



Convection in Channels and Porous Media

By Rocha, Luiz

Condition: New. Publisher/Verlag: VDM Verlag Dr. Müller | Analysis, Optimization, and Constructal Design | Convection in porous media has a large field of application. Firstly, this book presents an analytical and numerical study of the generation and flow of methane gas through a layer of porous medium impregnated with solid clathrate hydrates. Later, design with constructal theory is addressed. We start studying the fundamental problem of maximizing the thermal contact between an entire heat-generating volume and a pulsating stream of coolant that bathes the volume. A series of examples in which the global performance of flow systems is optimized subject to global constraints is also presented. The text continues describing a hierarchical strategy to developing the optimal internal structure of a round heat-generating body cooled at its center with the help of optimally distributed inserts of high-conductivity material. Finally, it considers the fundamental problem of squeezing into a fixed volume the highest heat transfer rate that can be made to occur between two streams at different initial temperatures. | Format: Paperback | Language/Sprache: english | 292 gr | 216 pp.

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