

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 24 1981



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. MARTYNENKO, 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 Street, 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, Pasadena

F. J. BAYLEY, Sussex

J. BEÉR, Cambridge, Massachusetts

F. BOŠNJAČKIĆ, Stuttgart

J. W. CIBOROWSKI, Warsaw

J. A. CLARK, Ann Arbor

I. CURIEVICI, Iasi, Romania

D. A. DE VRIES, Eindhoven

R. G. DEISSLER, Cleveland, Ohio

J. J. D. DOMINGOS, Lisbon

R. V. DUNKLE, Melbourne

D. K. EDWARDS, Los Angeles

R. EICHHORN, Lexington

H. W. EMMONS,
Cambridge, Massachusetts

A. ENDRENYI, Budapest

A. FORTIER, Orsay

B. GEBHART, New York

H. GLASER, Stuttgart

R. J. GOLDSTEIN, Minneapolis

P. GRASSMAN, Zürich

A. A. GUKHMAN, Moscow

W. B. HALL, Manchester, England

G. F. HEWITT, Harwell, England

T. W. HOFFMAN,
Hamilton, Ontario

T. F. IRVINE, JR.,
Stony Brook, New York

Y. KATTO, Tokyo

SHAO-YEN KO, Philadelphia

S. S. KUTATELADZE, Novosibirsk

A. I. LEONTIEV, Moscow

J. MATHIEU, Ecully

M. D. MIKHAILOV, Sofia

YU. A. MIKHAILOV, Riga

TOKURO MIZUSHINA, Kyoto

H. MONDIN, Grenoble

I. L. MOSTINSKY, Moscow

L. G. NAPOLITANO, Naples

K. NISHIKAWA, Hakozaki, Japan

T. D. PATTEN, Edinburgh

J. R. A. PEARSON, London

A. RAMACHANDRAN, Madras

J. F. RICHARDSON, Swansea, Wales

WARREN M. ROHSENOW,
Cambridge, Massachusetts

J. J. RONCO, La Plata, Argentina

R. H. SABERSKY,
Pasadena, California

T. SATO, Kyoto, Japan

JIRI SCHNELLER,
Bechovice, Czechoslovakia

R. A. SEBAN,
Berkeley, California

S. SIDEMAN, Haifa

R. S. SILVER, Glasgow

MARIO SILVESTRI, Milan

E. M. SPARROW,
Minneapolis, Minnesota

M. A. STYRIKOVICH, Moscow

J. TABOREK, Alhambra, California

Y. S. TOLOUKIAN,
West Lafayette, Indiana

M. G. VELARDE, Madrid

D. VORTMEYER, München

J. W. WESTWATER,
Urbana, Illinois

S. S. ZABRODSKY, Minsk

Z. ZARIC, Beograd, Yugoslavia

A. A. ZHUKAUSKAS, Vilnius

N. ZUBER, Washington, D.C.

Annual Subscription Rates 1982

For libraries, research establishments and all other multiple-reader institutions—U.S. \$360.00 (including postage and insurance). Two-year rate (1982/1983): U.S. \$684.00. 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 U.S. \$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. 1981

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

- E. R. G. ECKERT, E. M. SPARROW,
R. J. GOLDSTEIN, E. PFENDER,
S. V. PATANKAR, J. W. RAMSEY and
K. Y. TEICHMAN
- S. EL TAHRY, A. D. GOSMAN and
B. E. LAUNDER
- S. A. ZHUKOV, V. V. BARELKO and
A. G. MERZHANOV
- K. S. ADZERIKHO and
V. I. ANTSULEVICH
- V. V. KLIMENKO
- M. D. MIKHAILOV and M. N. ÖZİŞİK
- J. R. THOME and G. DAVEY
- K. STEPHAN and H. AURACHER
- Y. KATTO
- H. J. PALMER and J. C. MAHESHRI
- W. P. GRAEBEL
- M. CASTALDINI, K. N. HELLAND
and V. MALVESTUTO
- A. D. MESSINA and E. L. PARK, JR.
J. BANDROWSKI and A. KUBACZKA
- J. V. BECK
- J. SCHRÖPPEL
- R. I. SOLOUKHIN and
O. G. MARTYNENKO

Shorter Communications

- A. BAR-COHEN
- J. POLMAN

Announcement

- 1 Heat transfer—a review of 1979 literature
- 35 The two- and three-dimensional dispersal of a passive scalar in a turbulent boundary layer
- 47 Wave processes on heat generating surfaces in pool boiling
- 57 Study of radiation properties of a plane inhomogeneous two-phase medium
- 69 Film boiling on a horizontal plate—new correlation
- 81 A general solution of solute diffusion with reversible reaction
- 89 Bubble growth rates in liquid nitrogen, argon and their mixtures
- 99 Correlations for nucleate boiling heat transfer in forced convection
- 109 General features on CHF of forced convection boiling in vertical concentric annuli with a uniformly heated rod and zero inlet subcooling
- 117 Enhanced interfacial heat transfer by differential vapor recoil instabilities
- 125 The influence of Prandtl number on free convection in a rectangular cavity
- 133 Hot-film anemometry in aqueous NaCl solutions
- 141 Effects of precise arrays of pits on nucleate boiling
- 147 On the condensation of multicomponent vapours in the presence of inert gases
- 155 Large time solutions for temperatures in a semi-infinite body with a disk heat source
- 165 Impact of wall temperature variation on the film condensation of binary gas-vapour mixtures
- 171 Heat and mass transfer bibliography—Soviet works

- 181 Exponentially varying internal heat generation in fully-developed, laminar, rectangular channel flow
- 184 Heat transfer in a piston-cylinder system
- 189 Advanced Study Institute on Low Reynolds Number Forced Convection in Channels and Rod Bundles Applied to Heat Exchangers

