



Encyclopedia of Two-Phase Heat Transfer and Flow III

Macro and Micro Flow Boiling and Numerical Modeling

Fundamentals

(A 4-Volume Set)

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Set 3 of this encyclopedia is a new addition to the previous Sets 1 and 2. It contains 26 invited chapters from international specialists on the topics of numerical modeling of two-phase flows and evaporation, fundamentals of evaporation and condensation in microchannels and macrochannels, development and testing of micro two-phase cooling systems for electronics, and various special topics (surface wetting effects, microfin tubes, two-phase flow vibration across tube bundles). The chapters are written both by renowned university researchers and by well-known engineers from leading corporate research laboratories. Numerous "must read" chapters cover the fundamentals of research and engineering practice on boiling, condensation and two-phase flows, two-phase heat transfer equipment, electronics cooling systems, case studies and so forth. Set 3 constitutes a "must have" reference together with Sets 1 and 2 for thermal engineering researchers and practitioners.

Contents: Volume 1: Numerical Modeling Methodologies: Fundamentals of Multiphase Flow Modeling Based on Continuum Dynamics (*A Tomiyama, K Hayashi*); Interface Tracking Methods (*K Hayashi, A Tomiyama*); Front Tracking Methods (*Andrea Ferrari*); Arbitrary Lagrangian-Eulerian Method for Two-Phase Flows: New Methods (*Peixoto Oliveira, G Anjos, N Mangiavacchi*); Arbitrary Lagrangian-Eulerian Method for Two-Phase Flows: Applications (*G Anjos, G Peixoto Oliveira, N Mangiavacchi*); Arbitrary Lagrangian Euler Method for Two-Phase Flows: 2D and Axisymmetric Formulation (*E Gros, G Rabello Anjos, JR Thome*); An Interface Tracking Method for Pool Boiling from Isolated Bubble Regime to Critical Heat Flux (*Y Sato, B Smith, B Niceno*); Direct Numerical Simulations for Two-Phase Flows with Phase Change (*Mario F Trujillo, Lakshman Anumolu and Douglas T Ryddner*); **Volume 2: Macro and Microscale Flow Boiling and Condensation:** Two-Phase Flow and Heat Transfer in Multi-Microchannel Evaporators: Improved Measurements, Data Reduction and Models (*Houxue Huang, John R Thome*); Flow Boiling of Refrigerant-Oil Mixtures Inside Smooth and Microfin Tubes (*Haitao Hu*); Convective Condensation of Refrigerant-Oil Mixtures Inside Smooth and Microfin Tubes (*Haitao Hu*); Flow Boiling of Refrigerant-Oil Mixture Inside Metal-Foam Filled Tubes (*Haitao Hu*); Nucleate Pool Boiling of Nanorefrigerant and Oil Mixtures (*Haitao Hu*); A Review of Condensation in Inclined Tubes (*J P Meyer, J D Dirker, S M A Noori Rahim Abadi*); **Volume 3: Micro-Two-Phase Cooling Systems:** A Figure of Merit for Mobile Device Thermal Management (*Victor*

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