

1. Record Nr.	UNINA9911019594503321
Titolo	Drilling in extreme environments : penetration and sampling on Earth and other planets / / edited by Yoseph Bar-Cohen & Kris Zacny
Pubbl/distr/stampa	Weinheim, : Wiley-VCH, 2009
ISBN	9786612279133 9781282279131 1282279130 9783527626625 352762662X 9783527626632 3527626638
Descrizione fisica	1 online resource (825 p.)
Altri autori (Persone)	Bar-CohenYoseph ZacnyKris
Disciplina	622.1 622.3381
Soggetti	Boring Boring - Technological innovations Oil well drilling Oil well drilling - Technological innovations Astrogeology Space robotics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Drilling in Extreme Environments: Penetration and Sampling on Earth and other Planets; Foreword; Contents; Preface; List of Contributors; Acknowledgments; Color Plates; 1 Drills as Tools for Media Penetration and Sampling; 1.1 Introduction and Historical Perspective; 1.2 Methods of Drilling and Penetration of Objects; 1.2.1 Mechanical Techniques; 1.2.2 Thermal Techniques; 1.2.3 Chemical Techniques; 1.3 Types of Mechanical Drills; 1.3.1 Rotary Drill; 1.3.2 Hammer Drill; 1.3.3 Rotary-Hammer Drill; 1.4 Bits - the End-Effect of Drills; 1.4.1 Twist Drill Bits; 1.4.2 Gun Drill

1.4.3 Centering and Spotting Drill Bits 1.4.4 Material Makeup of Bits; 1.5 Application of Drilling Techniques; 1.5.1 Geological Studies and Search for Resources; 1.5.2 Mining and Tunneling; 1.5.3 Petroleum and Gas Drilling and Exploration; 1.5.4 Ocean and Seafloor Drilling; 1.5.5 Planetary Drilling and Sampling; 1.5.6 Ice Drilling; 1.5.7 Dental Drills; 1.6 Conclusion; References; 2 Principles of Drilling and Excavation; 2.1 Introduction; 2.2 Physical Properties of Rocks; 2.2.1 Terrestrial Rocks; 2.2.2 Extraterrestrial Rocks; 2.2.3 Influence Factors for Rock Mechanical Properties  
2.3 Stresses and Energy in Drilling 2.3.1 Stress in Sedimentary Basins; 2.3.2 Stresses Around a Borehole; 2.4 Theories of Rock Breakage; 2.4.1 Percussion Drilling; 2.4.2 Rotary Drilling; 2.4.3 Percussion-Rotary; 2.4.4 Other Drilling Methods; 2.4.5 Drilling Efficiency; 2.5 Conclusion; 2.5.1 Underground Rocks and Stresses; 2.5.2 Drilling Theories; 2.5.3 Effect of Environment on Drilling; References; 3 Ground Drilling and Excavation; 3.1 Background; 3.1.1 Three Requirements for Any Drilling System; 3.1.2 Types of Earth Boreholes; 3.2 Drilling Rigs; 3.2.1 Percussion Drilling Rigs  
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4.2.5 Hand Augers

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#### Sommario/riassunto

Uniquely comprehensive and up to date, this book covers terrestrial as well as extraterrestrial drilling and excavation, combining the technology of drilling with the state of the art in robotics. The authors come from industry and top ranking public and corporate research institutions and provide here real-life examples, problems, solutions and case studies, backed by color photographs throughout. The result is a must-have for oil companies and all scientists involved in planetary research with robotic probes. With a foreword by Harrison "Jack" Schmitt -- the first geologist to drill

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