February

- J. W. ROSE
- 191 Dropwise condensation theory

Contents

K. VAFAI and C. L. TIEN	195	Boundary and inertia effects on flow and heat transfer in porous media
N. SHERIFF and D. J. O'KANE	205	Sodium eddy diffusivity of heat measurements in a circular duct
R. A. M. AL-HAYES and R. H. S. WINTERTON	213	Bubble growth in flowing liquids
R. A. M. AL-HAYES and R. H. S. WINTERTON	223	Bubble diameter on detachment in flowing liquids
P. SAMPSON and R. D. GIBSON	231	A mathematical model of nozzle blockage by freezing
K. BREMHORST	243	Effect of mounting systems on heat transfer from inclined cylinders in cross-flow
R. S. GUPTA and D. KUMAR	251	Variable time step methods for one-dimensional Stefan problem with mixed boundary condition
W. M. GRISOM and F. A. WIERUM	261	Liquid spray cooling of a heated surface
E. M. SPARROW, E. D. LARSON and J. W. RAMSEY	273	Freezing on a finned tube for either conduction-controlled or natural-convection-controlled heat transfer
H. C. ÜNAL, M. L. G. VAN GASSEL and P. M. VAN 'T VERLAAT	285	Dryout and two-phase flow pressure drop in sodium heated helically coiled steam generator tubes at elevated pressures
H. PEDERSEN and J. E. PRENOSIL	299	Gas absorption in laminar falling films with first order homogeneous reaction and gas phase mass transfer resistances
R. CHILUKURI and J. A. C. HUMPHREY	305	Numerical computation of buoyancy-induced recirculation in curved square duct laminar flow
C. A. HIEBER	315	Mixed convection in an isothermal horizontal tube: some recent theories
P. M. ABDUL MAJEED	323	Analysis of heat transfer during hydrair cooling of spherical food products
H.-G. SCHREY und J. KERN	335	Zum Rohrreiheneffekt bei gasbeaufschlagten Kondensatoren
M. I. PAVLOVIĆ and D. Z. MILOJEVIĆ	343	A variational approach to the problem of stationary laminar convection with dissipation in the variable property fluid
G. SPIGA and M. SPIGA	355	A rigorous solution to a heat transfer two phase model in porous media and packed beds
 March		
M. K. EL-RIEDY	365	Analogy between heat and mass transfer by natural convection from air to horizontal tubes
C. BASILICO, G. JUNG et M. MARTIN	371	Etude du transfert convectif entre un cylindre chauffé et un écoulement d'air chargé de gouttelettes d'eau
W. RESNICK and M. GOLT	387	Particle-to-gas mass-transfer measurements and coefficients in fixed beds at low Reynolds numbers

Contents

S. N. SINGH and J. M. ELLIOTT	395	Natural convection between concentric spheres in a slightly-thermally stratified medium
P. HRYCAK	407	Heat transfer from a row of impinging jets to concave cylindrical surfaces
Y. OGNIEWICZ and C. L. TIEN	421	Analysis of condensation in porous insulation
B. SEDLER and J. MIKIELEWICZ	431	A simplified model of the boiling crisis
D. LENK and W. ZSCHERPEL	439	Electrical analogue model for moving stripe sources of frictional heat on surfaces of solid bodies
DJ. S. DJUKIC and T. M. ATANACKOVIC	443	The least squares method: Kantorovich approach
J. Y. BALADI, D. L. AYERS and R. J. SCHOENHALS	449	Transient heat and mass transfer in soils
R. H. HENZE and J. A. C. HUMPHREY	459	Enhanced heat conduction in phase-change thermal energy storage devices
G. GRÖTZBACH	475	Numerical simulation of turbulent temperature fluctuations in liquid metals
A. S. DAWOOD, B. L. MANOCHA and S. M. J. ALI	491	The effect of vertical vibrations on natural convection heat transfer from a horizontal cylinder
P. A. BLYTHE and P. G. SIMPKINS	497	Convection in a porous layer for a temperature dependent viscosity
E. M. SPARROW, M. MOLKI and S. R. CHASTAIN	507	Turbulent heat transfer coefficients and fluid flow patterns on the faces of a centrally positioned blockage in a duct
E. ALP and A. B. STRONG	521	Measurements of characteristic time scales of the turbulent boundary layer with mass transfer
Y. KATTO	533	On the heat-flux/exit-quality type correlation of CHF of forced convection boiling in uniformly heated vertical tubes
Y. KATTO	541	On the relation between critical heat flux and outlet flow pattern of forced convection boiling in uniformly heated vertical tubes
V. VOLLER and M. CROSS	545	Accurate solutions of moving boundary problems using the enthalpy method
P. EGERTON, J. A. HOWARTH and G. POOTS	557	The effect of nozzle erosion on heat transfer in a ladle of molten steel during pouring
April		
R. GUILLAUME, X. GARONNE et G. SALAÜN-PENQUER	563	Application de la méthode intégrale à l'étude de la zone d'établissement d'un panache thermique humide
S. S. ZABRODSKY, YU. G. EPANOV, D. M. GALERSSTEIN, S. C. SAXENA and A. K. KOLAR	571	Heat transfer in a large-particle fluidized bed with immersed in-line and staggered bundles of horizontal smooth tubes
J. A. CATON and J. B. HEYWOOD	581	An experimental and analytical study of heat transfer in an engine exhaust port
H. H. BAU and K. E. TORRANCE	597	Transient and steady behavior of an open, symmetrically-heated, free convection loop

