1. Record Nr. UNINA9910401933603321

Titolo	Modelling Rock Fracturing Processes : Theories, Methods, and Applications / / edited by Baotang Shen, Ove Stephansson, Mikael Rinne
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2020
ISBN	3-030-35525-X
Edizione	[2nd ed. 2020.]
Descrizione fisica	1 online resource (579 pages)
Disciplina	624.15132015118
Soggetti	Geotechnical engineering Applied mathematics Engineering mathematics Natural resources Geotechnical Engineering & Applied Earth Sciences Mathematical and Computational Engineering Natural Resources
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Chapter 1. Introduction (Baotang Shen, Ove Stephansson, Mikael Rinne) -- Part I: Theoretical background -- Chapter 2. Introduction to the Theories of Rock Fracturing (Mikael Rinne, Ove Stephansson, Baotang Shen, Heinz Konietzky) -- Chapter 3. Laboratory studies of 2D and 3D rock fracture propagation (Baotang Shen, Xizhen Sun, Baoliang Zhang) -- Chapter 4. Laboratory investigation on hydraulic fracturing of granite core specimens (Li Zhuang, Sunggyu Jung, Melvin Diaz, Kwang Yeom Kim) -- Chapter 5. Impact of Injection style on the evolution of fluid-induced seismicity in hard rock at spö Hard Rock Laboratory (Arno Zang, Ove Stephansson and Günter Zimmermann) -- Part II: Numerical methods -- Chapter 6. Modelling coupled rock fracture propagation with FRACOD (Baotang Shen, Ove Stephansson, Mikael Rinne) -- Chapter 7. FRACOD3D: A Three-dimensional Crack Growth Simulator Code (Jingyu Shi, Baotang Shen) -- Chapter 8. Coupled fracture modelling with RFPA (Gen Li, Chun'an Tang, Zhengzhao Liang,

Lianchong Li) -- Chapter 9. TOUGH-based hydraulic fracturing models (Jonny Rutqvist) -- Chapter 10. Coupled fracture modelling with distinct element methods (Jeoung Seok Yoon, Jim Hazzard) -- Part III: Case studies -- Chapter 11. Modelling of Tunnel Failure and Fault Re-activation in CO2 Geosequestration (Baotang Shen, Nick Barton, Jingyu Shi) -- Chapter 12. FRACOD Applications to Underground LNG storage (Eui-Seob Park, Yong-Bok Jung, Taek Kon Kim, Baotang Shen) -- Chapter 13. Applications for Deep Geothermal Engineering (Linmao Xie, Bing Bai, Baotang Shen, Günter Zimmermann, Ki-Bok Min) -- Chapter 14. FRACOD applications to nuclear waste disposal (Mikael Rinne) -- Chapter 15. Mine Stability and water inrush in coal mine (Yunliang Tan, Shichuan Zhang, Baotang Shen, Weiyao Guo, Xuesheng Liu) -- Chapter 16. Modelling Hydraulic Fracturing in Coals (Weiguo Liang, Haojie Lian, Jianfeng Yang) -- Chapter 17. Applications of Rock Failure Process Analysis (RFPA) to Rock Engineering (Chun'an Tang, Shibin Tang) -- Chapter 18. Hydro-mechanical coupled PFC2D modelling of fluid injection induced seismicity and fault reactivation (Jeoung Seok Yoon, Arno Zang, Hannes Hofmann, Ove Stephansson) -- Chapter 19. Lifetime prediction of rocks (Konietzky, H. Li, X. Chen, W.) -- Chapter 20. Numerical Simulation of Hydraulically Driven Fractures (Branko Damjanac, Christine Detournay and Peter Cundall).

Sommario/riassunto

This book is the second edition of the well-known textbook Modelling Rock Fracturing Processes. The new and extended edition provides the theoretical background of rock fracture mechanics used for modelling of 2-D and 3-D geomechanics problems and processes. Fundamentals of rock fracture mechanics integrated with experimental studies of rock fracturing processes are highlighted. The computer programs FRACOD 2D and 3D are used to analyse fracture initiation and propagation for the three fracture modes: Mode I, II and III. Coupled fracture modelling with other continuous and distinct element codes including FLAC, PFC, RFPA, TOUGH are also described. A series of applications of fracture modelling with importance for modern society is presented and discussed by distinguished rock fracture modelling experts.