

Heat transfer bibliography—Japanese works

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CONDUCTION

- T. Hayashi, T. Katayama, Y. Shiotsuki, N. Tsutsumi, H. Kitayama and J. Tsutsumi, Simulation on thermal performance of the earth coupling heat conduction and moisture movement, *Engng Sci. Rep. Kyushu Univ.* **12**(1), 47 (1990).
T. Kunugi, N. Akino, K. Ichimiya and I. Takagi, Evaluation of heat conduction and visualization of heat flux in a plate making use of heat transfer experiments, *Trans. Japan Soc. Mech. Engrs* **B56**(527), 2073 (1990).
K. Malhotra and A. S. Mujumdar, Effect of particle shape on particle-surface thermal contact resistance, *J. Chem. Engng Japan* (English) **23**(4), 510 (1990).

NATURAL CONVECTION

- C. H. Cheng, H. S. Kou and W. H. Huang, Locally fully developed laminar free convection within asymmetrically heated vertical channel, *J.S.M.E. Int. J., Series II* (English) **33**(2), 305 (1990).
M. A. I. El-Shaarawi and Z. Kodah, Natural convection in an annulus with two rotating boundaries, *J.S.M.E. Int. J., Series II* (English) **33**(2), 316 (1990).
M. Fujii, T. Tomimura and T. Takenoshita, Laminar mixed convection heat transfer between vertical parallel plates with discrete heat sources placed at arbitrary intervals (part 1: insulated plates), *Engng Sci. Rep. Kyushu Univ.* **11**(4), 395 (1990).
S. Fukusako, K. Kitayama and M. Tago, Free convection heat transfer along a horizontal ice cylinder immersed in seawater, *Trans. JAR* **7**(1), 57 (1990).
T. Hanzawa, X. J. Huang, S. Kamata and N. Sakai, Heat transfer by natural convection in an enclosed flat cylinder, *J. Chem. Engng Japan* (English) **23**(3), 378 (1990).
T. Hori, N. Satofuka, K. Morinishi and H. Nishida, Numerical simulation of natural convection in a square cavity using vorticity-velocity formulation, *Trans. Japan Soc. Mech. Engrs* **B56**(530), 2914 (1990).
T. Inagaki and K. Komori, One proposal on wall shear stress of the turbulent natural convection along a vertical flat plate, *Trans. Japan Soc. Mech. Engrs* **B56**(526), 1759 (1990).
T. Inagaki and K. Komori, Heat transfer of natural convection around vertical arrangement of two horizontal cylinders, *Trans. Japan Soc. Mech. Engrs* **B56**(530), 3050 (1990).
T. Inagaki and K. Komori, Heat transfer of natural convection around two vertically arranged horizontal cylinders, *Kagaku Kogaku Ronbunshu* (Trans. Chem. Engng Japan) **16**(6), 1256 (1990).
H. Ishiguro, K. Ohyama, H. Nariai, T. Teramoto and M. Akai, Numerical analysis of buoyancy and Marangoni convection in melted zone of metals under high power laser irradiation, *J. Nucl. Sci. Technol.* (English) **27**(12), 1115 (1990).
W. Jia, Y. Nakamura and M. Yasuhara, Natural convection flow solver in primitive variable form, *J. Japan Soc. Fluid Mech.* **9**, 34 (1990).
H. Kamegaya, N. Asano and R. Ishiguro, A variational principle for thermally coupled problems between solid and fluid (2nd report, on thermally coupled problems of unsteady natural convective flow), *Trans. Japan Soc. Mech. Engrs* **B56**(530), 3071 (1990).
Y. Kataoka, T. Fukui, S. Hatamiya, M. Murase, M. Naitoh and I. Sumida, Thermal-hydraulic characteristics and heat removal capability of containment cooling system with external water wall, *J. Nucl. Sci. Technol.* (English) **27**(9), 802 (1990).
H. Kimoto, Y. Miyawaki and M. Imajo, Three-dimensional flow generated in the multicellular natural convection field of a vertical slot, *Trans. Japan Soc. Mech. Engrs* **B57**(533), 236 (1991).
S. Kimura, Infinite Prandtl-number convection in a cube heated from below (numerical experiment by the pseudo-spectral method), *Trans. Japan Soc. Mech. Engrs* **B56**(529), 2717 (1990).
K. Kitamura, M. Honma and S. Kashiwagi, Heat transfer of combined forced and natural convection from a horizontal cylinder (heat transfer of aiding flow), *Trans. Japan Soc. Mech. Engrs* **B57**(534), 670 (1991).
T. Masuoka, T. Nishimura, S. Kawamoto and T. Tsuruta, Effects of midheight heating or cooling through a thermal screen on natural convection in a porous layer, *Trans. Japan Soc. Mech. Engrs* **B57**(533), 2431 (1991).
K. Morita, Y. Nakamura, N. Taniguchi, K. Fukuda and S. Hasegawa, Unsteady three-dimensional behavior of natural convection in horizontal annulus (III, validity of direct numerical simulation of turbulent natural convection), *J. Atom. Energy Soc. Japan* **32**(7), 719 (1990).
T. Nishimura, M. Fujiwara and H. Miyashita, Visualization of temperature fields of transient natural convection with maximum density effect in a water-filled enclosure by chiral nematic liquid crystals, *J. Chem. Engng Japan* (English) **23**(2), 241 (1990).
H. Okanaga and T. Tanahashi, Numerical analysis of natural convection in a square cavity at high Rayleigh numbers using the GSMAC finite-element method, *Trans. Japan Soc. Mech. Engrs* **B56**(530), 2922 (1990).
H. Ozoe, T. Inoue and M. Iwamoto, Numerical analyses and experiments of transport processes, *Rep. Inst. Adv. Mater. Study Kyushu Univ.* **4**(2), 115 (1990).
H. Ozoe, E. Maruo and H. Matsuo, Numerical analysis of

transient natural convection of liquid metals after a step change in an external lateral magnetic field, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng Japan)* **16**(5), 990 (1990).