Contents

P. I. LEBEDEV, S. S. RYBANIN and L. N. STESIK	611 Heat and mass transfer of a liquid drop evaporating into a flow of gas capable of condensing
A. MERTOL, R. GREIF and Y. ZVIRIN	621 The transient, steady state and stability behavior of a thermosyphon with throughflow
L. Y. WAGNER and P. S. LYKOUDIS	635 Mercury pool boiling under the influence of a hori- zontal magnetic field
D. MEINKÖHN	645 Heat explosion theory and vibrational heating of polymers
YU. P. GOLOVACHOV	649 Numerical investigation of supersonic non-equilib- rium carbon dioxide flow past blunt bodies
T. F. SMITH, F. ALIPOUR-HAGHIGHI and P. H. PAUL	659 Turbulent MHD flow of a radiating gas
S. S. MOHAMMADI, M. S. GRABOSKI and E. D. SLOAN	671 A mathematical model of a ramp forced hot-wire thermal conductivity instrument
R. D. BOYD and C. M. VEST	685 Laminar natural convection above a horizontal laser beam
C. T. AVEDISIAN and I. GLASSMAN	695 Superheating and boiling of water in hydrocarbons at high pressures
M. NIVOIT, J. L. PROFIZI et D. PAULMIER	707 Etude des équilibres thermiques d'un filament chauffé par effet Joule
R. L. WEBB	715 Performance evaluation criteria for use of enhanced heat transfer surfaces in heat exchanger design
H. OZOE, T. SHIBATA and S. W. CHURCHILL	727 Natural convection in an inclined circular cylindrical annulus heated and cooled on its end plates
M. A. HASSAB and M. N. ÖZİŞİK	739 Effects of thermal wall resistance on the stability of conduction regime in an inclined narrow slot
M. TRELA	749 An approximate calculation of heat transfer during flow of an air-water mist along a heated flat plate
D. TSACALOS, F. J. DUPORIEUX et D. L. BALAGEAS	757 Application de la méthode des transformations intégrales finies à la modélisation d'une sonde de débitmétrie sanguine intratissulaire
<i>Shorter Communications</i>	
O. A. PLUMB and J. C. HUENEFELD	765 Non-Darcy natural convection from heated surfaces in saturated porous media
W. J. SEALE	768 The effect of subchannel shape on heat transfer in rod bundles with axial flow
W. P. GRAEBEL and C. C. HSU	771 A Galerkin method for calculation of laminar thermal boundary layers

Contents

P. M. LIGRANI, W. M. KAYS and R. J. MOFFAT	774 A heat transfer prediction method for turbulent boundary layers developing over rough surfaces with transpiration
G. H. MEYER	778 A numerical method for the solidification of a binary alloy
<i>Announcement</i>	783 International Advanced Study Institute on 'Mass Transfer with Chemical Reaction in Multiphase Systems'
May	
S.-C. YAO and A. RANE	785 Numerical study of turbulent droplet flow heat transfer
I. G. SHEKRLADZE	795 Developed boiling heat transfer
S. S. KUTATELADZE	803 Intrinsic scales in thermohydrodynamics
A. B. DIDKOVSKY and M. K. BOLOGA	811 Vapour film condensation heat transfer and hydrodynamics under the influence of an electric field
A. I. LEONTIEV, I. L. MOSTINSKY, V. S. POLONSKY, M. A. STYRIKOVICH and I. M. CHERNIKA	821 Experimental investigation of the critical heat flux in horizontal channels with circumferentially variable heating
B. GILLY, P. BONTOUX et B. ROUX	829 Influence des conditions thermiques de paroi sur la convection naturelle dans une cavité rectangulaire verticale, différentiellement chauffée
L. C. WROBEL and C. A. BREBBIA	843 A formulation of the boundary element method for axisymmetric transient heat conduction
E. M. SPARROW and U. GURDAL	851 Heat transfer at an upstream-facing surface washed by fluid <i>en route</i> to an aperture in the surface
R. E. FAW and T. A. DULLFORCE	859 Holographic interferometry measurement of convective heat transport beneath a heated horizontal plate in air
L. C. DANIELS and W. B. BROWNE	871 Calculation of heat transfer rates to gas turbine blades
R. KARVINEN	881 Natural and forced convection heat transfer from a plate fin
O. KVERNOLD and P. A. TYVAND	887 Dispersion effects on thermal convection in a Hele-Shaw cell
Z. Sz. KOLENDA, J. NOWAKOWSKI and R. OBŁAKOWSKI	891 Measurements of thermophysical properties of liquid electrolyte by modified heat pulse technique
E. M. SPARROW and C. PRAKASH	895 Interaction between internal natural convection in an enclosure and an external natural convection boundary-layer flow

Contents

- C. G. LAW, JR., P. PIERINI
and J. NEWMAN 909 Mass transfer to rotating disks and rotating rings in laminar, transition and fully-developed turbulent flow
- D. J. SHLIEN and R. L. BOXMAN 919 Laminar starting plume temperature field measurement
- D. W. RUTH 933 Finite amplitude convection in inclined and vertical slots—a power integral analysis
- Y. I. CHO and J. P. HARNETT 945 Mass transfer in turbulent pipe flow of viscoelastic fluids

Letter to the Editors

- V. L. LELCHUK 953 Comment on “Turbulent convective heat transfer from rough surfaces” and the discussion of Hall’s method

Book Reviews

- L. H. TOWNEND 955 Thermodynamics of Turbomachinery (3rd edition), by S. L. Dixon
- R. M. SINGER 955 Heat and Fluid Flow in Power System Components, edited by A. M. A. Rezk
- I. J. G. BERRY 955 Energy Conservation Through Control, by F. G. Shinskey
- J. R. SINGHAM 956 Heat Conduction, by M. Necati Özisik
- P. LE GOFF 956 Energy and Combustion Science, edited by N. Chigier
- S. V. PATANKAR 957 Finite Elements in Fluids, Vol. 3, edited by R. H. Gallagher, O. C. Zienkiewicz, J. T. Oden, M. Morandi Cecchi and C. Taylor

Announcement

- i 7th International Heat Transfer Conference

June

- R. I. SOLOUKHIN and
O. G. MARTYNENKO 959 Heat and mass transfer bibliography—Soviet works
- P. A. DURBIN and S. FROST 969 Dispersion from line sources in turbulent pipe flow
- P. CHENG 983 Film condensation along an inclined surface in a porous medium
- P. CRAUSSE, G. BACON et
S. BORIES 991 Etude fondamentale des transferts couplés chaleur-masse en milieu poreux
- L. AISA, B. CAUSSADE, J. GEORGE
et L. MASBERNAT 1005 Echanges de gaz dissous en écoulements stratifiés de gaz et de liquide
- D. W. HATFIELD and
D. K. EDWARDS 1019 Edge and aspect ratio effects on natural convection from the horizontal heated plate facing downwards

Contents

- D. B. R. KENNING and V. H. DEL VALLE M. 1025 Fully-developed nucleate boiling: overlap of areas of influence and interference between bubble sites
- R. I. NIGMATULIN, N. S. KHABEEV and F. B. NAGIEV 1033 Dynamics, heat and mass transfer of vapour-gas bubbles in a liquid
- Z. P. SHUL'MAN and B. M. KHUSID 1045 Conjugated convective heat transfer problems for viscoplastic fluids in plane-parallel channels
- P. J. WALKLATE 1051 A two wavelength holographic technique for the study of two-dimensional thermal boundary layers
- R. SMITH and M. F. EDWARDS 1059 Heat transfer to non-Newtonian and drag-reducing fluids in turbulent pipe flow

