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Micro- and Nanoscale Fluid Mechanics

By Kirby, Brian

Book Condition: New. Publisher/Verlag: Cambridge University Press | Transport in Microfluidic Devices | This text focuses on the physics of fluid transport in micro- and nanofabricated systems. | This text focuses on the physics of fluid transport in micro- and nanofabricated liquid-phase systems, with consideration of gas bubbles, solid particles, and macromolecules. This text brings together several areas that are often taught separately - namely fluid mechanics, electrodynamics, and interfacial chemistry and electrochemistry - with a focused goal of preparing the modern microfluidics researcher to analyse and model continuum fluid mechanical systems encountered when working with micro- and nanofabricated devices. This text is not a summary of current research in the field, and it omits any discussion of microfabrication techniques or any attempt to summarise the technological state of the art. This text serves as a useful reference for practising researchers but is designed primarily for classroom instruction. Worked sample problems are inserted throughout to assist the student, and exercises are included at the end of each chapter to facilitate use in classes. | 1. Kinematics, conservation equations, and boundary conditions for incompressible flow; 2. Unidirectional flow; 3. Hydraulic circuit analysis; 4. Passive scalar transport: dispersion, patterning, and mixing; 5....



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