

International Journal of
HEAT and MASS
TRANSFER

Editors

CARL GAZLEY, JR., U. GRIGULL, J. P. HARTNETT
O. G. MARTYNENKO, Y. MORI, R. I. SOLOUKHIN, D. B. SPALDING

VOLUME 23 1980



PERGAMON PRESS

OXFORD · NEW YORK · PARIS · FRANKFURT

INTERNATIONAL JOURNAL OF HEAT AND MASS TRANSFER

BOARD OF EDITORS

- CARL GAZLEY, Jr., Dept. of Geophysics and Astronomy, The RAND Corporation, 1700 Main Street, Santa Monica, California 90406, U.S.A.
- J. GOSSE (Associate Editor), C.N.A.M., 292, rue Saint-Martin, 75141—Paris Cedex 03, France
- U. GRIGULL, Technische Universität, Arcisstrasse 21, München, Germany
- E. HAHNE (Associate Editor), Institut für Thermodynamik und Wärmetechnik, Pfaffenwaldring 6, D-7000 Stuttgart 80, Germany
- J. P. HARTNETT, Energy Engineering Dept., University of Illinois, Box 4348, Chicago, Illinois 60680, U.S.A.
- O. G. MARTYNEKO, Heat and Mass Transfer Institute, Byelorussian Academy of Sciences, 25 Podlesnaya, Minsk, B.S.S.R., U.S.S.R.
- W. J. MINKOWYCZ (Associate Editor), Energy Engineering Dept., University of Illinois, Box 4348, Chicago, Illinois 60680, U.S.A.
- Y. MORI, Faculty of Engineering, Tokyo Institute of Technology, Meguro-ku, Tokyo, Japan
- R. I. SOLOUKHIN, Heat and Mass Transfer Institute, Byelorussian Academy of Sciences, 25 Podlesnaya, Minsk, B.S.S.R., U.S.S.R.
- D. B. SPALDING, Bakery House, 40 High St., Wimbledon, London SW19 5AU, England
- B. R. PAI (Associate Editor for the Indian Sub-Continent), National Aeronautical Laboratory, Post Bag No. 1779, Bangalore—560017, India
- C. L. TIEN (Associate Editor), Department of Mechanical Engineering, University of California, Berkeley, California 94720, U.S.A.

HONORARY EDITORIAL ADVISORY BOARD

Chairman: E. R. G. ECKERT, *University of Minnesota, Minneapolis, Minnesota 55455, U.S.A.*
Past-chairman: Sir OWEN SAUNDERS, *F.R.S., Imperial College, London, England*

- | | | |
|---|---|--|
| L. H. BACK, <i>Pasadena</i> | T. W. HOFFMAN, <i>Hamilton, Ontario</i> | R. H. SABERSKY, <i>Pasadena, California</i> |
| F. J. BAYLEY, <i>Sussex</i> | T. F. IRVINE, JR., <i>Stony Brook, New York</i> | T. SATO, <i>Kyoto, Japan</i> |
| J. BEÉR, <i>Sheffield</i> | Y. KAITO, <i>Tokyo</i> | JIRI SCHNELLER, <i>Bechovice, Czechoslovakia</i> |
| F. BOŠNJAKOVIĆ, <i>Stuttgart</i> | S. S. KUTATELADZE, <i>Novosibirsk</i> | R. A. SEBAN, <i>Berkeley, California</i> |
| J. W. CIBOROWSKI, <i>Warsaw</i> | A. I. LEONTIEV, <i>Moscow</i> | S. SIDEMAN, <i>Haifa</i> |
| J. A. CLARK, <i>Ann Arbor</i> | J. MATHIEU, <i>Ecully</i> | R. S. SILVER, <i>Glasgow</i> |
| I. CURIEVICI, <i>Iasi, Romania</i> | M. D. MIKHAILOV, <i>Sofia</i> | MARIO SILVESTRI, <i>Milan</i> |
| D. A. DE VRIES, <i>Eindhoven</i> | YU. A. MIKHAILOV, <i>Riga</i> | E. M. SPARROW, <i>Minneapolis, Minnesota</i> |
| R. G. DEISSLER, <i>Cleveland, Ohio</i> | TOKURO MIZUSHINA, <i>Kyoto</i> | M. A. STYRIKOVICH, <i>Moscow</i> |
| J. J. D. DOMINGOS, <i>Lisbon</i> | H. MONDIN, <i>Grenoble</i> | J. TABOREK, <i>Alhambra, California</i> |
| R. V. DUNKLE, <i>Melbourne</i> | I. L. MOSTINSKY, <i>Moscow</i> | Y. S. TOULOUKIAN, <i>West Lafayette, Indiana</i> |
| D. K. EDWARDS, <i>Los Angeles</i> | L. G. NAPOLITANO, <i>Naples</i> | M. G. VELARDE, <i>Madrid</i> |
| R. EICHHORN, <i>Lexington</i> | K. NISHIKAWA, <i>Hakozaki, Japan</i> | D. VORTMEYER, <i>München</i> |
| H. W. EMMONS, <i>Cambridge, Massachusetts</i> | T. D. PATTEN, <i>Edinburgh</i> | J. W. WESTWATER, <i>Urbana, Illinois</i> |
| A. ENDRENYI, <i>Budapest</i> | J. R. A. PEARSON, <i>London</i> | S. S. ZABRODSKY, <i>Minsk</i> |
| A. FORTIER, <i>Orsay</i> | A. RAMACHANDRAN, <i>Madras</i> | Z. ZARIC, <i>Beograd, Yugoslavia</i> |
| B. GEBHART, <i>New York</i> | J. F. RICHARDSON, <i>Swansea, Wales</i> | A. A. ZHUKAUSKAS, <i>Vilnius</i> |
| H. GLASER, <i>Stuttgart</i> | WARREN M. ROHSENOW, <i>Cambridge, Massachusetts</i> | N. ZUBER, <i>Washington, D.C.</i> |
| R. J. GOLDSTEIN, <i>Minneapolis</i> | J. J. RONCO, <i>La Plata, Argentina</i> | |

Annual Subscription Rates 1981

For libraries, research establishments and all other multiple-reader institutions—U.S. \$330.00 (including postage and insurance). Two-year rate (1981/1982): U.S. \$627.00. Subscription enquiries from customers in North America should be sent to: Pergamon Press Inc., Maxwell House, Fairview Park, Elmsford, NY 10523, U.S.A., and for the remainder of the world to: Pergamon Press Ltd., Headington Hill Hall, Oxford OX3 0BW, England.

Specially Reduced Rates to Individuals

In the interests of maximising the dissemination of the research results published in this important international journal we have established a two-tier price structure. Any individual, whose institution takes out a library subscription, may purchase a second or additional subscription for personal use at the much reduced rate of US \$55 per annum.