Shorter Communications

- E. K. ZARIFFEH and M. DAGUENET 1071 Laminar free convection on an inclined flat plate or a vertical cylinder with prescribed wall heat flux

- A. A. B. EL-HADIK and H. BARROW 1076 An anomaly in the similarity analysis of film-cooling heat transfer

Book Reviews

- J. R. SINGHAM 1079 Developments in Heat Exchanger Technology—1, edited by D. Chisholm

July

- M. E. CUNNINGHAM and K. L. PEDDICORD 1081 Heat conduction in spheres packed in an infinite regular cubical array

- J. MAJUMDAR, B. C. RAYCHAUDHURI and S. DASGUPTA 1082 An instrumentation scheme for multipoint measurement of mould-metal gap in an ingot casting system

- C. S. WANG and R. GREIF 1097 The effect of impingement on heat transfer in rotating condensation

- P. PARANTHOEN et M. TRINITE 1105 Etude de la diffusion de la chaleur en aval d'une source linéaire placée dans une couche limite turbulente

- J. C. BESSE et P. DUMARGUE 1119 Etude du transfert de matière dû à une injection pariétale normale localisée, dans un écoulement laminaire à grand nombre de Schmidt

- H. S. RAGHEB, S. C. CHENG and D. C. GROENEVELD 1127 Observations in transition boiling of subcooled water under forced convective conditions

- R. J. SANTORO, H. G. SEMERJIAN, P. J. EMMERMAN and R. GOULARD 1139 Optical tomography for flow field diagnostics

- P. CHENG and A. K. VERMA 1151 The effect of subcooled liquid on film boiling about a vertical heated surface in a porous medium

- M. HUMBERT et M. MARTIN 1161 Conditions d'apparition de l'ébullition nucléée en convection forcée dans un canal court. Influence de la conduction longitudinale dans la paroi épaisse

Contents

R. VISKANTA and D. W. LANKFORD	1171	Coupling of heat transfer between two natural convection systems separated by a vertical wall
C.-J. CHEN and J. SHING CHIOU	1179	Laminar and turbulent heat transfer in the pipe entrance for liquid metals
D. MAGALLON	1191	Méthode des éléments finis appliquée au calcul du régime établi laminaire de convection naturelle dans les faisceaux tubulaires verticaux de dimension finie
M. T. ACKER et B. FOURCHER	1201	Analyse en régime thermique périodique du couplage conduction-convection entre un fluide en écoulement laminaire et une paroi de stockage
P. ANDRE, R. CREFF et J. CRABOL	1211	Etude des conditions particulières de fréquence favorisant les transferts thermiques en écoulements pulsés en canalisation cylindrique
D. K. PANDEY, S. N. UPADHYAY and S. KUMAR	1221	Mass transfer between the particles and the fluid in fluidized beds of large particles
C. HINCHCLIFFE and A. J. WILLMOTT	1229	Lumped heat-transfer coefficients for thermal regenerators
A. BEJAN and R. ANDERSON	1237	Heat transfer across a vertical impermeable partition imbedded in porous medium
T. HONDA, T. HAYASHI and A. KANZAWA	1247	Heat transfer from rarefied ionized argon gas to a biased tungsten fine wire
T. UEDA, M. INOUE and S. NAGATOME	1257	Critical heat flux and droplet entrainment rate in boiling of falling liquid films
T. UEDA and Y. ISAYAMA	1267	Critical heat flux and exit film flow rate in a flow boiling system

Bibliography

R. I. SOLOUKHIN and O. G. MARTYNENKO

1277	Heat and Mass Transfer Bibliography—Soviet Works
------	--

Shorter Communication

J.-M. LIUJKX, J. K. PLATTEN and J. CL. LEGROS

1287	On the existence of thermoconvective rolls, transverse to a superimposed mean Poiseuille flow
------	---

Announcement

1293	Sixth National Heat and Mass Transfer Conference
------	--

August

T.-H. SHIH	1295	Computer-extended series: natural convection in a long horizontal pipe with different end temperatures
L. KREBS, K. BREMHORST and U. MÜLLER	1305	Measurement and prediction of the mean and fluctuating temperature field downstream of a multi-bore jet block in which one jet is heated

Contents

- G. ANTONINI, M. GELUS,
G. GIFFANT et A. ZOULALIAN
- J. P. RICHARD et J. GOUNOT
- C. F. HSU, E. M. SPARROW and
S. V. PATANKAR
- E. M. SPARROW and C. F. HSU
- T. HINRICH, E. HENNECKE and
H. YASUDA
- F. GEOOLA and A. R. H. CORNISH
- S. G. BANKOFF, R. S. TANKIN,
M. C. YUEN and C. L. HSIEH
- A. AZIZ and T. Y. NA
- D. J. GUNN and P. V. NARAYANAN
- Y. KATTO
- R. K. AHLUWALIA and K. H. IM
- Book Review*
- 1313 Caractéristiques des transferts simultanés de masse et de quantité de mouvement dans des écoulements de recirculation forcée
- 1325 Critère d'apparition de la convection naturelle dans des couches poreuses stratifiées
- 1335 Numerical solution of moving boundary problems by boundary immobilization and a control-volume-based finite-difference scheme
- 1345 Analysis of two-dimensional freezing on the outside of a coolant-carrying tube
- 1359 The effect of plasma-deposited polymers on the nucleate boiling behavior of copper heat transfer surfaces
- 1369 Numerical solution of steady-state free convective heat transfer from a solid sphere
- 1381 Countercurrent flow of air/water and steam/water through a horizontal perforated plate
- 1397 Periodic heat transfer in fins with variable thermal parameters
- 1405 Axial thermal dispersion and particle to fluid transfer in packed-fluidized beds
- 1413 General features of CHF of forced convection boiling in uniformly heated rectangular channels
- 1421 Combined conduction, convection, gas radiation and particles radiation in MHD diffusers
- 1431 Medium and High Temperature Solar Processes, edited by Jan F. Kreider
- September**
- W. J. MINKOWYCZ, N. J. RABADI and D. M. FRANCE
- R. L. LEVIN
- V. R. VOLLER and M. CROSS
- A.-M. DALBERT, F. PENOT et J.-L. PEUBE
- M. G. COOPER and T. T. CHANDRATILLEKE
- 1433 Dynamics of inert gas bubbles in forced convective systems
- 1443 The freezing of finite domain aqueous solutions: solute redistribution
- 1457 Estimating the solidification/melting times of cylindrically symmetric regions
- 1463 Convection naturelle laminaire dans un canal vertical chauffé à flux constant
- 1475 Growth of diffusion-controlled vapour bubbles at a wall in a known temperature gradient

