

**JOURNAL
OF
HEAT
TRANSFER**

Editor, **YOGESH JALURIA** (2010)
Assistant to the Editor, **S. PATEL**

Associate Editors

Yutaka Asako, Tokyo Metropolitan University, Japan (2010)
Gautam Biswas, Indian Inst. of Tech., Kanpur (2009)
Cho Lik Chan, The University of Arizona (2010)
Louis C. Chow, University of Central Florida (2010)
Minking Chyu, Univ. of Pittsburgh (2009)
Frank J. Cunha, Pratt & Whitney (2011)
Ali Ebadian, Florida International Univ. (2011)
Ofodike A. Ezekoye, Univ. of Texas-Austin (2011)
Satish G. Kandlikar, Rochester Inst. of Tech. (2010)
Sung Jin Kim, KAIST, Korea (2010)
Sai C. Lau, Texas A&M Univ. (2009)
Ben Q. Li, Univ. of Michigan, Dearborn (2009)
Raj M. Manglik, Univ. of Cincinnati (2009)
Jayanthi Y. Murthy, Purdue University (2010)
Pamela M. Norris, Univ. of Virginia (2011)
Patrick E. Phelan, Arizona State Univ. (2011)
Roger R. Schmidt, IBM Corporation (2010)
S. A. Sherif, University of Florida (2010)
Heping Tan, Harbin Institute of Technology (2011)
Peter Vadasz, Northern Arizona University (2010)
Jamal Yagoobi, Illinois Inst. of Tech. (2009)
Walter W. Yuen, Univ. of California—Santa Barbara (2011)

Past Editors

V. DHIR
J. R. HOWELL
R. VISKANTA
G. M. FAETH
K. T. YANG
E. M. SPARROW

HEAT TRANSFER DIVISION

Chair, **C. OH**
Vice Chair, **V. CAREY**
Past Chair, **T. TONG**

PUBLICATIONS COMMITTEE

Chair, **BAHRAM RAVANI**

OFFICERS OF THE ASME

President,
THOMAS M. BARLOW
Executive Director,
THOMAS G. LOUGHLIN
Treasurer,
THOMAS D. PESTORIS

PUBLISHING STAFF

Managing Director, Publishing
PHILIP DI VIETRO
Manager, Journals
COLIN McATEER
Production Coordinator
JUDITH SIERANT

Transactions of the ASME, Journal of Heat Transfer (ISSN 0022-1481) is published monthly by The American Society of Mechanical Engineers, Three Park Avenue, New York, NY 10016. Periodicals postage paid at New York, NY and additional mailing offices.
POSTMASTER: Send address changes to *Transactions of the ASME, Journal of Heat Transfer*, c/o THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS, 22 Law Drive, Box 2300, Fairfield, NJ 07007-2300.
CHANGES OF ADDRESS must be received at Society headquarters seven weeks before they are to be effective. Please send old label and new address.

STATEMENT from By-Laws. The Society shall not be responsible for statements or opinions advanced in papers or ... printed in its publications (B7.1, Para. 3).

COPYRIGHT © 2009 by The American Society of Mechanical Engineers. For authorization to photocopy material for internal or personal use under those circumstances not falling within the fair use provisions of the Copyright Act, contact the Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, MA 01923, tel: 978-750-8400, www.copyright.com. Request for special permission or bulk copying should be addressed to Reprints/Permission Department, Canadian Goods & Services Tax Registration #126148048

Journal of Heat Transfer

Published Monthly by ASME

VOLUME 131 • NUMBER 6 • JUNE 2009

RESEARCH PAPERS

Conduction

- 061301 Solid-State Thermal Rectification With Existing Bulk Materials
C. Dames

Evaporation, Boiling, and Condensation

- 061501 Microscale Temperature Measurements Near the Triple Line of an Evaporating Thin Liquid Film
Hemanth K. Dhavaleswarapu, Suresh V. Garimella, and Jayathi Y. Murthy

Forced Convection

- 061701 Influence of Film-Hole Shape and Angle on Showerhead Film Cooling Using PSP Technique
Zhihong Gao and Je-Chin Han
- 061702 Heat Transfer to Supercritical Water in a Horizontal Pipe: Modeling, New Empirical Correlation, and Comparison Against Experimental Data
Majid Bazargan and Daniel Fraser
- 061703 Flow and Heat Transfer Over a Stretched Microsurface
Suhil Kiwan and M. A. Al-Nimr
- 061704 Large-Eddy Simulation of Turbulence-Radiation Interactions in a Turbulent Planar Channel Flow
Ankur Gupta, Michael F. Modest, and Daniel C. Haworth

Heat Exchangers

- 061801 The Air-Side Thermal-Hydraulic Performance of Flat-Tube Heat Exchangers With Louvered, Wavy, and Plain Fins Under Dry and Wet Conditions
Young-Gil Park and Anthony M. Jacobi
- 061802 Experimental Study and Genetic-Algorithm-Based Correlation on Pressure Drop and Heat Transfer Performances of a Cross-Corrugated Primary Surface Heat Exchanger
Qiu-Wang Wang, Dong-Jie Zhang, and Gong-Nan Xie

Jets, Wakes, and Impingement Cooling

- 062201 Film-Cooling Enhancement of the Mist Vertical Wall Jet on the Cylindrical Channel Surface With Heat Transfer
V. I. Terekhov and M. A. Pakhomov

Melting and Solidification

- 062301 Modeling Frost Growth for Subcooled Tube-Array Configurations
V. Yadav, C. G. Moon, and K. Kant

Natural and Mixed Convection

- 062501 Non-Newtonian Natural Convection Along a Vertical Flat Plate With Uniform Surface Temperature
S. Ghosh Moulic and L. S. Yao
- 062502 The Impact of Normal Magnetic Fields on Instability of Thermocapillary Convection in a Two-Layer Fluid System
Hulin Huang and Xiaoming Zhou
- 062503 Experimental Investigation of Radiation Effects on Natural Convection in Horizontal Channels Heated From Above
Oronzio Manca and Sergio Nardini

(Contents continued on inside back cover)

This journal is printed on acid-free paper, which exceeds the ANSI Z39.48-1992 specification for permanence of paper and library materials. ©™
♻️ 85% recycled content, including 10% post-consumer fibers.