



Volume 69, February 2014

ISSN 0017-9310

International Journal of HEAT and MASS TRANSFER

Editor-in-Chief

W. J. MINKOWYCZ

Editors

A. R. BALAKRISHNAN, P. CHENG, R. GREIF, C. P. GRIGOROPOULOS,
B. WEIGAND, A. I. LEONTIEV, J. W. ROSE, J. TAINÉ, H. YOSHIDA

Available online at www.sciencedirect.com

ScienceDirect

INTERNATIONAL JOURNAL OF HEAT AND MASS TRANSFER

ABSTRACTED/INDEXED IN: *Applied Mechanics Reviews, Applied Science & Technology Abstracts, Applied Science and Technology Index, Cambridge Scientific Abstracts, Chemical Abstracts, Chemical Engineering Abstracts, Current Contents/Engineering, Computing & Technology, Current Contents/SciSearch Database, Current Contents/Social & Behavioral Sciences, Current Technology Index, Engineering Index, INSPEC, MSCI, Mechanics, PASCAL/CNRS, Petroleum Abstracts, Research Alert, TCEA, Zentralblatt MATH*. Also covered in the abstract and citation database Scopus®. Full text available on ScienceDirect®.

Volume 69

February 2014

CONTENTS

Review

J. YUAN and B. SUNDÉN

- 358 On mechanisms and models of multi-component gas diffusion in porous structures of fuel cell electrodes

Original Research

E. B. SOBOLEVA and S. A. NIKITIN

- 6 Benchmark data on laminar Rayleigh–Bénard convection in a stratified supercritical fluid: A case of two-dimensional flow in a square cell

Y. YANG, G. L. MORINI and J. J. BRANDNER

- 17 Experimental analysis of the influence of wall axial conduction on gas-to-gas micro heat exchanger effectiveness

H. GAO, B. YU, Y. DUAN and Q. FANG

- 26 Fractal analysis of dimensionless capillary pressure function

P. DUPUIS, Y. CORMIER, A. FARJAM, B. JODOIN and A. CORBEIL

- 34 Performance evaluation of near-net pyramidal shaped fin arrays manufactured by cold spray

O. SAMIMI ABIAINEH, C. P. CHEN and S. MAHALINGAM

- 44 Numerical modeling of multi-component fuel spray evaporation process

F. SELIMEFENDIGİL and H. F. ÖZTOP

- 54 Pulsating nanofluids jet impingement cooling of a heated horizontal surface

H. Tuo and P. HRNJAK

- 66 Effect of venting the periodic reverse vapor flow on the performance of a microchannel evaporator in air-conditioning systems

S. SARANGI, K. K. BODLA, S. V. GARIMELLA and J. Y. MURTHY

- 92 Manifold microchannel heat sink design using optimization under uncertainty

Y. ZHANG and S. LI

- 106 Mass transfer during radial oscillations of gas bubbles in viscoelastic mediums under acoustic excitation

G. GUTIÉRREZ, J. M. BENITO, J. COCA and C. PAZOS

- 117 Evaporation of aqueous dispersed systems and concentrated emulsions formulated with non-ionic surfactants

G. MONTEYNE, S. JAVED and G. VANDERSTEEN

- 129 Heat transfer in a borehole heat exchanger: Frequency domain modeling

S. ASGHAR, M. JALIL, M. HUSSAN and M. TURKYILMAZOGLU

- 140 Lie group analysis of flow and heat transfer over a stretching rotating disk

S. PAUL and S. SINGH

- 151 A density variant drift flux model for density wave oscillations

H. KIM, E. KIM and M. H. KIM

- 164 Effect of nanoparticle deposit layer properties on pool boiling critical heat flux of water from a thin wire

S. W. CHANG and Y.-W. HU

- 173 Endwall thermal performances of radially rotating rectangular channel with pin-fins on skewed rib lands

T. P. LYUBIMOVA and R. V. SKURIDYN

- 191 The influence of vibrations on the stability of thermocapillary flow in liquid zone

C. CHEN, J.-T. TENG, C.-H. CHENG, S. JIN, S. HUANG, C. LIU, M.-T. LEE, H.-H. PAN and R. GREIF

- 203 A study on fluid flow and heat transfer in rectangular microchannels with various longitudinal vortex generators

(Continued on back matter pages III-IV)



0017-9310(201402)69:C;1-9

(Continued from outside back cover)