Contents

J. L. SPROSTON

- 1493 Two-dimensional solidification in pipes of rectangular section

Z. H. QURESHI and B. GEBHART

- 1503 Measurements of fluid and thermal transport in vertical buoyancy induced flows in cold water

J. S. VRENTAS, R. NARAYANAN
and S. S. AGRAWAL

- 1513 Free surface convection in a bounded cylindrical geometry

H.-T. LIN and Y.-P. SHIH

- 1531 Unsteady thermal entrance heat transfer of power-law fluids in pipes and plate slits

Shorter Communications

B. A. KADER

- 1541 Temperature and concentration profiles in fully turbulent boundary layers

R. D. BOYD

- 1545 A unified theory for correlating steady laminar natural convective heat transfer data for horizontal annuli

A. BENNANI, E. ALCARAZ and
J. MATHIEU

- 1549 An experimental set-up for interaction turbulence-chemical reaction research

B. CLEMENTS and Y. LEE

- 1554 Additional parameters in two-phase closed thermosyphons:
effects of tube diameter and wall thickness

Letters to the Editors

S. HOSSAIN

- 1557 Comments on 'A synthesis of analytical results for natural convection heat transfer across rectangular enclosures'

A. BEJAN

- 1557 Reply to "Comments on 'A synthesis of analytical results for natural convection heat transfer across rectangular enclosures'"

Book Review

S. ANGUS

- 1559 Water and Steam: their properties and current industrial applications

October

A. SHARON and S. G. BANKOFF

- 1561 On the existence of steady supercritical plane thermal detonations

A. CICHY, S. LASOCKI and
H. MARCAK

- 1573 Efficient numerical technique for determining two-dimensional temperature distribution for N arbitrarily located heat receivers with phase-change

Y. JOSHI and B. GEBHART

- 1577 Effect of pressure stress work and viscous dissipation in some natural convection flows

J. A. C. HUMPHREY and
E. W. JACOBS

- 1589 Free-forced laminar flow convective heat transfer from a square cavity in a channel with variable inclination

M. FARGE et P. DUHAMEL

- 1599 Simulation numérique du régime thermohydraulique transitoire d'un jet bidimensionnel injecté dans une cavité rectangulaire

R. ANDERSON and A. BEJAN

- 1611 Heat transfer through single and double vertical walls in natural convection: theory and experiment

G. SHIRALKAR, A. GADGIL and
C. L. TIEN

- 1621 High Rayleigh number convection in shallow enclosures with different end temperatures

Contents

J. V. BECK	1631 Transient temperatures in a semi-infinite cylinder heated by a disk heat source
C. S. SUBRAMANIAN and R. A. ANTONIA	1641 Response of a turbulent boundary layer to a sudden decrease in wall heat flux
V. M. YEROSHENKO, L. I. ZAICHIK and B. Yu BAKHVALOV	1649 Heat transfer in laminar plane channel flow with uniform suction or injection
J. MADEJSKI	1657 A new criterion of dry-out in two-phase flow
M. ADELT and J. MIKIELEWICZ	1667 Heat transfer in a channel at supercritical pressure
J. F. GABITTO and U. BÖHM	1675 Experimental study of free convective mass transfer in porous media
F. H. AZAD and M. F. MODEST	1681 Combined radiation and convection in absorbing, emitting and anisotropically scattering gas-particulate tube flow
R. G. KEMINK and E. M. SPARROW	1699 Heat transfer coefficients for melting about a vertical cylinder with or without subcooling and for open or closed containment
J. SUCEC	1711 An improved quasi-steady approach for transient conjugated forced convection problems
S. SIENIUTYCZ	1723 Thermodynamics of coupled heat, mass and momentum transport with finite wave speed I—basic ideas of theory
J. BANDROWSKI and J. ZIOŁO	1733 Heat and mass transfer bibliography—Polish works (1979–1980)
<i>Shorter Communications</i>	
J. H. LEE and T. S. LEE	1739 Natural convection in the annuli between horizontal confocal elliptic cylinders
M. KAVIANY and R. A. SEBAN	1742 Transient turbulent thermal convection in a pool of water
<i>Letters to the Editors</i>	
R. A. ANTONIA	1747 Discussion of ‘Application of a second-moment turbulence closure to heat and mass transport in thin shear flows—I. Two-dimensional transport’
B. E. LAUNDER	1748 Author’s response to “Discussion of ‘Application of a second-moment turbulence closure to heat and mass transport in thin shear flows’”.
<i>Book Review</i>	
P. B. WHALLEY	1749 Thermohydraulics of two-phase systems for industrial design and nuclear engineering, edited by J. M. Delhaye, M. Giot and M. L. Riethmuller
<i>Announcements</i>	
	1751 Nineteenth Annual Meeting of the Society of Engineering Science
	Numerical Computation of Multi-Phase Flow