T. Sato, A. Saito and T. Tanahashi, Numerical analysis of natural convection of an electrically conducting fluid under magnetic field using the GSMAC finite-element method, *Trans. Japan Soc. Mech. Engrs* **B56**(526), 1571 (1990).

M. Takashima, The stability of natural convection in an inclined fluid layer with internal heat generation II, *J. Phys. Soc. Japan (English)* **60**(2), 455 (1991).

T. Tomimura and M. Fujii, A numerical analysis of laminar mixed convection heat transfer between vertical parallel plates with discrete sources heated at different rate (part 2: conducting plates), *Rep. Inst. Adv. Mater. Study Kyushu Univ.* **4**(1), 15 (1990).

T. Tomimura and M. Fujii, Mixed convection heat transfer from vertical parallel plates with discrete heat sources (effects of conduction in plates), *Trans. Japan Soc. Mech. Engrs* **B57**(534), 676 (1991).

T. Tsuji, Y. Nagano, M. Tagawa and M. Aoyama, Space-time structure of a turbulent natural convection boundary layer, *Trans. Japan Soc. Mech. Engrs* **B56**(527), 2019 (1990).

T. Watanabe, H. Kawakami and H. M. Warui, Free convection boundary layers over a wedge with uniform suction or injection, *Trans. Japan Soc. Mech. Engrs* **B56**(531), 3366 (1990).

FORCED CONVECTION

T. Aihara and H. Gakumasawa, Numerical analysis of thermal stability of forced-flow cooled superconductors, *Cryogenic Engng* **25**(4), 250 (1990).

Y. Aoyama, K. Hijikata and K. Futagami, Numerical analysis of turbulent flow in a curved tube by a combination of the $k-\varepsilon$ model and the algebraic turbulent stress model, *Trans. Japan Soc. Mech. Engrs* **B56**(528), 2300 (1990).

Y. Aoyama, K. Hijikata and K. Futagami, Secondary motion and turbulence of the flow through a circular π -curved bent tube and a S-duct, *Trans. Japan Soc. Mech. Engrs* **B56**(531), 3321 (1990).

S. Aso and M. Hayashi, Aerodynamic heating in hypersonic flow, *J. Japan Soc. Aeronaut. Space Sci.* **38**(435), 178 (1990).

K. Fukuda, S. Hasegawa, T. Kondoh, F. Nozaki and T. Nagayoshi, Instability of supercritical helium flow, *Trans. Japan Soc. Mech. Engrs* **B57**(534), 621 (1991).

H. Fuse, S. Torii, T. Futami and S. Kajiya, Flow and heat transfer characteristics behind circular cylinders in lower Reynolds number region, *Res. Rep. Fac. Engng Kagoshima Univ.* **32**, 1 (1990).

T. Hagiwara and H. Madarame, Two-dimensional numerical analysis of turbulent flow with a free surface in a tank, *Trans. Japan Soc. Mech. Engrs* **B57**(534), 412 (1991).

E. Hasegawa and M. Segawa, Heat generation in a viscous flow between a horizontally and vertically oscillating plane and a fixed plane, *J.S.M.E. Int. J., Series II (English)* **33**(3), 454 (1990).

E. Hasegawa and J. Yamada, Heat transfer in a steady flow of a viscous fluid with temperature-dependent material properties between a permeable wall and a solid wall, *Trans. Japan Soc. Mech. Engrs* **B57**(533), 276 (1991).

M. Hishida, Local heat transfer coefficient of a ribbed surface, *Trans. Japan Soc. Mech. Engrs* **B56**(524), 1107 (1990).

M. Hori, J. Yata and T. Minamiyama, The effects of free stream turbulence on turbulent boundary layer on a flat plate with zero pressure gradient (2nd report, effects of pitch-diameter ratio of the turbulence grid), *Trans. Japan Soc. Mech. Engrs* **B56**(527), 1922 (1990).

K. Ichimiya and N. Hosaka, A fundamental study of heat transfer characteristics due to confined impinging two-dimensional jets (numerical estimation for three laminar slot jets), *Trans. Japan Soc. Mech. Engrs* **B56**(526), 1727 (1990).

T. Igarashi and H. Takasaki, Heat transfer around three rectangular cylinders fixed on a flat plate laminar boundary layer, *Trans. Japan Soc. Mech. Engrs* **B56**(523), 780 (1990).

T. Igarashi and H. Takasaki, Fluid flow and heat transfer around a rectangular cylinder in a flat plate laminar boundary layer, *Trans. Japan Soc. Mech. Engrs* **B56**(529), 2759 (1990).

T. Igarashi and H. Takasaki, Enhancement of heat transfer around a rectangular cylinder in a flat plate boundary layer, *Trans. Japan Soc. Mech. Engrs* **B56**(531), 3431 (1990).

M. Ikegami, M. Hida and K. Nishiwaki, Computational fluid-dynamic predictions of heat transfer to the combustion-chamber walls of diesel engines, *Trans. Japan Soc. Mech. Engrs* **B57**(534), 744 (1991).

T. Inagaki and K. Komori, Numerical presentations of turbulent heat transfer using penetration model (turbulent boundary layer), *J. Toyota College Technol.* **23**, 1 (1990).

Y. Inoue and Y. Yamamoto, Hypersonic aerodynamic heating studies for space plane, *J. Japan Soc. Aeronaut. Space Sci.* **38**(435), 204 (1990).

T. Ishikawa and T. Kamiya, Promoting effect of heat transfer due to recirculating flows behind block-like structures, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng Japan)* **16**(6), 1187 (1990).

K. Iwashita and M. Murakami, Direct numerical solution of two-fluid equation for thermal shock wave, *Cryogenic Engng* **25**(4), 244 (1990).

A. Kamitani, T. Amano, S. Sekiya and A. Ohara, Stability analysis of forced-flow cooled superconducting coil (numerical simulation on multiple stability), *Cryogenic Engng* **25**(3), 156 (1990).

K. Kataoka, Controlling heat transfer by means of jet impingement, *J. Japan Soc. Mech. Engrs* **93**(864), 910 (1990).

S. Kikkawa, Full-coverage film cooling of a flat plate with impinging jets, *Sci. Engng Rev. Doshisha Univ.* **31**(3), 259 (1990).