Microform Subscriptions and Back Issues

Back issues of all previously published volumes are available in the regular editions and on microfilm and microfiche. Current subscriptions are available on microfiche simultaneously with the paper edition and on microfilm on completion of the annual index at the end of the subscription year.

Published monthly

Copyright © Pergamon Press Ltd. 1980

It is a condition of publication that manuscripts submitted to this journal have not been published and will not be simultaneously submitted or published elsewhere. By submitting a manuscript, the authors agree that the copyright for their article is transferred to the publisher if and when the article is accepted for publication. However, assignment of copyright is not required from authors who work for organisations which do not permit such assignment. The copyright covers the exclusive rights to reproduce and distribute the article, including reprints, photographic reproductions, microform or any other reproductions of similar nature, and translations. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, electrostatic, magnetic tape, mechanical, photocopying, recording or otherwise, without permission in writing from the copyright holder.

U.S. Copyright Law Applicable to Users in the U.S.A.

The Article Fee Code on the first page of an article in this journal indicates the copyright owner's consent that, in the U.S.A., copies may be made for personal or internal use provided the stated fee for copying, beyond that permitted by Sections 107 or 108 of the United States Copyright Law, is paid. The appropriate remittance should be forwarded with a copy of the first page of the article to the Copyright Clearance Center Inc., 21 Congress Street, Salem, MA 01970. If a code does not appear, copies of the article may be made without charge, provided permission is obtained from the publisher. The copyright owner's consent does not extend to copying for general distribution, for promotion, for creating new works, or for resale. Specific written permission must be obtained from the publisher for such copying. In case of doubt please contact your nearest Pergamon office.

PERGAMON PRESS

Headington Hill Hall,
Oxford OX3 0BW, England

Maxwell House, Fairview Park,
Elmsford, New York 10523, U.S.A.

CONTENTS

January

- R. K. SHAH 1 Professor Alexander Louis London on his 65th birthday
- Pioneer Paper*
- A. L. LONDON and R. A. SEBAN 5 A generalization of the methods of heat exchanger analysis
- G. M. HARPOLE 17 Radiative absorption by evaporating droplets
- O. TAKAHASHI, M. NISHIDA,
N. TAKENAKA and I. MICHİYOSHI 27 Pool boiling heat transfer from horizontal plane heater to mercury under magnetic field
- G. SALAUN-PENQUER, X. GARONNE,
R. GUILLAUME et A. PAPON 37 Puissances thermiques critiques lors de la pénétration dans l'atmosphère des panaches, avec ou sans giration
- M. AL-ARABI and Y. K. SALMAN 45 Laminar natural convection heat transfer from an inclined cylinder
- A. SUWONO 53 Laminar free convection boundary-layer in three-dimensional systems
- S. H. CHAN, D. H. CHO and
D. W. CONDIFF 63 Heat transfer from a high temperature condensable mixture
- K. STEPHAN and M. ABDELSALAM 73 Heat-transfer correlations for natural convection boiling
- YU. P. GUPALO, A. D. POLYANIN,
YU. S. RYAZANTSEV and
YU. A. SERGEEV 89 Convective diffusion to a solid particle in the case of nonlinear kinetics of heterogeneous chemical reaction
- V. P. CAREY and J. C. MOLLENDORF 95 Variable viscosity effects in several natural convection flows
- R. SESHADRI and
A. V. G. KRISHNAYYA 111 Quasisteady approach for thermal analysis of insulated structures
- Y. MORI 123 Heat transfer bibliography—Japanese works

February

- D. G. DRAKE, D. S. RILEY,
R. R. BAKER and K. D. KILBURN 127 On a cell to measure diffusion coefficients of gases through cigarette papers
- S. A. HODGE, J. P. SANDERS
and D. E. KLEIN 135 Slope and intercept of the dimensionless velocity profile for artificially roughened surfaces
- H. J. RÖHM 141 The simulation of steady state behaviour of the dephlegmation of multi-component mixed vapours

Contents

H. W. STOCK	147	Gas-Partikel-Strömungen an einem Keil im Überschall
F. DOBRAN and R. S. THORSEN	161	Forced flow laminar filmwise condensation of a pure saturated vapor in a vertical tube
M. EPSTEIN and G. M. HAUSER	179	Subcooled forced-convection film boiling in the forward stagnation region of a sphere or cylinder
B. N. ANTAR, F. G. COLLINS and G. H. FICHTL	191	Influence of solidification on surface tension driven convection
K. KÜBLBECK, G. P. MERKER and J. STRAUB	203	Advanced numerical computation of two-dimensional time-dependent free convection in cavities
R. COLE, J. M. PAPAIZIAN and W. R. WILCOX	219	Bubble departure radii at solidification interfaces
M. M. SHAH	225	A general correlation for critical heat flux in annuli
R. I. SOLOUKHIN and O. G. MARTYNYENKO	235	Heat and mass transfer bibliography—Soviet works
<i>Shorter Communication</i>		
C. N. KERR	247	Analog solution of free convection mass transfer from downward-facing horizontal plates
<i>Book Review</i>		
D. B. SPALDING	251	Fluid Flow and Heat Transfer, by Aksel L. Lydersen
<i>Announcement</i>	252	

March

S. PRAKASH and W. A. SIRIGNANO	253	Theory of convective droplet vaporization with unsteady heat transfer in the circulating liquid phase
F. P. INCROPERA and M. A. YAGHOUBI	269	Buoyancy driven flows originating from heated cylinders submerged in a finite water layer
A. N. SINGH, S. KESAVAN and P. SEN GUPTA	279	Rate of mass transfer in a semifluidized bed
N. W. HALE, JR. and R. VISKANTA	283	Solid-liquid phase-change heat transfer and interface motion in materials cooled or heated from above or below
H. F. A. VERHAART, R. M. DE JONGE and S. J. D. VAN STRALEN	293	Growth rate of a gas bubble during electrolysis in supersaturated liquid
G. F. MARSTERS, B. HOWKINS and E. KORTSCHAK	301	Heat transfer to a plane wall from a heated, ventilated plane jet
S. AIBA, T. OTA and H. TSUCHIDA	311	Heat transfer of tubes closely spaced in an in-line bank