Contents

November

- Y. MORI 1753 Heat transfer bibliography—Japanese works
- S. SIENIUTYCZ 1759 Thermodynamics of coupled heat, mass and momentum transport with finite wave speed II—examples of transformations of fluxes and forces
- M. N. ROLIN, R. I. SOLOUKHIN and F. B. YUREVICH 1771 Heat and mass transfer in an emitting compressed layer with reflection from the body surface and injection of ablation products
- C. F. WEBER 1783 Analysis and solution of the ill-posed inverse heat conduction problem
- O. P. CHAWLA and A. I. KHANDWAWALA 1793 Thermal performance of regenerators and waste heat recovery
- S. V. PATANKAR and C. PRAKASH 1801 An analysis of the effect of plate thickness on laminar flow and heat transfer in interrupted-plate passages
- S. BYGGSTØYL and W. KOLLMANN 1811 Closure model for intermittent turbulent flows
- H. NAGASUE 1823 Steady-state heat transfer with axial conduction in laminar flow in a circular tube with a specified temperature or heat flux wall
- C. S. SUBRAMANIAN and R. A. ANTONIA 1833 Effect of Reynolds number on a slightly heated turbulent boundary layer

Shorter Communications

- J. D. THORNTON and T. J. ANDERSON 1847 Surface renewal phenomena in liquid–liquid droplet systems with and without mass transfer
- B. J. VENKATACHALA and G. NATH 1848 Nonsimilar laminar natural convection in a thermally stratified fluid
- S. T. LIN and L. T. FAN 1851 Pressure drop of two-phase flow through circular tubes with in-line static mixers accompanied by condensation—simple stochastic modelling of the data
- H. INABA and N. SEKI 1854 An experimental study of transient heat transfer characteristics in a porous layer enclosed between two opposing vertical surfaces with different temperatures

Book Reviews

- N. H. AFGAN 1859 Two-Phase Flow Heat Transfer in the Power and Process Industries, by A. E. Bergles, J. G. Collier, J. M. Delhaye, G. F. Hewitt and F. Mayinger
- N. C. MARKATOS 1860 Turbulence. Topics in Applied Physics, Vol. 12, edited by P. Bradshaw

December

- E. N. GANIC and J. P. HARTNETT 1861 Professor Warren M. Rohsenow—on his 60th birthday

Contents

E. R. G. ECKERT, R. J. GOLDSTEIN, S. V. PATANKAR, E. PFENDER, J. W. RAMSEY, T. W. SIMON, E. M. SPARROW and K. Y. TEICHMAN	1863 Heat transfer—a review of 1980 literature
L. SENF	1903 A special case of diffusion with moving boundary
C. C. CHEN, J. V. LOH and J. W. WESTWATER	1907 Prediction of boiling heat transfer duty in a compact plate-fin heat exchanger using the improved local assumption
A. C. ALKIDAS	1913 The influence of size-distribution parameters on the evaporation of polydisperse dilute sprays
M. J. ADAMS and H. KRIER	1925 Unsteady internal boundary layer analysis applied to gun barrel wall heat transfer
M. G. COOPER and C. R. STONE	1937 Boiling of binary mixtures—study of individual bubbles
M. KAWAHASHI and M. SUZUKI	1951 Temperature separation produced by a Hartmann- Sprenger tube coupling a secondary resonator
K. V. LIU, J. R. LLOYD and K. T. YANG	1959 An investigation of a laminar diffusion flame adjacent to a vertical flat plate burner
L. S. YAO and W. CHERNEY	1971 Transient phase-change around a horizontal cylinder
<i>Shorter Communications</i>	
M. A. AZOUNI	1983 Oscillatory behaviour in convecting water
B. RUBINSKY and E. G. CRAVAHLO	1987 A finite element method for the solution of one-dimensional phase change problems
A. J. LADERMAN	1990 Total temperature-velocity relation in turbulent compressible boundary layers
<i>Book Reviews</i>	
A. B. BARTMAN, V. G. LEITSINA and N. V. PAVLYUKEVICH	1993 Heat Conduction, by S. Kakaç and Y. Yener
O. G. MARTYNENKO and R. I. SOLOUKHIN	1993 Heat Conduction, by M. N. Ožišik
<i>Announcement</i>	
	1995 The Ninth U.S. National Congress of Applied Mechanics