S.-T. Koh, S. Hiraoka, Y. Tada, T. Aragaki, I. Yamada, T. Takahashi and K. Suzuki, Heat transfer in jet mixing vessel with rotating nozzle around the vessel axis, *J. Chem. Engng Japan (English)* **23**(5), 627 (1990).

Y. Komiyama, F. Mikami and K. Okui, Laminar forced convection heat transfer in rectangular ducts rotating about an axis parallel to duct axis, *Trans. Japan Soc. Mech. Engrs* **B56**(524), 1099 (1990).

K. Komori and T. Inagaki, Effect of suction through a slit on forced convective heat transfer, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng Japan)* **16**(2), 275 (1990).

S. Kotoh and G. Yamanaka, Skew upstream differential schemes for 3-dimensional fluid flow (an application for air conditioning problem), *Trans. Japan Soc. Mech. Engrs* **B56**(530), 3120 (1990).

I. Mabuchi, M. Kumada, K. Oyakawa and M. Hiwada, Fluid flow behavior around a circular cylinder perpendicular arrangement of circular cylinders, *Trans. Japan Soc. Mech. Engrs* **B56**(526), 1588 (1990).

H. Makita, S. Mori and M. Niimi, Turbulence transport mechanism in stable stratified flow (1st report: characteristics of a thermal stratification wind tunnel and occurrence of internal gravity wave), *Trans. Japan Soc. Mech. Engrs* **B57**(534), 404 (1991).

J. Mimatou and K. Hijikata, Turbulent structure in backward step flow using the cross-correlation between velocity and wall pressure fluctuation, *Trans. Japan Soc. Mech. Engrs* **B56**(523), 796 (1990).

T. Miyauchi, K. Kawano and M. Shingou, Large eddy simulation of turbulent mixing (4th report, coherent structure in the turbulent mixing layer), *Trans. Japan Soc. Mech. Engrs* **B56**(530), 2879 (1990).

T. Miyauchi and M. Tanahashi, Direct simulation of turbulent mixing layers with a pseudospectral method, *Trans. Japan Soc. Mech. Engrs* **B57**(533), 44 (1991).

S. Mochizuki, H. Osaka and S. Nishi, Turbulent structure in the near-wall region for a boundary layer over a d-type rough surface at a low Reynolds number, *Trans. Japan Soc. Mech. Engrs* **B56**(523), 555 (1990).

- S. Mochizuki and H. Osaka, Statistical properties of a d-type rough wall boundary layer in a transitionally rough and a fully rough regime, *Trans. Japan Soc. Mech. Engrs* **B56**(525), 1312 (1990).
- H. K. Myong and N. Kasagi, A proposal for an anisotropic $k-\epsilon$ turbulence model satisfying the wall-limiting condition of turbulence, *Trans. Japan Soc. Mech. Engrs* **B56**(531), 3298 (1990).
- H. K. Myong, N. Kasagi and T. Kobayashi, Numerical prediction of boundary layer flows with the anisotropic $k-\epsilon$ turbulence model, *Trans. Japan Soc. Mech. Engrs* **B56**(531), 3305 (1990).
- H. K. Myong and T. Kobayashi, Numerical simulation of developing turbulent flows in a square duct (application of an anisotropic $k-\epsilon$ turbulence model), *Trans. Japan Soc. Mech. Engrs* **B56**(532), 3680 (1990).
- Y. Nagano, M. Tagawa and T. Tsuji, A two-equation model for heat transfer taking into account the near-wall limiting behavior of turbulence, *Trans. Japan Soc. Mech. Engrs* **B56**(530), 3087 (1990).
- Y. Nagano, M. Tagawa, T. Tsuji and S. Sohma, Modeling of the dissipation-rate tensor of Reynolds stress components, *Trans. Japan Soc. Mech. Engrs* **B57**(533), 1 (1991).
- Y. Nishi, I. Kinoshita and K. Ogura, Study on enhancement of heat transfer in the reactor vessel auxiliary cooling system of a fast breeder reactor, *Trans. Japan Soc. Mech. Engrs* **B56**(529), 2779 (1990).
- N. Ohiwa, Y. Suzuki and S. Yamaguchi, A study on the flow and thermal characteristics in a pulse combustor (time-averaged and fluctuation properties of pulsating air flows in a circular tailpipe), *Trans. Japan Soc. Mech. Engrs* **B56**(529), 2808 (1990).
- M. Osakabe, Turbulence structure in a horizontal fluid layer heated from below (measurement of the Lagrangian energy spectrum), *Trans. Japan Soc. Mech. Engrs* **B56**(527), 1943 (1990).
- M. Ozawa, T. Sakaguchi, H. Hamaguchi, A. Kawamoto, A. Ichii and S. Ono, Enhancement of heat transfer by sinusoidal oscillation of fluid (transient behavior of a dream pipe), *Trans. Japan Soc. Mech. Engrs* **B56**(530), 3056 (1990).
- Y. Sano, H. Usui and H. Sakata, Correspondence between power number of mixing vessel and friction factor of pipe flow in turbulent region, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engrg Japan)* **16**(2), 317 (1990).
- R. Shimada, T. Ohkubo, T. Kobayashi and S. Kumagai, Heat transfer from a rotating cylinder in a uniform flow, *J. Japan Soc. Mech. Engrs* **B57**(533), 210 (1991).
- Y. Sudo, T. Usui and M. Kaminaga, Heat transfer characteristics in narrow vertical rectangular channels heated from both sides, *J.S.M.E. Int. J., Series II (English)* **33**(4), 743 (1990).
- K. Sudou and T. Takami, Effects of adjacent wall on turbulent jets (1st report, mean features of offset jet), *Trans. Japan Soc. Mech. Engrs* **B56**(524), 919 (1990).
- K. Sudou, T. Takami and N. Kuroda, Effects of adjacent wall on turbulent jets (2nd report, turbulence energy balance), *Trans. Japan Soc. Mech. Engrs* **B56**(524), 926 (1990).
- K. Suga and A. Aoki, Numerical analysis on two-dimensional flow and heat transfer of louvered fins using overlaid grids (2nd report, parametric study of fin parameter), *Trans. Japan Soc. Mech. Engrs* **B56**(531), 3279 (1990).
- H. Sugiyama, M. Akiyama and T. Serizawa, An algebraic stress model analysis of developing turbulent flow in a square duct, *Trans. Japan Soc. Mech. Engrs* **B56**(531), 3328 (1990).
- K. Sugiyama, R. Ishiguro, F. Imaeda and H. Nei, Analysis of heat transfer rates to cross-flowing NaK in tube banks by inviscid flow model, *J. Atom. Energy Soc. Japan* **32**(11), 1104 (1990).
- K. Suzuki, Heat transfer augmentation through the control of turbulent flow structure, *J. Japan Soc. Mech. Engrs* **93**(864), 908 (1990).
- K. Suzuki, J. S. Szmyd and H. Ohtsuka, Liquid metal turbulent heat transfer in eccentric annuli, *Trans. Japan Soc. Mech. Engrs* **B56**(527), 2027 (1990).
- K. Suzuki, J. S. Szmyd and H. Ohtsuka, Laminar forced convection heat transfer in eccentric annuli, *Trans. Japan Soc. Mech. Engrs* **B56**(531), 3445 (1990).
- Y. Tada, A. Takimoto, D. Ueda and Y. Hayashi, Heat transfer enhancement in a convective field with corona discharge (experimental study for parallel wire-electrode arrangement), *Trans. Japan Soc. Mech. Engrs* **B57**(533), 217 (1991).
- Y. Tada, A. Takimoto, D. Ueda and Y. Hayashi, Heat transfer enhancement in a convective field with corona discharge (analytical study for parallel wire-electrode arrangement), *Trans. Japan Soc. Mech. Engrs* **B57**(533), 223 (1991).
- A. Takimoto, Y. Tada, K. Yamada and Y. Hayashi, Heat transfer enhancement in a convective field with corona discharge (2nd report, effect of polarity and wire-electrode arrangement), *Trans. Japan Soc. Mech. Engrs* **B56**(524), 1119 (1990).
- I. Tanasawa, Enhancement of single-phase convective heat transfer, *Refrigeration* **65**(757), 1099 (1990).
- S. Torii, A. Shimizu, S. Hasegawa and M. Higasa, Laminarization of strongly heated gas flows in a circular tube (numerical analysis by means of a modified $k-\epsilon$ model), *J.S.M.E. Int. J., Series II (English)* **33**(3), 538 (1990).
- T. Ueda, S. Hisai, I. N. G. Wardana and M. Mizomoto, Structure of grid turbulence through a heated screen, *Trans. Japan Soc. Mech. Engrs* **B56**(532), 3881 (1990).
- H. Yamazaki, I. Takagi, T. Sakamoto and K. Kawashima, Basic cooling characteristics of perfluorocarbon liquid immersed windings for nonflammable transformers (1st report, disk coil cooling for large-capacity forced convective transformers), *Trans. Japan Soc. Mech. Engrs* **B56**(532), 3849 (1990).
- J. I. Yanagihara and K. Torii, Enhancement of laminar boundary layer heat transfer by a vortex generator, *Trans. Japan Soc. Mech. Engrs* **B56**(530), 3045 (1990).
- H. Yoshida, T. Komuro and R. Echigo, Heat-transfer control in a turbulent pipe flow with gas-solid suspensions by electric field, *Trans. Japan Soc. Mech. Engrs* **B56**(525), 1148 (1990).

