understanding of historical and recent research with a critical review of several aspects of the flyrock phenomenon along with classification of pertinent literature This puts flyrock into proper perspective and develops a comprehensive regime for flyrock prediction and control It also addresses the blast danger zone demarcation based on scientific understanding in comparison to the consequence based approach supported by pertinent case studies Features Discusses exclusive material on flyrock in surface mining Presents comprehensive and critical review of the flyrock phenomenon Reviews prediction and control mechanisms in vogue with scientific and risk based definitions of blast danger zone Provides new insights into the flyrock definitions prediction and prevention along with the research approach to the problem Includes Indian case studies and summarize global data available in the published domain This book is aimed at researchers and graduate students in mining and civil engineering engineering geology and blasting

Forensic Investigation of Explosions Alexander Beveridge, 2011-11-02 Now in its second edition Forensic Investigation of Explosions draws on the editor's 30 years of explosives casework experience including his work on task forces set up to investigate major explosives incidents Dr Alexander Beveridge provides a broad multidisciplinary approach assembling the contributions of internationally recognized experts Principles and Practices of Rock Blasting Vivek Kumar Himanshu, Narayan Kumar Bhagat, Ashish Kumar Vishwakarma, Arvind Kumar Mishra, 2024-11-28 This book enriches the readers with the advances in rock blasting techniques for mining and civil construction rock excavation projects including the need for and importance of rock blasting related theories challenges in rock blasting operations and rock blasting methodology for excavation of coal and overburden benches of opencast coal mines It also discusses methods to estimate charge factors and dimensional parameters for different rock types of iron ore mines blasting methodology for rock strata and the blasting technologies for civil construction projects The book Provides comprehensive review of the prediction methodologies of blasting results Reviews insights into advanced blasting methodologies for rock excavation near sensitive structures Includes case studies of coal mining iron ore mining limestone mining and civil construction projects Explores the detailed theoretical background of rock blasting Discusses methodologies of secondary blasting This book is aimed at graduate students and researchers in mining geotechnical and rock engineering International Society for Rock Mechanics Sam Stuart, 2016-01-21 International Society for Rock Mechanics compiles the list of members of the International Society for Rock Mechanics ISRM from several nations and dependencies countries around the globe The ISRM is a non profit organization dedicated to the study and scientific investigation of Rock Mechanics including related fields such as geology geophysics soil mechanics mining engineering petroleum engineering and civil engineering Each chapter representing a country in this book includes a complete lists of its engineers and geologists that are categorized into three types National Groups the group that represents a country Corresponding Members Supporting Members and Ordinary Members A tally of the total number of members per country is also provided At the end of this book the statutes of ISRM which was approved by the Council of ISRM on September 26 1978 are discussed and expounded in three different languages English French and German These statutes are implemented by by laws approved by the council Rock Engineering for Excavations John Endicott, 2025-02-21 This book provides an introduction to the whole engineering process of designing and constructing deep excavations in rock including caverns tunnels shafts and pits The process is comprehensively covered from initial site planning through design considerations such as the assessment of rock mass properties the closure of contracts and resolution of disputes and lastly onto the maintenance and final decommissioning or repurposing of underground facilities The subject material is derived from the author's extensive practice with reference to successful projects and cases where things went wrong Written accessibly and starting from the basics Rock Engineering for Excavations serves as a comprehensive and practical guide for undergraduate and master's students as well as non specialist