i Volume 24 Contents and Author Index

AUTHOR INDEX

- ABDUL MAJEED, P. M., 323
 ACKER, M. T., 1201
 ADAMS, M. J., 1925
 ADELT, M., 1667
 ADZERIKHO, K. S., 57
 AFGAN, N. H., 1859
 AGRAWAL, S. S., 1513
 AHLUWALIA, R. K., 1421
 AISA, L., 1005
 ALCARAZ, E., 1549
 AL-HAYES, R. A. M., 213, 223
 ALI, S. M. J., 491
 ALIPOUR-HAGHIGHI, F., 659
 ALKIDAS, A. C., 1913
 ALP, E., 521
 ANDERSON, R., 1237, 1611
 ANDERSON, T. J., 1847
 ANDRE, P., 1211
 ANGUS, S., 1559
 ANTONIA, R. A., 1641, 1747, 1833
 ANTONINI, G., 1313
 ANTSULEVICH, V. I., 57
 ATANACKOVIC, T. M., 443
 AURACHER, H., 99
 AVEDISIAN, C. T., 695
 AYERS, D. L., 449
 AZAD, F. H., 1681
 AZOUNI, M. A., 1983
- BACON, G., 991
 BALADI, J. Y., 449
 BAKHVALOV, B. YU., 1649
 BALAGEAS, D. L., 757
 BANDROWSKI, J., 147, 1733
 BANKOFF, S. G., 1381, 1561
 BAR-COHEN, A., 181
 BARELKO, V. V., 47
 BARROW, H., 1076
 BASILICO, C., 371
 BAU, H. H., 597
 BECK, J. V., 155, 1631
 BEJAN, A., 1237, 1557, 1611
 BENNANI, A., 1549
 BERRY, I. J. G., 955, 956
 BESSE, J. C., 1119
 BLYTHE, P. A., 497
 BOHM, U., 1675
 BOLOGA, M. K., 811
 BONTOUX, P., 829
 BORIES, S., 991
 BOXMAN, R. L., 919
 BOYD, R. D., 685, 1545
 BREBBIA, C. A., 843
 BREMHRST, K., 243, 1305
 BROWNE, W. B., 871
 BULLFORCE, T. A., 859
 BYGGSTØYL, S., 1811
- CASTALDINI, M., 133
 CATON, J. A., 581
 CAUSSADE, B., 1005
 CHANDRATILLEKE, T. T., 1475
 CHASTAIN, S. R., 507
 CHAWLA, O. P., 1793
 CHEN, C. C., 1907
 CHEN, C.-J., 1179
 CHENG, P., 983, 1151
 CHENG, S. C., 1127
 CHERNEY, W., 1971
 CHERNIKA, I. M., 821
 CHILUKURI, R., 305
 CHO, Y. I., 945
- CHECHILL, S. W., 727
 CICHY, A., 1573
 CLEMENTS, B., 1554
 CORNISH, A. R. H., 1369
 COOPER, M. G., 1475, 1937
 CRABOL, J., 1211
 CRAUSSE, P., 991
 CRAVHL, E. G., 1987
 CROSS, M., 545, 1457
 CUNNINGHAM, M. E., 1081
- DAGUENET, M., 1071
 DALBERT, A.-M., 1463
 DANIELS, L. C., 871
 DASGUPTA, S., 1089
 DAVEY, G., 89
 DAWOOD, A. S., 491
 DEL VALLE, M. V. H., 1025
 DIDKOVSKY, A. B., 811
 DJUKIC, D. J. S., 443
 DUHAMEL, P., 1599
 DUMARGUE, P., 1119
 DUPORIEUX, F. J., 757
 DURBIN, P. A., 969
- ECKERT, E. R. G., 1, 1863
 EDWARDS, D. K., 1019
 EDWARDS, M. F., 1059
 EGERTON, P., 557
 EL-HADIK, A. A. B., 1076
 ELLIOTT, J. M., 395
 EL-RIEDY, M. K., 365
 EL TAHRY, S., 35
 EMMERMAN, P. J., 1139
 EPANOV, YU. G., 571
- FAN, L. T., 1851
 FARQE, M., 1599
 FAW, R. E., 859
 FOURCHER, B., 1201
 FRANCE, D. M., 1433
 FROST, S., 969
- GABITTO, J. F., 1675
 GADGIL, A., 1621
 GALERSSTEIN, D. M., 571
 GANIC, E. N., 1861
 GARONNE, X., 563
 GEBHART, B., 1503, 1577
 GELUS, M., 1313
 GEOOLA, F., 1369
 GEORGE, J., 1005
 GIBSON, R. D., 231
 GILLY, B., 829
 GLASSMAN, I., 695
 GOLDSTEIN, R. J., 1, 1863
 GOLOVACHOV, YU. P., 649
 GOLT, M., 387
 GOSMAN, A. D., 35
 GOULARD, R., 1139
 GOUNOT, J., 1325
 GRABOSKI, M. S., 671
 GRAEBEL, W. P., 125, 771
 GREFF, R., 1211
 GREIF, R., 621, 1097
 GRISSOM, W. M., 261
 GROENEVELD, D. C., 1127
 GRÖTZBACH, G., 475
 GUIFFANT, G., 1313
 GUILLAUME, R., 563
 GUNN, D. J., 1405
 GUPTA, R. S., 251
- GURDAL, U., 851
 HARTNETT, J. P., 945, 1861
 HASSAB, M. A., 739
 HATFIELD, D. W., 1019
 HAYASHI, T., 1247
 HELLAND, K. N., 133
 HENNECKE, E., 1359
 HENZE, R. H., 459
 HEYWOOD, J. B., 581
 HIEBER, C. A., 315
 HINCHCLIFFE, C., 1229
 HINRICH, T., 1359
 HONDA, T., 1247
 HOSSAIN, S., 1557
 HOWARTH, J. A., 557
 HRYCAK, P., 407
 HSIEH, C. L., 1381
 HSU, C. C., 771
 HSU, C. F., 1335, 1345
 HUENEFELD, J. C., 765
 HUMBERT, M., 1161
 HUMPHREY, J. A. C., 305, 459, 1589
- IM, K. H., 1421
 INABA, H., 1854
 INOUE, M., 1257
 ISAYAMA, Y., 1267
- JACOBS, E. W., 1589
 JOSHI, Y., 1577
 JUNG, G., 371
- KADER, B. A., 1541
 KANZAWA, A., 1247
 KARVINEN, R., 881
 KATTO, Y., 109, 533, 541, 1413
 KAVIANY, M., 1742
 KAWAHASHI, M., 1951
 KAYS, W. M., 774
 KEMINK, R. G., 1699
 KENNING, D. B. R., 1025
 KERN, J., 335
 KHABEEV, N. S., 1033
 KHANDWAWALA, A. I., 1793
 KHUSID, B. M., 1045
 KLIMENICO, V. V., 69
 KOLAR, A. K., 571
 KOLEND, Z. SZ., 891
 KOLLMANN, W., 1811
 KREBS, L., 1305
 KRIER, H., 1925
 KUBACZKA, A., 147
 KUMAR, D., 251
 KUMAR, S., 1221
 KUTATELADZE, S. S., 803
 KVERNVOLD, O., 887
- LADERMAN, A. J., 1990
 LASOCKI, S., 1573
 LANKFORD, D. W., 1171
 LARSON, E. D., 273
 LAUNDER, B. E., 35, 1748
 LAW, C. G., JR., 909
 LEBODEV, P. I., 611
 LEE, J. H., 1739
 LEE, T. S., 1739
 LEE, Y., 1554
 LE GOFF, P., 956
 LEGROS, J. CL., 1287
 LELCHUK, V. L., 953