BOILING AND EVAPORATION

- M. Dohi, S. Sawai, M. Kato and N. Wada, Gas evaporation of Zn by means of the top-heating vertical furnace, *Jap. J. Appl. Phys. (English)* **29**(11), 2445 (1990).
- C. Y. Fang, T. Takagi, T. Kamimoto and T. Okamoto, Numerical simulation of transient sprays (evaporation and nonevaporating sprays), *Trans. Japan Soc. Mech. Engrs* **B56**(528), 2510 (1990).
- T. Fuketa and T. Fujishiro, An experimental study on vapor explosion under a reactivity initiated accident condition, *Trans. Japan Soc. Mech. Engrs* **B56**(525), 1502 (1990).
- E. Hihara, Boiling of refrigerant liquid mixtures, *Refrigeration* **65**(757), 1131 (1990).
- Y. Iida, K. Tsutsui and J. Sasaki, The effect of ultrasonic wave application for the rapid cool-down process of high-temperature solids submerged in liquid, *Trans. Japan Soc. Mech. Engrs* **B56**(526), 1780 (1990).
- H. Ikawa, T. Otsuji and A. Kurosawa, Behavior of bubble in subcooled boiling with forced convection, 1st report, *Rev. Kobe Univ. Mercantile Marine Part II* **38**, 123 (1990).
- T. Ito, Active control of boiling heat transfer by ultrasonic fields, *J. Japan Soc. Mech. Engrs* **93**(864), 918 (1990).
- Y. Katto, T. Hirao, N. Ebihara, A. Kariyama, K. Taniwa and K. Nakashima, Critical heat flux of counter-current boiling in a vertical tube with a closed bottom, *Trans. Japan Soc. Mech. Engrs* **B57**(533), 229 (1991).
- Y. Katto and M. Yoshiwara, Generalized prediction of critical heat flux of subcooled flow boiling in round tubes, *Trans. Japan Soc. Mech. Engrs* **B56**(528), 2453 (1990).
- Y. Kikuchi, T. Nogaki and R. Matsumoto, The effect of a