project managers **Proceedings of the 8th International Conference on Fracture, Fatigue and Wear** Magd Abdel Wahab, 2021-01-12 This proceedings gather a selection of peer reviewed papers presented at the 8th International Conference on Fracture Fatigue and Wear FFW 2020 held as a virtual conference on 26 27 August 2020 The contributions prepared by international scientists and engineers cover the latest advances in and innovative applications of fracture mechanics fatigue of materials tribology and wear of materials In addition they discuss industrial applications and cover theoretical and analytical methods numerical simulations and experimental techniques The book is intended for academics including graduate students and researchers as well as industrial practitioners working in the areas of fracture fatigue and wear *Performance of Explosives and New Developments* Bibhu Mohanty, Vinay Kumar Singh, 2012-11-05 There is considerable scope for improving the outcome of any blasting operation through basic understanding and application of the principles of blasting science and technology The main objective of *Performance of Explosives and New Developments* is to sensitize the practitioner to critically examine the various empirical approaches in blasting whi **SCCL JMET Exam PDF-Singareni Collieries Company Ltd Junior Mining Engineer Trainee Exam-Mining Engineering Subject Practice Sets** Chandresh Agrawal, Nandini Books, 2025-02-11 SGN The SCCL JMET Exam Singareni Collieries Company Ltd Junior Mining Engineer Trainee Exam Mining Engineering Subject Practice Sets eBook Covers Objective Questions With Answers **HCL Exam PDF-Hindustan Copper Ltd Junior Manager (Mining) Exam-Mining Engineering Practice Sets With Books** Chandresh Agrawal, Nandini Books, 2025-01-07 SGN The HCL Exam Hindustan Copper Ltd Junior Manager Mining Exam Mining Engineering Practice Sets With Books Covers Objective Questions With Answers *Engineering in Rocks for Slopes, Foundations and Tunnels* T. Ramamurthy, 2010-08 With the ever increasing developmental activities as diverse as the construction of dams roads tunnels underground powerhouses and storage facilities petroleum exploration and nuclear repositories a more comprehensive and updated understanding of rock mass is essential for civil engineers engineering geologists geophysicists and petroleum and mining engineers Though some contents of this vast subject are included in undergraduate curriculum there are full fledged courses on Rock Mechanics Rock Engineering in postgraduate programmes in civil engineering and mining engineering Much of the material presented in this book is also taught to geology and geophysics students In addition the book is suitable for short courses conducted for teachers practising engineers and engineering geologists This book with contributions from a number of authors with expertise and vast experience in various areas of rock engineering gives an in depth analysis of the multidimensional aspects of the subject The text covers a wide range of topics related to engineering behaviour of rocks and rock masses their classifications interpretation of geological mapping of joints through stereographic projection in situ stress measurements laboratory and field tests stability of rock slopes foundations of structures including dams and support systems for underground excavations The Second Edition has been enriched with new topics such as minimum overburden on pressure tunnels pressure around

vertical cylindrical shaft thickness of steel lining and penetration rate from joint factor What distinguishes the text is the application of numerical methods to solve various problems by discrete element and equivalent material concepts interpretations of geomechanics modelling test data excavation methods ground improving methods and use of roadheaders and TBMs The book provides an excellent understanding of how to solve problems in rock engineering and should immensely benefit students teachers professionals and designers alike

SME Mining Engineering Handbook, Third Edition Peter Darling, Society for Mining, Metallurgy, and Exploration (U.S.), 2011 This third edition of the SME Mining Engineering Handbook reaffirms its international reputation as the handbook of choice for today's practicing mining engineer It distills the body of knowledge that characterizes mining engineering as a disciplinary field and has subsequently helped to inspire and inform generations of mining professionals Virtually all of the information is original content representing the latest information from more than 250 internationally recognized mining industry experts Within the handbook's 115 thought provoking chapters are current topics relevant to today's mining professional Analyzing how the mining and minerals industry will develop over the medium and long term why such changes are inevitable what this will mean in terms of challenges and how they could be managed Explaining the mechanics associated with the multifaceted world of mine and mineral economics from the decisions associated with how best to finance a single piece of high value equipment to the long term cash flow issues associated with mine planning at a mature operation Describing the recent and ongoing technical initiatives and engineering developments in relation to robotics automation acid rock drainage block caving optimization or process dewatering methods Examining in detail the methods and equipment available to achieve efficient predictable and safe rock breaking whether employing a tunnel boring machine for development work mineral extraction using a mobile miner or cast blasting at a surface coal operation Identifying the salient points that dictate which is the safest most efficient and most versatile extraction method to employ as well as describing in detail how each alternative is engineered Discussing the impacts that social and environmental issues have on mining from the pre exploration phase to end of mine issues and beyond and how to manage these two increasingly important factors to the benefit of both the mining companies and other stakeholders

The Chemistry Companion Vandana Jangde, Reenu Mishra, Danuj Kumar Markam, Anshu Priti Kujur, Gurudev Choudhary, 2025-06-13 The Chemistry Companion is a thoughtfully designed resource tailored to meet the academic needs of engineering students This book provides a comprehensive collection of questions and answers based on the chemistry syllabus commonly followed in engineering courses across various institutions Structured to support both learning and revision the book covers essential topics in physical organic and inorganic chemistry offering clear explanations and concise answers to help students strengthen their conceptual understanding

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