S. HOSODA, S. ABE, S. HOSOKAWA and A. TOMIYAMA	215	Mass transfer from a bubble in a vertical pipe
Z. LU and C. K. LAW	223	An iterative solution of the Blasius flow with surface gasification
J. GYLYS, T. ZDANKUS and M. GYLYS	230	Experimental investigation of heat transfer from inclined flat surface to aqueous foam
L. CABEZAS-GÓMEZ, J. M. SAIZ-JABARDO, H. A. NAVARRO and P. E. L. BARBIERI	237	New thermal effectiveness data and formulae for some cross-flow arrangements of practical interest
H. KIM, S. W. BAEK and D. CHANG	247	A single <i>n</i> -heptane droplet behavior in rapid compression machine
S. HADI, M. NISHITANI, A. T. WIJAYANTA, T. FUKUNAGA, K. KURATA and H. TAKAMATSU	256	Contact measurement of thermal conductivity and thermal diffusivity of solid materials: Experimental validation of feasibility with a prototype sensor
D. LELEA and I. LAZA	264	The water based Al ₂ O ₃ nanofluid flow and heat transfer in tangential microtube heat sink with multiple inlets
C. J. HO, W.-C. CHEN and W.-M. YAN	276	Experiment on thermal performance of water-based suspensions of Al ₂ O ₃ nanoparticles and MEPCM particles in a minichannel heat sink
S. PAL, M. R. HAJJ, W. P. WONG and I. K. PURI	285	Thermal energy storage in porous materials with adsorption and desorption of moisture
C. J. HO, W.-C. CHEN and W.-M. YAN	293	Correlations of heat transfer effectiveness in a minichannel heat sink with water-based suspensions of Al ₂ O ₃ nanoparticles and/or MEPCM particles
E. SAKAI, T. TAKAHASHI and H. WATANABE	300	Large-eddy simulation of an inclined round jet issuing into a crossflow
S. MANSERVISI and F. MENCHINI	312	A CFD four parameter heat transfer turbulence model for engineering applications in heavy liquid metals
M. S. HOSSAIN and M. A. ALIM	327	MHD free convection within trapezoidal cavity with non-uniformly heated bottom wall
C. ALBERT, H. MARSHALL and D. BOTHE	343	Direct Numerical Simulation of interfacial mass transfer into falling films
S. STROMMER, M. NIEDERER, A. STEINBOECK and A. KUGI	375	A mathematical model of a direct-fired continuous strip annealing furnace
P. A. K. LAM and K. ARUL PRAKASH	390	A numerical study on natural convection and entropy generation in a porous enclosure with heat sources
Y. LUO, H. YANG and L. LU	408	Liquid desiccant dehumidifier: Development of a new performance predication model based on CFD
M. AMMAR, M. SULLIVAN and D. ANGELESCU	417	Pressure controlled bubble growth in microchannels
H. PENG, P. F. PAI and H. MA	424	Nonlinear thermomechanical finite-element modeling, analysis and characterization of multi-turn oscillating heat pipes
X. LI, K. LI, J. TU and J. BUONGIORNO	443	On two-fluid modeling of nucleate boiling of dilute nanofluids
B. RUAN, H. MENG and V. YANG	455	Simplification of pyrolytic reaction mechanism and turbulent heat transfer of n-decane at supercritical pressures
S. AMIRI, R. TAHER and L. G. MONGEAU	464	Experimental study of the oscillatory velocity and temperature near a heated circular cylinder in an acoustic standing wave
J. CHEN, W. ZHANG, Z. FENG and W. CAI	473	Determination of thermal contact conductance between thin metal sheets of battery tabs
W. MACHER, N. I. KÖMLE, M. S. BENTLEY and G. KÄRGL	481	Temperature evolution of two parallel composite cylinders with contact resistances and application to thermal dual-probes

(Continued on next page)

(Continued)

S. J. THIAGARAJAN, S. NARUMANCHI and R. YANG

- 493 Effect of flow rate and subcooling on spray heat transfer on microporous copper surfaces

Technical Notes

D. HAN, B. YU, G. YU, Y. ZHAO and W. ZHANG

- 1 Study on a BFC-based POD-Galerkin ROM for the steady-state heat transfer problem

A. T. UTOMO, E. B. HAGHIGHI, A. I. T. ZAVAREH,
M. GHANBARPOURGERAVI, H. POTH, R. KHODABANDEH,
B. PALM and A. W. PACEK

- 77 The effect of nanoparticles on laminar heat transfer in a horizontal tube

J. M. CABEZA-LAINEZ, J. A. PULIDO-ARCAS,
B. SANCHEZ-MONTAÑES and C. RUBIO-BELLIDO

- 147 New configuration factor between a circle and a point-plane at random positions

E. KALYUZHNY and F. A. KULACKI

- 337 Condensation of FC-72

J. PALLARES and F. X. GRAU

- 438 Mass transfer rate of a first-order chemical reaction on a wall at high Schmidt numbers

Y. ZHOU, Y.-j. WANG and W.-k. BU

- 451 Exact solution for a Stefan problem with latent heat a power function of position