- coating material on minimum film boiling temperature, *Trans. Japan Soc. Mech. Engrs* **B56**(527), 2038 (1990).
- Y. Masuhara, O. Yokomizo and Y. Yoshimoto, Transient analysis of boiling transition phenomena using liquid film flow model, *J. Nucl. Sci. Technol.* (English) **28**(1), 66 (1991).
- A. Matsuda, T. Kawamura and K. Haneda, Evaporation of lithium bromide aqueous solution in a vertical falling film type of generator under reduced pressure (numerical analysis by one-dimensional difference method), *Refrigeration* **7**(2), 35 (1990).
- T. Matsue, M. Arai and H. Hiroyasu, The evaporation and combustion of a single coal-water slurry droplet on a hot surface, *Trans. Japan Soc. Mech. Engrs* **B57**(533), 373 (1991).
- T. Matsue, M. Arai and H. Hiroyasu, Experimental study on the evaporation and combustion of a single coal-water slurry droplet (2nd report, the influence of stream in an elevated temperature environment), *Trans. Japan Soc. Mech. Engrs* **B56**(528), 2476 (1990).
- O. Miyatake, A. Yamada, Y. Tsutsui and I. Tanaka, Bubble growth rates in superheated solutions of volatile binary components, *Kagaku Kokaku Ronbunshu* (Trans. Chem. Engng Japan) **16**(5), 953 (1990).
- M. Monde, S. Mihara and K. Yamaji, Critical heat flux during natural convective boiling in vertical uniformly heated tubes submerged in saturated liquid, *Trans. Japan Soc. Mech. Engrs* **B56**(531), 3413 (1990).
- A. Nakayama and M. Kano, Enhancement of a saturated-pool nucleate-boiling heat transfer by ultrasonic vibrations, *Trans. Japan Soc. Mech. Engrs* **B56**(524), 1071 (1990).
- M. Narazaki, S. Fuchizawa and M. Inaba, Effects of surface texture on cooling curve during quenching of heated metals in subcooled water, *Tetsu to Hagane* (J. Iron Steel Inst. Japan) **76**(6), 902 (1990).
- S. Nishio, G. R. Chandratilleke and T. Ozu, Natural-convection film boiling heat transfer (1st report, saturated film boiling with long vapor film), *Trans. Japan Soc. Mech. Engrs* **B56**(525), 1484 (1990).
- J. Ogata and A. Yabe, Augmentation of boiling heat transfer by utilizing the EHD effect (3rd report, EHD behavior of a bubble in an electric field), *Trans. Japan Soc. Mech. Engrs* **B57**(533), 250 (1991).
- J. Ogata, A. Yabe and T. Taketani, Augmentation of boiling heat transfer by utilizing EHD effect (2nd report, EHD behavior of boiling bubbles and heat transfer characteristics), *Trans. Japan Soc. Mech. Engrs* **B56**(527), 2052 (1990).
- J. Ogata, A. Yabe, T. Yamazaki and Y. Hirao, Augmentation of boiling heat transfer by utilizing the EHD effect (1st report, basic study on the enhancement of nucleate boiling heat transfer by applying electric field), *Trans. Japan Soc. Mech. Engrs* **B56**(527), 2044 (1990).
- H. Ohkubo and S. Nishio, Study on accurate prediction of heat transfer characteristics of mist cooling (effects of surface wettability), *J.S.M.E. Int. J.*, Series II (English) **33**(2), 326 (1990).
- A. Ohnuki, H. Akimoto and Y. Murao, Effect of liquid flow rate on film boiling heat transfer during reflood in rod bundle, *J. Nucl. Sci. Technol.* (English) **27**(6), 535 (1990).
- T. Okamura, Y. Sagawa and Y. Yoshizawa, Boiling heat transfer in vertical superfluid helium channel, *Cryogenic Engng* **25**(4), 260 (1990).
- K. Okuyama and Y. Iida, Transient boiling heat transfer characteristics of nitrogen (bubble behavior and heat-transfer rate at stepwise heat input), *Trans. Japan Soc. Mech. Engrs* **B56**(526), 1741 (1990).
- A. Sakurai, Theoretical models and general correlations for film boiling heat transfer and its minimum temperature, *Bull. Inst. Atomic Energy Kyoto Univ.* **78**, 3 (1990).
- K. Shioda, Y. Hashidate and S. Nonaka, Numerical analysis of time-dependent molten metal behavior involving free evaporation interface, *Trans. Japan Soc. Mech. Engrs* **B56**(531), 3372 (1990).
- M. Tajima, T. Maki and K. Katayama, Study of heat transfer phenomena in quenching of steel (effects of boiling heat transfer on cooling curves and water temperature on hardness of steel), *J.S.M.E. Int. J.*, Series II (English) **33**(2), 340 (1990).
- H. Takamatsu, S. Momoki, S. Hiraoka, H. Nakada, S. Koyama and T. Fujii, An experiment on the heat transfer to substitute refrigerant HFC134a evaporating in a horizontal smooth tube, *Trans. Japan Soc. Mech. Engrs* **B57**(534), 682 (1991).
- K. Takano, I. Tanasawa and S. Nishio, Enhancement of evaporation of droplet using EHD effect, *Trans. Japan Soc. Mech. Engrs* **B57**(534), 693 (1991).
- I. Taniguchi, T. Kawahara and K. Asano, Simultaneous evaporation of two adjacent volatile drops, *J. Chem. Engng Japan* (English) **23**(3), 315 (1990).
- K. Yamamoto, M. Fujimoto, M. Nagae, J. Senda, K. Hojyo and H. Fujimoto, Characteristics of diesel spray impinging on a hot wall, *Sci. Engng Rev. Doshisha Univ.* **31**(3), 247 (1990).
- S. Yoshida, Enhancement of heat transfer to boiling refrigerant, *Refrigeration* **65**(757), 1105 (1990).
- S. Yoshida, T. Matsunaga, H. Mori and K. Ohishi, Heat transfer to non-azeotropic mixtures of refrigerants flowing in a horizontal evaporator tube, *Trans. Japan Soc. Mech. Engrs* **B56**(524), 1084 (1990).