Contents

- Y. TAMBOUR 321 On thermal-diffusion effects in chemically frozen multicomponent boundary layer with surface catalytic recombination behind a strong moving shock
- H. A. J. VERCAMMEN and G. F. FROMENT 329 An improved zone method using Monte Carlo techniques for the simulation of radiation in industrial furnaces
- D. BALAGEAS et D. ORY 339 Equation généralisée du touchau amélioration de la méthode de mesure de l'effusivité thermique
- H. VAN DAM and J. E. HOOGENBOOM 349 The adjoint space in heat transport theory
- H. T. KARLSSON, S. ÅBERG and I. BJERLE 355 An experimental investigation of mass transfer from a gas flow to liquid jets
- F. X. HART and J. S. MASSEY 363 Ion wind enhancement of evaporation into a laminar air stream
- P. F. DUNN 373 Single-phase and two-phase magnetohydrodynamic pipe flow
- J. BANDROWSKI and J. ZIOŁO 387 Heat and mass transfer bibliography—Polish works (1977–1978)
- E. M. SPARROW and L. R. LAING 393 Heat transfer bibliography
- Shorter Communications*
- R. N. GUPTA, M. K. CHAURASTIA and C. M. RODKIEWICZ 405 Displacement-thickness induced pressures on a flat plate with homogeneous and heterogeneous vectored injection
- K. VAJRAVELU and K. S. SASTRI 408 Natural convective heat transfer in vertical wavy channels

April

- V. H. ARAKERI 413 Boundary layer transition observations on a body of revolution with surface heating and cooling in water
- R. GHEZ 425 Expansions in time for the solution of one-dimensional Stefan problems of crystal growth
- P. M. BECKETT and N. HOBSON 433 The effect of shrinkage on the rate of solidification of a cylindrical ingot
- S. C. SOLOSKI and T. H. K. FREDERKING 437 Dimensional analysis and equation for axial heat flow of Gorter–Mellink convection (He II)
- M. N. BAPU RAO 443 Solutions to heat-conduction problems by a mixed method
- T. S. CHEN and C. F. YUH 451 Combined heat and mass transfer in natural convection along a vertical cylinder

Contents

A. QUARMBY and A. A. M. AL-FAKHRI	463	Effect of finite length on forced convection heat transfer from cylinders
E. M. SPARROW and M. CHARMCHI	471	Heat transfer and fluid flow characteristics of spanwise-periodic corrugated ducts
P. SAHA	483	A nonequilibrium heat transfer model for dispersed droplet post-dryout regime
Y. KATTO	493	General features of CHF of forced convection boiling in uniformly heated vertical tubes with zero inlet subcooling
N. AFZAL	505	Convective wall plume: higher order analysis
A. E. M. NASSER and R. A. EAST	515	A shock tube investigation of heat transfer from dissociated hydrogen to catalytic surfaces
T. S. CHEN, C. F. YUH and A. MOUTSOGLOU	527	Combined heat and mass transfer in mixed convection along vertical and inclined plates
J. W. ROSE	539	Approximate equations for forced-convection condensation in the presence of a non-condensing gas on a flat plate and horizontal tube
A. SHARON and A. ORELL	547	Dry patch formation in liquid films flowing in a heated horizontal channel
<i>Shorter Communications</i>		
M. FAGHRI and E. M. SPARROW	559	Parallel-flow and counter-flow condensation on an internally cooled vertical tube
P. THERY, J. P. DUBUS et F. WATTIAU	562	Détermination de la diffusivité et de la chaleur massique par traitement d'une évolution thermocinétique transitoire
D. NAOT and F. KREITH	566	On the penetration of turbulence through perforated flat plates
P. D. VAN BUREN and R. VISKANTA	568	Interferometric measurement of heat transfer during melting from a vertical surface
B. SAMMAKIA, B. GEBHART and Z. H. QURESHI	571	Measurements and calculations of transient natural convection in air
<i>Book Reviews</i>		
F. BAKHTAR	577	Advances in Heat Transfer, Vol. 14
J. I. SPROSTON	577	Matrix Computation for Engineers and Scientists, by Alan Jennings
G. J. WILLIAMS	577	Internal Flow Systems, by D. S. Miller
P. L. BETTS	578	Methods in Computational Physics, Vol. 17. General Circulation Models of the Atmosphere, J. Chang (Editor)
D. T. SWIFT-HOOK	578	Magnetohydrodynamic Flows in Ducts, by Herman Branover
M. W. COLLINS	579	Applications of Numerical Heat Transfer, by E. F. Nogotov
G. F. C. ROGERS	579	A course in Thermodynamics, Vols. I and II, by J. Kestin

Contents

D. B. SPALDING	580	Turbulent Shear Flows: Selected Papers from the First International Symposium on Turbulent Shear Flows, edited by F. Durst, B. E. Launder, F. W. Schmidt and J. H. Whitelaw
M. CROSS	580	The Iron Blast Furnace, by J. G. Peacey and W. G. Davenport
<i>Addendum</i>		
W. T. SHA and S. L. SOO	583	Addendum to "Multidomain multiphase fluid mechanics"
<i>Erratum</i>		
	587	

May

J. MEYER-TER-VEHN	589	Obituary—Alekssei Aleksandrovich Pomerantsev
L. MEYER	591	Turbulent flow in a plane channel having one or two rough walls
M. D. MIKHAILOV and M. N. ÖZISIK	609	An alternative general solution of the steady-state heat diffusion equation
B. LANDRO and P. G. MCCORMICK	613	Effect of surface characteristics and atmospheric conditions on radiative heat loss to a clear sky
J.-P. MAYE	621	Etude expérimentale de certains moments vitesse-température d'ordres 2, 3 et 4 en tunnel aérothermique turbulent
R. K. AHLUWALIA and P. M. CHUNG	627	Exact and approximate solutions of a chemically reacting nonequilibrium flow problem
A. SEGEV and S. G. BANKOFF	637	The role of adsorption in determining the minimum film boiling temperature
C. A. BUSSE and J. E. KEMME	643	Dry-out phenomena in gravity-assist heat pipes with capillary flow
A. J. WILLMOTT and R. C. DUGGAN	655	Refined closed methods for the contra-flow thermal regenerator problem
P. S. KUTS and E. G. TUTOVA	663	Experimental and analytical investigation of the sprayed liquid hydrodynamics in a swirled flow
E. P. DYBAN, A. I. MAZUR and V. P. GOLOVANOV	667	Heat transfer and hydrodynamics of an array of round impinging jets with one-sided exhaust of the spent air
G. P. MERKER and L. G. LEAL	677	Natural convection in a shallow annular cavity
R. M. PERKIN	687	The heat and mass transfer characteristics of boiling point drying using radio frequency and microwave electromagnetic fields
M. A. HILAL and R. W. BOOM	697	An experimental investigation of free convection heat transfer in supercritical helium

