



Nanoscale Flow: Advances, Modeling, and Applications

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Understanding the physical properties and dynamical behavior of nanochannel flows has been of great interest in recent years and is important for the theoretical study of fluid dynamics and engineering applications in physics, chemistry, medicine, and electronics. The flows inside nanoscale pores are also important due to their highly beneficial drag and heat transfer properties.

Nanoscale Flow: Advances, Modeling, and Applications presents the latest research in the multidisciplinary area of nanoscale flow. Featuring contributions from top inventors in industry, academia, and government, this comprehensive book:

- Highlights the current status of research on nucleate pool boiling heat transfer, flow boiling heat transfer, and critical heat flux (CHF) phenomena of nanofluids
- Describes two novel fractal models for pool boiling heat transfer of nanofluids, including subcooled pool boiling and nucleate pool boiling
- Explores thermal conductivity enhancement in nanofluids measured with a hot-wire calorimeter
- Discusses two-phase laminar mixed convection Al_2O_3 -water nanofluid in an elliptic duct
- Explains the principles of molecular and omics imaging and spectroscopy techniques for cancer detection
- Analyzes fluid dynamics modeling of the tumor vasculature and drug transport
- Studies the properties of nanoscale particles and their impact on diagnosis, therapeutics, and theranostics
- Provides a brief background and review of medical nanoscale flow applications
- Contains useful appendices of physical constants, equations, common symbols, mathematical formulas, the periodic table, and more

A valuable reference for engineers, scientists, and biologists, **Nanoscale Flow: Advances, Modeling, and Applications** is also designed for researchers, universities, industrial institutions, and government, giving it broad appeal.

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Editorial Review

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Sarhan M. Musa, Ph.D, is associate professor in the Department of Engineering Technology, Roy G. Perry College of Engineering, at Prairie View A&M University, Texas. He has been director of the Prairie View Networking Academy, Texas since 2004. Dr. Musa has published more than a hundred papers in peer-reviewed journals and conferences, is a frequent invited speaker on computational nanotechnology, has consulted for multiple organizations nationally and internationally, and has written and edited several books, including *Computational Nanotechnology Modeling and Applications with MATLAB®*. He is a senior member of the IEEE and an LTD Sprint and Boeing Welliver fellow.

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