CONDENSATION

- R. Araki, M. Soda, T. Urabe and N. Hasegawa, The study of multi tube condenser heat transfer and pressure drop characteristic in down flow, *Trans. Japan Soc. Mech. Engrs* **B56**(527), 2067 (1990).
- R. Echigo, H. Yoshida and Y. Miyashita, Heat transfer characteristics of a fine-tube condenser woven with threads, *Trans. Japan Soc. Mech. Engrs* **B56**(531), 3439 (1990).
- S. Fujikawa and M. Maerefat, A study of the molecular mechanism of vapour condensation, *J.S.M.E. Int. J.*, Series II (English) **33**(4), 634 (1990).
- S. Fujikawa, M. Maerefat, T. Mizutani and T. Akamatsu, Measurement and theoretical consideration of the condensation parameter of a polyatomic molecule vapour (the case of ethanol vapour), *Trans. Japan Soc. Mech. Engrs* **B56**(530), 3039 (1990).
- M. Goto, Condensation heat transfer of mixed refrigerants, *Refrigeration* **65**(757), 1137 (1990).
- T. Haraguchi, R. Shimada and T. Takeyama, Observation of the initial droplet formation mechanism in dropwise condensation using a microscope (film growth hypothesis as suggested by three experiments), *Trans. Japan Soc. Mech. Engrs* **B56**(529), 2697 (1990).
- H. Honda, Enhancement of condensation heat transfer, *Refrigeration* **65**(757), 1111 (1990).
- H. Honda, S. Nozu, B. Uchima, H. Fukumori and T. Kobayashi, Experimental study of the enhancement of condensation heat transfer on downward-facing horizontal surfaces, *Trans. Japan Soc. Mech. Engrs* **B56**(525), 1493 (1990).
- H. Honda, B. Uchima, S. Nozu, E. Torigoe and S. Imai, Film condensation of downward flowing R-113 vapor on staggered bundles of horizontal finned tubes, *Trans. Japan Soc. Mech. Engrs* **B57**(534), 653 (1991).
- T. Mizutani, S. Fujikawa, Y. Takano, M. Maerefat and T. Akamatsu, A computational study of the shock-wave reflection in a shock-tube and the filmwise condensation of a vapour on shock-tube walls, *Trans. Japan Soc. Mech. Engrs* **B56**(532), 3732 (1990).
- S. Nozu and H. Honda, Effects of bundle depth and condensing fluid on the optimized fin dimensions of a horizontal low-finned condenser tube, *Trans. Japan Soc. Mech. Engrs* **B56**(524), 1077 (1990).
- S. Nozu, H. Honda, T. Kobayashi and H. Inaba, Experimental study of condensation heat transfer from downward-facing inclined surfaces, *Trans. Japan Soc. Mech. Engrs* **B57**(533), 195 (1991).

- S. Nozu, H. Honda, M. Satoh, S. Nishida and H. Nakata, Condensation of refrigerants R11 and R113 in the annulus of a double-tube coil with an enhanced inner tube, *Trans. Japan Soc. Mech. Engrs* **B56**(532), 3821 (1990).
- S. Nozu, K. Ozaki, H. Inaba and H. Honda, Condensation of nonazeotropic refrigerant mixture R114/R113 in horizontal annuli with an enhanced inner tube, *Trans. Japan Soc. Mech. Engrs* **B57**(534), 645 (1991).
- T. Shigechi, N. Kawae, Y. Tokita and T. Yamada, Film condensation heat transfer on a finite-size horizontal plate facing upward, *Trans. Japan Soc. Mech. Engrs* **B56**(529), 2753 (1990).
- T. Tsuruta, M. Shirahama and T. Masuoka, Constriction resistance of dropwise condensation on a polymer-coated surface, *Trans. Japan Soc. Mech. Engrs* **B56**(528), 2446 (1990).
- Y. Utaka, A. Saito, H. Nishimura and T. Kaneko, The effect of departing condensate in the condensation curves, *Trans. Japan Soc. Mech. Engrs* **B57**(534), 661 (1991).
- S. P. Wang and K. Hijikata, Experimental study on condensation heat transfer enhancement by various kinds of integral finned tubes, *Trans. Japan Soc. Mech. Engrs* **B56**(527), 2060 (1990).
- K. Yamashita, S. Sekita and Y. Watanabe, Enhancement technique of condensation heat transfer by EHD, *Refrigeration* **65**(757), 1124 (1990).
- Y. Zhou, K. Hijikata and N. Himeno, Nonsimilar solution for free convective condensation of binary vapor mixtures, *Trans. Japan Soc. Mech. Engrs* **B56**(529), 2684 (1990).