Contents

I. MIKK	707	Convective fin of minimum mass
R. I. SOLOUKHIN and O. G. MARTYNENKO	713	Heat- and mass-transfer bibliography—Soviet works
<i>Shorter Communications</i>		
A. BEJAN	723	A synthesis of analytical results for natural convection heat transfer across rectangular enclosures
A. BEJAN	726	Natural convection in a vertical cylindrical well filled with porous medium
G. GUGLIELMINI and E. NANNEI	729	A note on Kutateladze's equation for partial nucleate boiling
S. SINGH SADHAL	731	Transient thermal response of two solids in contact over a circular disk
D. W. RUTH	733	On the transition to transverse rolls in inclined infinite fluid layers—steady solutions
R. J. GOLDSTEIN and S. TOKUDA	738	Heat transfer by thermal convection at high Rayleigh numbers
L. C. CHOW, A. CAMPO and C. L. TIEN	740	Heat transfer characteristics for laminar flow between parallel plates with suction
<i>Letter to the Editors</i>		
M. DALLE DONNE	745	Comments on "Turbulent convective heat transfer from rough surfaces"
<i>Book Reviews</i>		
D. B. SPALDING	747	An Introduction to Viscous Incompressible Flow, by W. F. Hughes
D. B. SPALDING	747	Programming in Standard Fortran 77, by A. Balfour and D. H. Marwick
<i>Announcement</i>	748	
June		
S.-M. YIH and R. C. SEAGRAVE	749	Mass transfer in laminar falling liquid films with accompanying heat transfer and interfacial shear
YU. T. GLAZUNOV	759	Generalized variational principle of molar-molecular heat- and mass-transfer phenomena
S. BORIES et A. DELTOUR	765	Influence des conditions aux limites sur la convection naturelle dans un volume poreux cylindrique
T. W. CLYNE and A. GARCIA	773	Assessment of a new model for heat flow during uni-directional solidification of metals
B. N. PAMADI and I. A. BELOV	783	A note on the heat transfer characteristics of circular impinging jet
C. T. HSU and P. CHENG	789	Vortex instability of mixed convective flow in a semi-infinite porous medium bounded by a horizontal surface

Contents

- A. HIRSCHBERG,
W. H. H. VAN HEUGTEN,
J. F. H. WILLEMS and
M. E. H. VAN DONGEN 799 An accurate experimental investigation of the shock-tube end-wall boundary layer in argon
- I. CORNET, R. GREIF, J. T. TENG
and F. ROEHLER 805 Mass transfer to rotating rods and plates
- J. L. PEUBE, J. L. BOUSGARBIÉS
et M. J. PIERRE-EUGÈNE 813 Diffusion convective à l'intérieur d'un canal à parois poreuses
- A. SUWONO 819 Buoyancy effects on flow and heat transfer on rotating axisymmetric round-nosed bodies
- D. MEINKÖHN 833 A minorant-majorant approximation method for the solution of the nonlinear Fourier equation
- G. SPIGA, F. SANTARELLI and
C. STRAMIGIOLI 841 Radiative transfer in an absorbing and anisotropically scattering slab with a reflecting boundary
- F. SANTARELLI, C. STRAMIGIOLI
and G. SPIGA 853 Rigorous and simplified approach to the radiative transfer in an absorbing and anisotropically scattering slab with a reflecting boundary
- M. FAGHRI and E. M. SPARROW 861 Forced convection in a horizontal pipe subjected to nonlinear external natural convection and to external radiation
- Z. ZAPRYANOV, CH. CHRISTOV
and E. TOSHEV 873 Fully developed laminar flow and heat transfer in curved tubes
- P. G. SIMPKINS and
P. A. BLYTHE 881 Convection in a porous layer
- D. D. PAPAILIOU 889 Statistical characteristics of a turbulent free-convection flow in the absence and presence of a magnetic field
- J. G. ANDREWS and
D. A. C. NICOL 897 Heat flow in a rotating weld pool
- Shorter Communications*
- N. D. KAUSHIK and A. SRIVASTAVA 903 Temperature distribution in ground: response function technique
- R. A. ANTONIA 906 Behaviour of the turbulent Prandtl number near the wall

July

- J. P. RIBA et J. P. COUDERC 909 Transfert de matière autour d'une sphère immergée dans une couche fluidisée par un liquide
- A. N. BHAT and M. L. MITTAL 919 Heat transfer in a MHD channel with uniform wall heat flux—effects of Hall and ion slip currents

Contents

D. M. MARON, W. ZIJL and J. ABOUDI	927	Hydrodynamic and transfer characteristics in a free interface film due to time-dependent disturbance at the entry
N. T. DUNWOODY and T. A. HAMILL	943	Forced heat convection in lineal flow of non-Newtonian fluids through rectangular channels
R. L. LEVIN	951	Generalized analytical solution for the freezing of a supercooled aqueous solution in a finite domain
K.-H. BODE	961	Wärmeleitfähigkeitsmessungen mit dem Plattengerät: Einfluß der Schutzringbreite auf die Meßunsicherheit
T. H. KUEHN and R. J. GOLDSTEIN	971	Numerical solution to the Navier–Stokes equations for laminar natural convection about a horizontal isothermal circular cylinder
A. M. CAMES-PINTAUX et J. P. PADET	981	Etude des contacts thermiques en régime transitoire. Proposition d'un modèle thermiquement équivalent
T. C. CHAWLA and M. ISHI	991	Two-fluid model of two-phase flow in a pin bundle of a nuclear reactor
S. SHIBAYAMA and S. MOROOKA	1003	Study on a heat pipe
S. B. H. C. NEAL and E. W. NORTHOVER	1015	The measurement of radiant heat flux in large boiler furnaces—I. Problems of ash deposition relating to heat flux
S. B. H. C. NEAL, E. W. NORTHOVER and R. J. PREECE	1023	The measurement of radiant heat flux in large boiler furnaces—II. Development of flux measuring instruments
R. I. SOLOUKHIN and O. G. MARTYNEKO	1033	Heat and mass transfer bibliography—Soviet works

Book Reviews

F. MAYINGER	1043	Measurement of Two-Phase-Flow Parameters, by G. F. Hewitt
J. F. CLARKE	1043	Aerodynamic Heating and Thermal Protection Systems, edited by Leroy S. Fletcher
W. J. SEALE	1044	Turbulent Forced Convection in Channels and Rod Bundles: Theory and Applications to Heat Exchangers and Nuclear Reactors, Vols. I and II, by S. Kakac and D. B. Spalding
D. B. SPALDING	1044	Recent Developments in Theoretical and Experimental Fluid Mechanics, edited by U. Müller, K. G. Rosener and B. Schmidt

August

M. A. STYRIKOVICH, A. I. LEONTIEV, V. S. POLONSKY and I. I. MALASHKIN	1045	Analytical study of heat transfer in the post dry-out region in smooth and rough vaporization channels
Cz. O. POPIEL, Th. H. VAN DER MEER and C. J. HOOGENDOORN	1055	Convective heat transfer on a plate in an impinging round hot gas jet of low Reynolds number
H. A. DINULESCU and E. R. G. ECKERT	1069	Analysis of the one-dimensional moisture migration caused by temperature gradients in a porous medium

