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Chapter 3 Permeability Structure of a Strike-Slip Fault 3.1. Introduction; 3.2. Hydraulic Tests; 3.3. Drawdown Analysis; 3.3. Conclusions; Acknowledgments; Appendix; References; Chapter 4 Feasibility of Long-Term Passive Monitoring of Deep Hydrogeology with Flowing Fluid Electric Conductivity Logging Method; 4.1. Introduction; 4.2. Motivation and Problem Definition; 4.3. Results and Discussion; 4.4. Concluding Remarks; Acknowledgments; References; PART II Collective Behavior and Emergent Properties of Complex Fractured Rock Systems; Chapter 5 Particle Swarms in Fractures; 5.1. Introduction 5.2. Experimental Methods 5.3. Analysis Techniques; 5.4. Results and Discussion; 5.5. Conclusions; Acknowledgments; References; Chapter 6 The Effect of Chemical Osmosis on Oil and Gas Production from Fractured Shale Formations; 6.1. Introduction; 6.2. Clay as Semipermeable Membrane; 6.3. Oil Recovery Experiments in Bakken; 6.4. Mathematical Model; 6.5. The Effect of Osmosis Pressure on Oil and Gas Production; 6.6. Conclusions; Acknowledgments; Nomenclature (A Dash Denotes No Unit of Measure); References Chapter 7 An Experimental Investigation of Stress-Dependent Permeability and Permeability Hysteresis Behavior in Rock Fractures 7.1. Introduction; 7.2. Materials and Equipment; 7.3. Experimental Results; 7.4. Discussion; 7.5. Conclusion; Acknowledgments; References; Chapter 8 Permeability of Partially Cemented Fractures; 8.1. Introduction; 8.2. Methods; 8.3. Results; 8.4. Discussion; 8.5. Conclusion; Acknowledgments; References; Chapter 9 An Emergent Conductivity Relationship for Water Flow Based on Minimized Energy Dissipation: From Landscapes to Unsaturated Soils; 9.1. Introduction 9.2. Steady-State Optimal Landscape

Sommario/riassunto

Despite of many years of studies, predicting fluid flow, heat, and chemical transport in fractured-porous media remains a challenge for scientists and engineers worldwide. This monograph is the third in a series on the dynamics of fluids and transport in fractured rock published by the American Geophysical Union (Geophysical Monograph Series, Vol. 162, 2005; and Geophysical Monograph, No. 122, 2000). This monograph is dedicated to the late Dr. Paul Witherspoon for his seminal influence on the development of ideas and methodologies and the birth of contemporary fractured rock hydrogeology, in