MULTIPHASE FLOW

- A. Ando, H. Sadata, K. Hishida and M. Maeda, Particle motion in a two-dimensional turbulent mixing layer, *Trans. Japan Soc. Mech. Engrs* **B56**(528), 2189 (1990).
- H. Asaka, Y. Kukita, Y. Anoda, H. Nakamura and K. Tasaka, Improvement of TRAC-PFI interfacial drag model for analysis of high-pressure horizontally-stratified two-phase flow, *J. Nucl. Sci. Technol. (English)* **28**(1), 33 (1991).
- T. Fujii, J. Ohta, K. Akagawa, T. Nakamura and H. Asano, Performance characteristics of Hero's turbine using hot water as a working fluid, *Trans. Japan Soc. Mech. Engrs* **B56**(531), 3419 (1990).
- T. Fujii, J. Ohta, N. Takenaka, H. Asano and A. Ono, Performance characteristics of convergent-divergent nozzles for subcooled hot water (3rd report, effect of induced turbulence on nozzle performance), *Trans. Japan Soc. Mech. Engrs* **B57**(533), 256 (1991).
- H. Fujita, T. Ohara and T. Tachibana, Two-phase flow in vertical flat channels with repeated rib roughness, *Trans. Japan Soc. Mech. Engrs* **B57**(534), 626 (1991).
- T. Fukano, A. Kariyasaki and M. Kagawa, Flow patterns and pressure drop in isothermal gas-liquid concurrent flow in a horizontal capillary tube, *Trans. Japan Soc. Mech. Engrs* **B56**(528), 2318 (1990).
- Y. Hanaoka, K. Maeno, L. Zhao and G. Heymann, A study of liquid flashing phenomenon under rapid depressurization, *J.S.M.E. Int. J., Series II (English)* **33**(2), 276 (1990).
- Y. Hatate, S. Tajiri, T. Fukumoto, Y. Uemura and T. Hano, Heat transfer coefficient in three-phase vertical downflows of gas-liquid-fine solid particles system, *J. Chem. Engng Japan (English)* **23**(2), 370 (1990).
- K. Hijikata, Heat transfer control by using multi-phase flows, *J. Japan Soc. Mech. Engrs* **93**(864), 916 (1990).
- I. Kataoka, Modelling and basic equations of gas-liquid two-phase flow, *Jap. J. Multiphase Flow* **4**(2), 275 (1990).
- Y. Koizumi, H. Nakamura, N. Yamamoto and K. Tasaka, Air/water two-phase flow in a horizontal large-diameter pipe (2nd report, pressure drop), *Trans. Japan Soc. Mech. Engrs* **B56**(532), 3750 (1990).
- Y. Koizumi, N. Yamamoto and K. Tasaka, Air/water two-phase flow in a horizontal large-diameter pipe (1st report, flow regime), *Trans. Japan Soc. Mech. Engrs* **B56**(532), 3745 (1990).
- H. Kutsuna, T. Morita and K. Fukuda, Natural circulation including boiling in a rectangular loop, *Trans. Japan Soc. Mech. Engrs* **B56**(530), 3034 (1990).
- T. Matumoto and Y. Ishii, Multi-channel thermal hydraulic model for LOCA analysis of heterogeneous BWR core, *J. Nucl. Sci. Technol. (English)* **27**(8), 718 (1990).
- S. Namie and K. Shiozaki, Investigation of annular liquid film flow in tubes with helical ribs and wires (suppression of droplet entrainment with the aim of improving evaporative heat transfer), *Trans. Japan Soc. Mech. Engrs* **B56**(524), 1113 (1990).
- M. Nishida and S. Ishimaru, Numerical analysis of gas-solid two-phase nonequilibrium nozzle flows, *J.S.M.E. Int. J., Series II (English)* **33**(3), 494 (1990).
- M. Osakabe and H. Goto, Pool void fraction in rectangular and bundle passage, *Trans. Japan Soc. Mech. Engrs* **B56**(528), 2351 (1990).
- T. Sakaguchi, M. Ozawa, H. Hamaguchi and T. Fukunaga, Behavior of a large bubble in a horizontal channel (2nd report, large bubble penetrating into running liquid), *Trans. Japan Soc. Mech. Engrs* **B56**(527), 1891 (1990).
- T. Sakaguchi, A. Tomiyama, H. Minagawa and S. Kawabata, Examination of constitutive equations required for the analyses of solid-liquid two-phase flow in vertical pipes with the two-fluid model, *Trans. Japan Soc. Mech. Engrs* **B56**(525), 1368 (1990).
- Y. Sato, M. Sadatomi, H. Shimogama, Y. Ishii and A. Kawahara, Void drift of two-phase flow in a multiple channel (1st report, experiment), *Trans. Japan Soc. Mech. Engrs* **B56**(528), 2327 (1990).
- K. Shiina, S. Nakamura, Y. Mizushima, H. Uozumi and K. Takaku, Investigation on drypatch characteristics of a saturated water thin film in a rectangular channel using a flat-plate-type obstacle (1st report, basic mechanism of drypatch characteristics), *Trans. Japan Soc. Mech. Engrs* **B56**(530), 3113 (1990).
- A. Shimizu, S. Hasegawa, H. Yoshida and Y. Yagi, Erosion of heat transfer surface due to an impingement of gas-solid suspension jet, *Engng Sci. Rep. Kyushu Univ.* **12**(1), 31 (1990).
- T. Takagi, C.-Y. Fang and T. Okamoto, Derivation of the nondimensional parameters governing transient sprays and discussions of the validity, *Trans. Japan Soc. Mech. Engrs* **B56**(525), 1531 (1990).
- K. Tsurutani, M. Yao, J. Senda and H. Fujimoto, Numerical analysis of the deformation process of a droplet impinging upon a wall, *J.S.M.E. Int. J., Series II (English)* **33**(3), 555 (1990).

MELTING AND SOLIDIFICATION

- T. Akiyama, Y. Ashizawa and J. Yagi, Storage and release of heat in a single spherical capsule containing phase change material of high melting point, *Trans. Japan Soc. Mech. Engrs* **B57**(533), 284 (1991).
- S. Fukusako, Active control of frosting freezing, and melting phenomena, *J. Japan Soc. Mech. Engrs* **93**(864), 924 (1990).
- S. Fukusako, Recent advances in study of water-freezing and ice-melting problems, *Trans. JAR* **7**(1), 1 (1990).
- S. Fukusako and M. Yamada, Freezing characteristics along a horizontal cooled tube immersed in aqueous binary solution, *Trans. Japan Soc. Mech. Engrs* **B56**(532), 3841 (1990).
- S. Fukusako, M. Yamada and H. Morizane, Freezing characteristics of ethylene-glycol solution on the vertical cooled plate, *Trans. JAR* **7**(2), 57 (1990).
- M. Hamano, Freezing and drying of fermented foods, *Refrigeration* **65**(757), 1158 (1990).
- H. Hashimoto and A. Masuda, Liquid sloshing phenomenon accompanying solidification, *Trans. Japan Soc. Mech. Engrs* **B57**(533), 87 (1991).