Contents

- Y. MORI, Y. YAMADA and K. HIJIKATA 1079 Radiation effects on performances of radiative gas heat exchangers at high temperatures
- K. E. TORRANCE and V. W. C. CHAN 1091 Heat transfer by a free convection loop embedded in a heat-conducting solid
- L. C. THOMAS 1099 The surface rejuvenation model of wall turbulence: inner laws for u^+ and T^+
- T. MIZUSHINA, F. OGINO, T. MATSUMOTO, M. YOKOYAMA and N. KITANO 1105 Effect of radial electric field on heat and momentum transfers in dielectric organic liquid for laminar flow through concentric annuli
- S. KIMURA and A. BEJAN 1117 Experimental study of natural convection in a horizontal cylinder with different end temperatures
- D. L. GEE and R. L. WEBB 1127 Forced convection heat transfer in helically rib-roughened tubes
- C. H. LIU and E. M. SPARROW 1137 Convective-radiative interaction in a parallel plate channel—application to air-operated solar collectors
- R. I. SOLOUKHIN and O. G. MARTYNYENKO 1147 Heat and mass transfer bibliography—Soviet works

Shorter Communications

- W. W. YUEN 1157 Application of the heat-balance integral to melting problems with initial subcooling
- R. A. ANTONIA and N. PHAN-THIEN 1160 Self-preservation of slightly heated small perturbation jets and wakes in a pressure gradient
- R. P. ROY and S. HO 1162 Influence of transverse intraphase velocity profiles and phase fraction distributions on the character of two-phase flow equations

Book Reviews

- P. HUTCHINSON 1168 *Laser Velocimetry and Particle Sizing*, H. Doyle Thompson and Warren H. Stevenson (Editors)
- J. KESTIN 1168 *Statistical Thermodynamics*, by Chang L. Tien and John H. Lienhard
- S.-Y. KO 1168 *Heat Transfer and Thermal Control Systems. Vol. 60, Progress in Astronautics and Aeronautics. AIAA (1978)*, Leroy S. Fletcher (Editor)
- R. G. TAYLOR 1169 *Fluid Mechanics*, by Frank M. White. *Engineering Fluid Mechanics*, by Alan Mironer
- G. D. RAITHBY 1170 *Applications of Numerical Heat Transfer*, B. M. Berkovsky (Editor) and W. J. Minkowycz (Consulting Editor)
- H. ROSTEN 1170 *Thermodynamics of Magnetic Fluids*, B. Berkovsky (Editor)

September

- A. D. POLYANIN and YU. A. SERGEEV 1171 Convective diffusion to a reacting particle in a fluid. Nonlinear surface reaction kinetics

Contents

- S. SIENIUTYCZ 1183 The variational principle replacing the principle of minimum entropy production for coupled non-stationary heat and mass transfer processes with convective motion and relaxation
- P. VASSEUR and L. ROBILLARD 1195 Transient natural convection heat transfer in a mass of water cooled through 4°C
- B. CASSAGNE, G. KIRSCH et J. P. BARDON 1207 Analyse théorique des erreurs liées aux transferts de chaleur parasites lors de la mesure d'une température de surface par contact
- J. A. SHERCLIFF 1219 Thermoelectric MHD with walls parallel to the magnetic field
- S. E. ELGHOBASHI and A. T. WASSEL 1229 The effect of turbulent heat transfer on the propagation of an optical beam across supersonic boundary/shear layers
- M. BERTELA 1243 Compatibility and mutual interaction among the dimensionless groups present in the Navier-Stokes and energy differential equations
- B. FOURCHER et C. SAINT-BLANQUET 1251 Fonction de transfert d'un élément de stockage par chaleur sensible fonctionnant en régime périodique
- Y. IIDA and T. TAKASHIMA 1263 Direct-contact heat transfer characteristics: evaporation of a drop dropped onto a hot liquid surface
- H. TANAKA and H. MIYATA 1273 Turbulent natural convection in a horizontal water layer heated from below
- Shorter Communications*
- S. TAKAO and U. NARUSAWA 1283 An experimental study of heat and mass transfer across a diffusive interface
- M. VEDHANAYAGAM, R. A. ALTENKIRCH and R. EICHORN 1286 A transformation of the boundary layer equations for free convection past a vertical flat plate with arbitrary blowing and wall temperature variations
- G. DE MEY 1289 Temperature distribution in floor heating systems
- W. KAMMINGA 1291 An analytic solution of the film thickness of laminar film condensation on inclined pipes
- Book Reviews*
- N. C. MARKATOS 1295 Transfer Processes. An Introduction to Diffusion, Convection and Radiation by D. K. Edwards, V. E. Denny and A. F. Mills
- W. D. ARMSTRONG 1295 Chemical Engineering Vol. 1, by J. M. Coulson and J. F. Richardson
- W. D. ARMSTRONG 1295 Chemical Engineering Vol. 4: Solutions to the Problems in Chemical Engineering Vol. 1, Edited by J. M. Coulson and J. F. Richardson

Contents

October

- M. MIKLAVČIČ and I. KUŠČER 1297 Pressure corrections in measurements of energy accommodation coefficients
- R. J. DALLMAN and R. W. DOUGLASS 1303 Convection in a rotating spherical annulus with a uniform axial gravitational field
- F. B. CHEUNG, S. H. CHAN, T. C. CHAWLA and D. H. CHO 1313 Radiative heat transfer in a heat generating and turbulently convecting fluid layer
- M. NAKAJIMA, K. FUKUI, H. UEDA and T. MIZUSHINA 1325 Buoyancy effects on turbulent transport in combined free and forced convection between vertical parallel plates
- R. E. POWE, R. O. WARRINGTON and J. A. SCANLAN 1337 Natural convective flow between a body and its spherical enclosure
- D. MUKHERJEE, M. P. SINHA, N. K. PUROHIT and A. K. MITRA 1351 Two phase heat transfer in horizontal tube with jet mixing
- B. SUNDÉN 1359 Conjugated heat transfer from circular cylinders in low Reynolds number flow
- A. MOJTABI et J.-P. CALTAGIRONE 1369 Analyse du transfert de chaleur en convection mixte laminaire entre deux cylindres coaxiaux horizontaux
- W. SCHNEIDER 1377 Transient solidification of a flowing liquid at a heat conducting wall
- E. M. SPARROW and L. R. LAING 1385 Heat transfer bibliography

Shorter Communication

- Y. BAYAZITOĞLU and M. N. ÖZISIK 1399 On the solution of Graetz type problems with axial conduction

