CRUSTAL PERMEABILITY

Permeability is the primary control on fluid flow in the Earth's crust. Characterization of permeability is a central concern to many Earth scientists; hydrogeologists and petroleum engineers recognize it as their most essential parameter. More broadly, permeability is key to a surprisingly wide range of geological processes, because it also controls the advection of heat and solutes and generation of anomalous pore pressures. The practical importance of permeability – and the potential for large, dynamic changes in permeability – is highlighted by ongoing issues associated with hydraulic fracturing for hydrocarbon production ("fracking"), enhanced geothermal systems, and geologic carbon sequestration.

Although there are many thousands of research papers on crustal permeability, this is the first book-length treatment of the subject. The objective of this book is to synthesize current understanding of static and dynamic permeability through representative contributions from multiple disciplines. The authors bridge the historical dichotomy between the hydrogeologic perspective of permeability as a static material property that exerts control on fluid flow, and the perspective of economic geologists, crustal petrologists, and geophysicists who have long recognized permeability as a dynamic parameter that changes in response to tectonism, fluid production, and geochemical reactions. The book focuses on the quantification of permeability, encompassing both direct measurement of permeability in the uppermost crust and inferential permeability estimates, mainly for the deeper crust. It provides a must-have synthesis for hydrogeologists and petroleum engineers.

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with websites

A companion website with additional resources is available at
www.wiley.com/go/gleeson/crustalpermeability

The other website with persistent data portal for sharing crustal-permeability data is available at
http://crustalpermeability.weebly.com

www.wiley.com

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AGU American Geophysical Union

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