Author Index

- LENK, D., 439
 LEONTIEV, A. I., 821
 LEVIN, R. L., 1443
 LIGRANI, P. M., 774
 LIN, H.-T., 1531
 LIN, S. T., 1851
 LIU, K. V., 1959
 LIUJKX, J.-M., 1287
 LLOYD, J. R., 1959
 LOH, J. V., 1907
 LYKOUDIS, P. S., 635
- MADEJSKI, J., 1657
 MAGALLON, D., 1191
 MAHERSHI, J. C., 117
 MAJUMDAR, J., 1089
 MALVESTUTO, V., 133
 MANOCHA, B. L., 491
 MARCAK, H., 1573
 MARKATOS, N. C., 1860
 MARTIN, M., 371, 1161
 MARTYNNENKO, O. G., 171, 959,
 1277
 MASBERNAT, L., 1005
 MATHIEU, J., 1549
 MEINKÖHN, D., 645
 MERTOL, A., 621
 MERZHANOV, A. G., 47
 MESSINA, A. D., 141
 MEYER, G. H., 778
 MIKHAILOV, M. D., 81
 MIKIELEWICZ, J., 431, 1667
 MILOJEVIC, D. Z., 343
 MINKOWYCZ, W. J., 1433
 MODEST, M. F., 1681
 MOFFAT, R. J., 774
 MOHAMMADI, S. S., 671
 MOLKI, M., 507
 MORI, Y., 1753
 MOSTINSKY, I. L., 821
 MÜLLER, U., 1305
- NA, T. Y., 1397
 NAGASUE, H., 1823
 NAGATOMI, S., 1257
 NAGIEV, F. B., 1033
 NARAYANAN, P. V., 1405
 NARAYANAN, R., 1513
 NATH, G., 1845
 NEWMAN, J., 909
 NIGMATULIN, R. I., 1033
 NIVOIT, .., 707
 NOWAKOWSKI, J., 891
- OBLAKOWSKI, R., 891
 OGNIEWICZ, Y., 421
 O'KANE, D. J., 205
 ÖZİSK, M. N., 81, 739
 OZOE, H., 727
- PALMER, H. J., 117
 PANDEY, D. K., 1221
 PARANTHOEN, P., 1105
 PARK, E. L., JR., 141
 PATANKAR, S. V., 1, 957, 1335,
 1801, 1863
 PAUL, P. H., 659
 PAULMIER, D., 707
- PAVLović, M. I., 343
 PEDDICORD, K. L., 1081
 PEDERSEN, H., 299
 PENOT, F., 1463
 PEUBE, J.-L., 1463
 PFENPER, E., 1, 1863
 PIERINI, P., 909
 PLATTEN, J. K., 1287
 PLUMB, O. A., 765
 POLMAN, J., 184
 POLONSKY, V. S., 821
 POOTS, G., 557
 PRAKASH, C., 895, 1801
 PRENOSIL, J. E., 299
 PROFIZI, J. L., 707
- QURESHI, Z. H., 1503
- RABADI, N. J., 1433
 RAGHEB, H. S., 1127
 RAMSEY, J. W., 1, 273, 1863
 RANE, A., 785
 RAYCHAUDHURI, B. C., 1089
 RESNICK, W., 387
 RICHARD, J. P., 1325
 ROLIN, M. N., 1771
 ROSE, J. W., 191
 ROUX, B., 829
 RUBINSKY, B., 1987
 RUTH, D. W., 933
 RYBANIN, S. S., 611
- SALAÜN - PENOUER, G., 563
 SAMPSON, P., 231
 SANTORO, R. J., 1139
 SAXENA, S. C., 571
 SCHOENHALS, R. J., 449
 SCHREY, H.-G., 335
 SCHRÖPPEL, J., 165
 SEALE, W. J., 768
 SEBAN, R. A., 1742
 SEDLER, B., 431
 SEKI, N., 1854
 SEMERJIAN, H. G., 1139
 SENF, L., 1903
 SHARON, A., 1561
 SHEKRILADZE, I. G., 795
 SHERIFF, N., 205
 SHIBATA, T., 727
 SHIH, T.-H., 1295
 SHIH, Y.-P., 1531
 SHING CHIOU, J., 1179
 SHIRALKAR, G., 1621
 SHLIEN, D. J., 919
 SHUL'MAN, Z. P., 1045
 SIENIUTYCYZ, S., 1723, 1759
 SIMON, T. W., 1863
 SIMPKINS, P. G., 497
 SINGER, R. M., 955
 SINGH, S. N., 395
 SINGHAM, J. R., 956, 1079
 SLOAN, E. D., 671
 SMITH, R., 1059
 SMITH, T. F., 659
 SOLOUKHIN, R. I., 171, 959, 1277,
 1771
 SPARROW, E. M., 1, 273, 507,
 851, 895, 1335, 1345, 1699, 1863
- SPIGA, G., 355
 SPIGA, M., 355
 SPROSTON, J. L., 1493
 STEPHAN, K., 99
 STESIK, L. N., 611
 STONE, C. R., 1937
 STRONG, A. B., 521
 STYRIKOVICH, M. A., 821
 SUBRAMANIAN, C. S., 1641, 1833
 SUCEC, J., 1711
 SUZUKI, M., 1951
- TANKIN, R. S., 1381
 TEICHMAN, K. Y., 1, 1863
 THOME, J. R., 89
 THORNTON, J. D., 1847
 TIEN, C. L., 195, 421, 1621
 TORRANCE, K. E., 597
 TOWNEND, L. H., 955
 TRELA, M., 749
 TRINITE, M., 1105
 TSACALOS, D., 757
 TYVAND, P. V., 887
- UEDA, T., 1257, 1267
 ÜNAL, H. C., 285
 UPADHYAY, S. N., 1221
- VAFAI, K., 195
 VAN GASSELT, M. L. G., 285
 VAN'T VERLAAT, P. M., 285
 VENKATACHALA, B. J., 1848
 VERMA, A. K., 1151
 VEST, C. M., 685
 VISKANTA, R., 1171
 VOLLER, V. R., 545, 1457
 VRENTAS, J. S., 1513
- WAGNER, L. Y., 635
 WALKLATE, P. J., 1051
 WANG, C. S., 1097
 WEBB, R. L., 715
 WEBER, C. F., 1783
 WESTWATER, J. W., 1907
 WHALLEY, P. B., 1749
 WIERUM, F. A., 261
 WILLMOTT, A. J., 1229
 WINTERTON, R. H. S., 213, 223
 WROBEL, L. C., 843
- YANG, K. T., 1959
 YAO, L. S., 1971
 YAO, S.-C., 785
 YASUDA, H., 1359
 YEROSHENKO, V. M., 1649
 YUEN, M. C., 1381
 YUREVICH, F. B., 1771
- ZABRODSKY, S. S., 571
 ZAICHIK, L. I., 1649
 ZARIFEEH, E. K., 1071
 ZHUKOV, S. A., 47
 ZIODO, J., 1733
 ZOULALIAN, A., 1313
 ZSCHERPEL, W., 439
 ZVIRIN, Y., 621