Book Reviews

- H. C. SIMPSON 1403 Bubbles, Drops and Particles by R. Clift, J. R. Grace and M. E. Weber
- E. R. G. ECKERT 1403 Wärmeleitung by U. Grigull and H. Sandner
- R. HETHERINGTON 1403 Transonic Flow Problems in Turbomachinery by T. C. Adamson Jr. and M. F. Platzer

November

- S. KOTAKE and K. OSWATITSCH 1405 Parameters of binary-mixture film condensation
- D. MOALEM-MARON, M. SOKOLOV and S. SIDEMAN 1417 A closed periodic condensation–evaporation cycle of an immiscible, gravity driven bubble
- H. BEGORRE et M. LÉBOUCHE 1425 Mesure simultanée de la concentration et du gradient pariétal de vitesse dans un écoulement
- K. TAGHAVI-TAFRESHI and V. K. DHIR 1433 Taylor instability in boiling, melting and condensation or evaporation

Contents

W. L. GROSSHANDLER	1447	Radiative heat transfer in nonhomogeneous gases: a simplified approach
R. H. NILSON and L. A. ROMERO	1461	Self-similar condensing flows in porous media
S. HIRASAWA, K. HIJIKATA, Y. MORI and W. NAKAYAMA	1471	Effect of surface tension on condensate motion in laminar film condensation (study of liquid film in a small trough)
L. J. LEE and C. W. MACOSKO	1479	Heat transfer in polymer reaction molding
A. G. BATHELT and R. VISKANTA	1493	Heat transfer at the solid-liquid interface during melting from a horizontal cylinder
N. S. GREWAL and S. C. SAXENA	1505	Heat transfer between a horizontal tube and a gas-solid fluidized bed
J. M. RAMILISON and B. GEBHART	1521	Buoyancy induced transport in porous media saturated with pure or saline water at low temperatures
A. LEKIC and J. D. FORD	1531	Direct contact condensation of vapour on a spray of subcooled liquid droplets
B. J. HUANG	1539	Mass transfer in heterogeneous system with chemical reaction
M. MIYAMOTO, J. SUMIKAWA, T. AKIYOSHI and T. NAKAMURA	1545	Effects of axial heat conduction in a vertical flat plate on free convection heat transfer
E. M. SPARROW and P. A. BAHRAMI	1555	Experiments on natural convection heat transfer on the fins of a finned horizontal tube
L. L. EYLER and A. SESONSKE	1561	Turbulent structure measurements in mercury pipe flow
Y. KATTO	1573	Critical heat flux of forced convection boiling in uniformly heated vertical tubes (correlation of CHF in HP-regime and determination of CHF-regime map)
F. OGINO, H. TAKEUCHI, I. KUDO and T. MIZUSHINA	1581	Heated jet discharged vertically into ambients of uniform and linear temperature profiles
Y. MORI	1589	Heat transfer bibliography—Japanese works
<i>Shorter Communications</i>		
J. B. GREENBERG, Y. TAMBOUR and B. GAL-OR	1595	A solution procedure for heat and mass transfer in multi-component laminar jets
R. S. RATH and G. JENA	1598	Combined free and forced convection near a vertical wall due to oscillations in the wall velocity and temperature
V. A. BORODULYA, V. L. GANZHA, S. N. UPADHYAY and S. C. SAXENA	1602	Heat transfer from in-land and staggered horizontal smooth tube bundles immersed in a fluidized bed of large particles
A. POLLARD and D. B. SPALDING	1605	On the three-dimensional laminar flow in a tee-junction
<i>Erratum</i>	1608	

December

E. A. BRUN MEMORIAL ISSUE

J. GOSSE	1609	Obituary—in memory of Edmond A. Brun
E. A. BRUN	1611	Louis Cailletet et la liquéfaction de l'oxygène
E. R. G. ECKERT and M. FAGHRI	1613	A general analysis of moisture migration caused by temperature differences in an unsaturated porous medium

Contents

Y. MORI, N. HIMENO, K. HIJIKATA and T. MIYAUCHI	1625	Effects of vibrational relaxation of multi-atomic molecules on stagnation heat transfer
K. BAUER, J. STRAUB and U. GRIGULL	1635	Influence of free-stream turbulence intensity on heat transfer in the two-dimensional turbulent boundary layer of an accelerated compressible flow
R. J. NEUMANN and E. W. P. HAHNE	1643	Free convective heat transfer to supercritical carbon dioxide
R. I. SOLOUKHIN, O. G. MARTYNENKO and N. E. GALICH	1653	Thermal interaction of high-power laser radiation with gases
P. DUHAMEL and J. GOSSE	1663	Analyse thermique d'un mur composite soumis sur une face à une variation en creneaux de la température
Z. A. KHAN and J. H. WHITELAW	1673	Vector and scalar characteristics of opposing jets discharging normally into a cross-stream
<i>Shorter Communications</i>		
E. SAATDJIAN	1681	Natural convection in a porous layer saturated with a compressible ideal gas
O. K. CROSSER and K. Y. PARK	1683	Analysis of batch scraped surface heat exchange
P. F. DUNN	1686	Measurement and prediction of the pressure difference through a two-phase liquid-metal MHD generator
V. KUPPU RAO	1690	A note on mass transfer in turbulent wall jets
F. BLANGETTI and M. K. NAUSHAHI	1694	Influence of mass transfer on the momentum transfer in condensation and evaporation phenomena
A. AZIZ and T. Y. NA	1695	Transient response of fins by coordinate perturbation expansion
<i>Book Reviews</i>		
E. KRAUSE	1699	Applied Numerical Modelling, edited by C. A. Brebbia and E. Alacron
D. C. LESLIE		Numerical Methods in Laminar and Turbulent Flows, edited by C. Taylor, K. Morgan and C. A. Brebbia
A. W. PRATT		Heat Transfer Calculations in Buildings, by R. W. R. Muncey
<i>Announcements</i>		
	1701	Third Symposium on Turbulent Shear Flows IUTAM Symposium on High Temperature Gas Dynamics
	1702	Second National Symposium on Numerical Methods in Heat Transfer
<i>Erratum</i>	1703	

