



# Electrokinetic Particle Transport in Micro-/Nanofluidics: Direct Numerical Simulation Analysis (Surfactant Science)

By Shizhi Qian, Ye Ai

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## Electrokinetic Particle Transport in Micro-/Nanofluidics: Direct Numerical Simulation Analysis (Surfactant Science) By Shizhi Qian, Ye Ai

Numerous applications of micro-/nanofluidics are related to particle transport in micro-/nanoscale channels, and electrokinetics has proved to be one of the most promising tools to manipulate particles in micro/nanofluidics. Therefore, a comprehensive understanding of electrokinetic particle transport in micro-/nanoscale channels is crucial to the development of micro-/nanofluidic devices.

**Electrokinetic Particle Transport in Micro-/Nanofluidics: Direct Numerical Simulation Analysis** provides a fundamental understanding of electrokinetic particle transport in micro-/nanofluidics involving electrophoresis, dielectrophoresis, electroosmosis, and induced-charge electroosmosis. The book emphasizes the direct numerical simulation of electrokinetic particle transport phenomena, plus several supportive experimental studies. Using the commercial finite element package *COMSOL Multiphysics*<sup>®</sup>, it guides researchers on how to predict the particle transport subjected to electric fields in micro-/nanoscale channels.

Researchers in the micro-/nanofluidics community, who may have limited experience in writing their own codes for numerical simulations, can extend the numerical models and codes presented in this book to their own research and guide the development of real micro-/nanofluidics devices.

*Corresponding COMSOL<sup>®</sup> script files are provided with the book and can be downloaded from the author's website.*

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- Sales Rank: #3760871 in Books
- Brand: Brand: CRC Press
- Published on: 2012-06-19
- Original language: English
- Number of items: 1
- Dimensions: 9.10" h x .90" w x 5.90" l, 1.50 pounds
- Binding: Hardcover
- 398 pages

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