AUTHOR INDEX

- ABDELSALAM, M., 73
 ABERG, S., 355
 ABOUDI, J., 927
 AFZAL, N., 505
 AHLUWALIA, R. K., 627
 AIBA, S., 311
 AKIYOSHI, T., 1545
 AL-ARABI, M., 45
 AL-FAKHRI, A. A. M., 463
 ALTENKIRCH, R. A., 1286
 ANDREWS, J. G., 897
 ANTAR, B. N., 191
 ANTONIA, R. A., 906, 1160
 ARAKERI, V. H., 413
 ARMSTRONG, W. D., 1295 (2)
 AZIZ, A., 1695
 BAHRAMI, P. A., 1555
 BAKER, R. R., 127
 BAKHTAR, F., 577
 BALAGEAS, D., 339
 BANDROWSKI, J., 387
 BANKOFF, S. G., 637
 BAPU RAO, M. N., 443
 BARDON, J. P., 1207
 BATHELT, A. G., 1493
 BAUER, K., 1635
 BAYAZITOGLU, Y., 1399
 BECKETT, P. M., 433
 BEGORRE, H., 1425
 BEJAN, A., 723, 726, 1117
 BELOV, I. A., 783
 BERTELA, M., 1243
 BETTS, P. L., 578
 BHAT, A. N., 919
 BJERLE, I., 355
 BLANGETTI, F., 1694
 BLYTHE, P. A., 881
 BODE, K.-H., 961
 BOOM, R. W., 697
 BORIES, S., 765
 BORODULYA, V. A., 1602
 BOUSGABIES, J. L., 813
 BRUN, E. A., 1611
 BUSSE, C. A., 643
 CALTAGIRONE, J.-P., 1369
 CAMES-PINTAUX, A. M., 981
 CAMPO, A., 740
 CAREY, V. P., 95
 CASSAGNE, B., 1207
 CHAN, S. H., 63, 1313
 CHAN, V. W. C., 1091
 CHARMCHI, M., 471
 CHAURASIA, M. K., 405
 CHAWLA, T. C., 991, 1313
 CHEN, T. S., 451, 527
 CHENG, P., 789
 CHEUNG, F. B., 1313
 CHO, D. H., 63, 1313
 CHOW, L. C., 740
 CHRISTOV, CH., 873
 CHUNG, P. M., 627
 CLARKE, J. F., 1043
 CLYNE, T. W., 773
 COLE, R., 219
 COLLINS, G., 191
 COLLINS, M. W., 579
 CONDIFF, D. W., 63
 CORNET, I., 805
 COUDERC, J. P., 909
 CROSS, M., 580
 CROSSER, O. K., 1683
 DALLE DONNE, M., 745
 DALLMAN, R. J., 1303
 DE JONGE, R. M., 293
 DELTOUR, A., 765
 DE MAY, G., 1289
 DER MEER, TH. H., 1055
 DHIR, V. K., 1433
 DINULESCU, H. A., 1069
 DOBRAN, F., 161
 DOUGLASS, R. W., 1303
 DRAKE, D. G., 127
 DUBUS, J. P., 562
 DUGGAN, R. C., 655
 DUHAMEL, P., 1663
 DUNN, P. F., 373, 1686
 DUNWOODY, N. T., 943
 DYBAN, E. P., 667
 EAST, R. A., 515
 ECKERT, E. R. G., 1069, 1403, 1613
 EICHHORN, R., 1286
 ELGHOBASHI, S. E., 1229
 EPSTEIN, M., 179
 EYLER, L. L., 1561
 FAGHRI, M., 559, 861, 1613
 FICHTL, G. H., 191
 FORD, J. D., 1531
 FOURCHER, B., 1251
 FREDERKING, T. H. K., 437
 FROMENT, G. F., 329
 FUKUI, K., 1325
 GALICH, N. E., 1653
 GAL-OR, B., 1595
 GANZHA, V. L., 1602
 GARCIA, A., 773
 GARONNE, X., 37
 GEBHART, B., 571, 1521
 GEE, D. L., 1127
 GHEZ, R., 425
 GLAZUNOV, YU. T., 759
 GOLDSTEIN, R. J., 738, 971
 GOLOVANOV, V. P., 667
 GOSSE, J., 1609, 1663
 GREENBERG, J. B., 1595
 GREIF, R., 805
 GREWAL, N. S., 1505
 GRIGULL, U., 1635
 GROSSHANDLER, W. L., 1447
 GUGLIELMINI, G., 729
 GUILLAUME, R., 37
 GUPALO, Y. P., 89
 GUPTA, P. S., 279
 GUPTA, R. N., 405
 HAHNE, E. W. P., 1643
 HALE, JR, N. W., 283
 HAMILL, T. A., 943
 HARPOLE, G. M., 17
 HART, F. X., 363
 HAUSER, G. M., 179
 HETHERINGTON, R., 1403
 HIJIKATA, K., 1079, 1471, 1625
 HILAL, M. A., 697
 HIMENO, N., 1625
 HIRASAWA, S., 1471
 HIRSCHBERG, A., 799
 HO, S., 1162
 HOBSON, N., 433
 HODGE, S. A., 135
 HOOGENBOOM, J. E., 349
 HOOGENDOORN, C. J., 1055
 HOWKINS, B., 301
 HSU, C. T., 789
 HUANG, B. J., 1539
 HUTCHINSON, P., 1168

Author Index

- IIDA, Y., 1263
 INCROPERA, F. R., 269
 ISHII, M., 991

 JENA, G., 1598

 KAMMINGA, W., 1291
 KARLSSON, H. T., 355
 KATTO, Y., 493, 1573
 KAUSHIK, N. D., 903
 KEMME, J. E., 643
 KERR, C. N., 247
 KESAVAN, S., 279
 KESTIN, J., 1168
 KHAN, Z. A., 1673
 KILBURN, K. D., 127
 KIMURA, S., 1117
 KIRSCH, G., 1207
 KITANO, N., 1105
 KLEIN, D. E., 135
 KO, S. Y., 1168
 KORTSCHAK, E., 301
 KOTAKE, S., 1405
 KREITH, F., 566
 KRISHNAYYA, A. V. G.,
 111
 KÜBLBECK, K., 203
 KUEHN, T. H., 971
 KUDO, I., 1581
 KUŠČER, I., 1297
 KUTS, P. S., 663

 LAING, L. R., 393, 1385
 LANDRO, B., 613
 LEAL, L. G., 677
 LÉBOUCHE, M., 1425
 LEE, L. J., 1479
 LEKIC, A., 1531
 LEONTIEV, A. I., 1045
 LEVIN, R. L., 951
 LIU, C. H., 1137
 LONDON, A. L., 5

 MACOSKO, C. W., 1479
 MALASHKIN, I. I., 1045
 MARKATOS, N. C., 1295
 MARON, D. M., 927
 MARSTERS, G. F., 301
 MARTYNYENKO, O. G., 235,
 713, 1033, 1147, 1653
 MASSEY, J. S., 363
 MATSUMOTO, T., 1105
 MAYE, J.-P., 621
 MAYINGER, F., 1043
 MAZUR, A. I., 667
 MCCORMICK, P. G., 613
 MEINKOHN, D., 833
 MERKER, G. P., 203, 677
 MEYER, L., 591
 MEYER-TER-VEHN, J., 589
 MICHIOYOSHI, I., 27
 MIKHAILOV, M. D., 609
 MIKK, J., 707
 MIKLAVČIĆ, M., 1297
 MITRA, A. K., 1351
 MITTAL, M. L., 919
 MIYAMOTO, M., 1545
 MIYATA, H., 1273
 MIYAUCHI, T., 1625
 MIZUSHINA, T., 1105,
 1325, 1581
 MOALEM-MARON, D., 1417

 MOJTABI, A., 1369
 MOLLENDORE, J. C., 95
 MORI, Y., 123, 1079,
 1471, 1589, 1625
 MOROOKA, S., 1003
 MOUTSOGLOV, A., 527
 MUKHERJEE, D., 1351

 NA, T. Y., 1695
 NAKAJIMA, M., 1325
 NAKAMURA, T., 1545
 NAKAYAMA, W., 1471
 NANNEI, E., 729
 NAOT, D., 566
 NARUSAWA, U., 1283
 NASSER, A. E. M., 515
 NAUSHAH, M. K., 1694
 NEAL, S. B. H. C., 1015
 1023
 NEUMANN, R. J., 1643
 NICOL, D. A. C., 897
 NILSON, R. H., 1461
 NISHIDA, M., 27
 NORTHOVER, E. W., 1015,
 1023

 OGINO, F., 1105, 1581
 ORELL, A., 547
 ORY, D., 339
 OSWATITSCH, K., 1405
 OTA, T., 311
 ÖZISIK, M. N., 609,
 1399

 PADET, J. P., 981
 PAMADI, B. N., 783
 PAPAILIOU, D. D., 889
 PAPAŽIAN, J. M., 219
 PAPON, A., 37
 PARK, K. Y., 1683
 PERKIN, R. M., 687
 PEUBE, J. L., 813
 PHAN-THIEN, N., 1160
 PIERRE-EUGENE, M. J.,
 813
 POLLARD, A., 1605
 POLONSKY, V. S., 1045
 POLYANIN, A. D., 89,
 1171
 POPIEL, CZ. O., 1055
 POWE, R. E., 1337
 PRAKASH, S., 253
 PREECE, R. J., 1023
 PUROHIT, N. K., 1351

 QUARMBY, A., 463
 QURESHI, Z. H., 571

 RAITHBY, G. D., 1170
 RAMILISON, J. M., 1521
 RAO, V. K., 1690
 RATH, R. S., 1598
 RIBA, J. P., 909
 RILEY, D. S., 127
 ROBILLARD, L., 1195
 RODKIEWICZ, C. M., 405
 ROEHLER, F., 805
 ROGERS, G. F. C., 579
 ROHM, H. J., 141
 ROMERO, L. A., 1461
 ROSE, J. W., 539
 ROSTEN, H., 1170

 ROY, R. P., 1162
 RUTH, D. W., 733
 RYAZANTSEV, Y. S., 89

 SAATDJIAN, E., 1681
 SAHA, P., 483
 SAINT-BLANQUET, C.,
 1251
 SALAUN-PENQUER, G., 37
 SALMAN, Y. K., 45
 SAMMAKIA, B., 571
 SANDERS, J. P., 135
 SANTARELLI, F., 841,
 853
 SAXENA, S. C., 1505,
 1602
 SCANLAN, J. A., 1337
 SCHNEIDER, W., 1377
 SEAGRAVE, R. C., 749
 SEALE, W. J., 1044
 SEBAN, R. A., 5
 SEGEV, A., 637
 SERGEEV, YU. A., 89,
 1171
 SESHADRI, R., 111
 SESONSKE, A., 1561
 SHA, W. T., 583
 SHAH, M. M., 225
 SHAH, R. K., 1
 SHARON, A., 547
 SHERCLIFF, J. A., 1219
 SHIBAYAMA, S., 1003
 SIDEMAN, S., 1417
 SIENIUTYCZ, S., 1183
 SIMPKINS, P. G., 881
 SIMPSON, H. C., 1403
 SINGH, A. N., 279
 SINGH SADHAL, S., 731
 SINHA, M. P., 1351
 SIRIGNANO, W. A., 253
 SOKOLOV, M., 1417
 SOLOSKI, S. C., 437
 SOLOUKHIN, R. I., 235,
 713, 1033, 1147, 1653
 SOO, S. L., 583
 SPALDING, D. B., 251,
 580, 747, (2), 1044,
 1605
 SPARROW, E. M., 393,
 471, 559, 861, 1137,
 1385, 1555
 SPIGA, G., 841, 853
 SPROSTON, J. L., 577
 SRIVASTAVA, A., 903
 STEPHAN, K., 73
 STOCK, H. W., 147
 STRAMIGIOLI, C., 841,
 853
 STRAUB, J., 203, 1635
 STYRIKOVICH, M. A.,
 1045
 SUMIKAWA, J., 1545
 SUNDEN, B., 1359
 SUWONO, A., 53, 819
 SWIFT-HOOK, D. T., 578

 TAKAHASHI, O., 27
 TAKASHIMA, T., 1263
 TAKAO, S., 1283
 TAKENAKA, N., 27
 TAMBOUR, Y., 321
 TAGHAVI-TAFRESHI, K.,
 1433

Author Index

- TAKEUCHI, H., 1581
TANAKA, H., 1273
TAYLOR, R. G., 1169
TENG, J. T., 805
THERY, P., 562
THORSEN, R. S., 161
TIEN, C. L., 740
THOMAS, L. C., 1099
TOKUDA, S., 738
TORRANCE, K. E., 1091
TOSHEV, E., 873
TSUCHIDA, H., 311
TUTOVA, E. G., 663

UEDA, H., 1325
UPADHYAY, S. N., 1602

VAN BUREN, P. D., 568
VAN DAM, H., 349
VAN DONGEN, M. E. H.,
799
VAN HEUGTEN, W. H. H.,
799
VAN STRALEN, S. J. D.,
293
VASSEUR, P., 1195
VED HANAYAGAM, M., 1286
VERCAMMEN, H. A. J., 329
VERHAART, H. F. A., 293
VISKANTA, R., 283, 568,
1493
WARRINGTON, R. O., 1337

WASSEL, A. T., 1229
WATTIAU, F., 562
WEBB, R. L., 1127
WHITELAW, J. H., 1673
WILCOX, W. R., 219
WILLEMS, J. F. H., 799
WILLIAMS, G. J., 577
WILLMOTT, A. J., 655

YAGHOUBI, M. A., 269
YAMADA, Y., 1079
YIH, S. M., 749
YOKOYAMA, M., 1105
YUEN, W. W., 1157
YUH, C. F., 451, 527

ZAPRYANOV, Z., 873
ZIJL, W., 927
ZIOLO, J., 387