- Y. Hirasawa, A. Saito, I. Tomizuka and E. Takegoshi, A study on phase changes of heterogeneous composite materials (effects of parameters on solidification process), *Trans. JAR* **7**(2), 27 (1990).
- Y. Hirasawa, E. Takegoshi, E. Takeshita and A. Saito, Phase change characteristics of TES materials with heterogeneous composite materials (experimental discussion on melting process), *Trans. JAR* **7**(2), 77 (1990).
- T. Hirata, Y. Makino and Y. Kaneko, Heat transfer with melting inside horizontal rectangular capsule (close contact melting for octadecane and ice), *Trans. Japan Soc. Mech. Engrs* **B56**(531), 3481 (1990).
- T. Hirata, Y. Makino and Y. Kaneko, Heat transfer with melting inside horizontal rectangular capsule (natural convection melting for octadecane and ice), *Trans. Japan Soc. Mech. Engrs* **B56**(531), 3468 (1990).
- T. Hirata and H. Matsui, Freezing and melting heat transfer with water flow around isothermally cooled cylinders in staggered and in-line arrangements, *Trans. Japan Soc. Mech. Engrs* **B56**(532), 3827 (1990).
- H. Kikuchi, T. Watanabe, T. Honda and A. Kanzawa, Effect of phase change material (PCM) m.p. distribution on latent heat storage, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng Japan)* **16**(5), 982 (1990).
- H. Inaba and J. Otake, Freezing behavior of branched water supply pipes, *Trans. Japan Soc. Mech. Engrs* **B56**(530), 3107 (1990).
- Y. Miyata and T. Suzuki, Interfacial stability during solidification under microgravity environment, *Tetsu to Hagane (J. Iron Steel Inst. Japan)* **76**(8), 1221 (1990).
- A. Narumi, T. Kashiwagi and Y. Sakatoku, Cooling and freezing processes of water with a supercooled region in the double horizontal concentric cylinders, *Trans. Japan Soc. Mech. Engrs* **B56**(527), 2077 (1990).
- M. Oka and E. Hasegawa, Contact melting of a rotating phase change material on a heated wall, *Trans. Japan Soc. Mech. Engrs* **B56**(524), 1131 (1990).
- M. Okada, K. Gotoh and M. Murakami, Solidification of an aqueous solution in a rectangular cell with hot and cold vertical walls, *Trans. Japan Soc. Mech. Engrs* **B56**(526), 1790 (1990).
- A. Saito, S. Okawa and S. Koganezawa, The freezing of supercooled water droplets, *Trans. JAR* **7**(3), 213 (1990).
- H. Saito, Relation between pressure rise due to freezing of water filled in a circular tube and heat transfer conditions on the surface, *Mem. Muroran Inst. Technol.* **40**, 47 (1990).
- K. Sasaguchi, Heat transfer enhancement in a latent heat thermal energy storage unit using a tube with radial fins, *Trans. Japan Soc. Mech. Engrs* **B56**(528), 2461 (1990).
- K. Sasaguchi, An experimental study on melting of a phase-change material around finned tubes, *Trans. Japan Soc. Mech. Engrs* **B56**(529), 2785 (1990).
- A. Sasaki, S. Aiba and S. Fukusako, Transient freezing heat transfer in water-saturated porous media, *Trans. Japan Soc. Mech. Engrs* **B57**(533), 188 (1991).
- A. Sasaki, S. Aiba and S. Fukusako, Freezing heat transfer within water-saturated porous media, *J.S.M.E. Int. J., Series II (English)* **33**(2), 296 (1990).
- A. Sasaki, S. Aiba and K. Negishi, Freezing of wet porous media, *Trans. JAR* **7**(3), 235 (1990).
- M. Sugawara, H. Kamada and T. Fujita, A study of the fin size ratio for freezing of water on an upper cooling wall with fins, *Trans. Japan Soc. Mech. Engrs* **B56**(532), 3835 (1990).
- M. Sugawara, Y. Konda and T. Fujita, Melting of snow by aqueous solution with low solidification temperature (an analysis on a melting model dominated by concentration diffusion for the same initial temperature of both CaCl_2 aqueous solution and snow layer), *Trans. Japan Soc. Mech. Engrs* **B56**(531), 3462 (1990).
- M. Tajima, T. Maki and K. Katayama, An analysis of cooling curve accompanying phase transformation for various diameter of steel, *Trans. Japan Soc. Mech. Engrs* **B56**(529), 2774 (1990).
- T. Takahashi, K. Ohsasa and N. Katayama, Simulation for progress of solid-liquid coexisting zone in continuous casting of carbon steels, *Tetsu to Hagane (J. Iron Steel Inst. Japan)* **76**(5), 728 (1990).
- R. Viskanta, Mathematical modeling of transport processes during solidification of binary systems, *J.S.M.E. Int. J., Series II (English)* **33**(3), 409 (1990).
- Y. Watanabe, Acceleration effect of $\text{Na}_3\text{PO}_4 \cdot 12\text{H}_2\text{O}$ for nucleation of $\text{NaCH}_3\text{COO} \cdot 3\text{H}_2\text{O}$ from melt, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng Japan)* **16**(5), 875 (1990).
- M. Yanadori and S. Sato, Fundamental investigations on the heat storage capacity of ice-water heat storage container influenced by the ice shape and brine concentration, *Trans. Japan Soc. Mech. Engrs* **B56**(531), 3476 (1990).

POROUS MEDIUM AND FLUIDIZED/ PACKED BED

- T. Akiyama, R. Takahashi and J. Yagi, Measurement of heat transfer rate between particle and fluid in counter-current moving beds, *Tetsu to Hagane (J. Iron Steel Inst. Japan)* **76**(6), 848 (1990).
- K. Fukuda, S. Hasegawa and T. Kondoh, Study on heat transfer correlation for porous media, *Trans. Japan Soc. Mech. Engrs* **B56**(529), 2729 (1990).
- H. Ishiguro, Y. Kurosaki and M. Yasui, A fundamental study of fluidization and heat transfer characteristics around a horizontal heated circular cylinder immersed in a fluidized bed (2nd report, effect of the properties of the particles and the device for promoting heat transfer), *Trans. Japan Soc. Mech. Engrs* **B56**(526), 1733 (1990).
- S. Kimura and H. Nigorinuma, Heat transfer from a cylinder in a porous medium subjected to axial flows, *Trans. Japan Soc. Mech. Engrs* **B56**(524), 1095 (1990).
- T. Miyahara, M.-S. Lee and T. Takahashi, Mass transfer characteristics in a three-phase fluidized bed containing low-density and/or small-size particles, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng Japan)* **16**(6), 1217 (1990).
- S. Mori, Recent advance in fluidization technology, *Tetsu to Hagane (J. Iron Steel Inst. Japan)* **76**(6), 817 (1990).
- J. Wang, R. Takahashi and J. Yagi, Gas flow analysis in the sludge melting furnace with packed bed, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng Japan)* **16**(4), 723 (1990).
- J. Wang, R. Takahashi and J. Yagi, Model experiment of particle movement and numerical analysis of flow and heat transfer in a sludge-melting furnace, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng Japan)* **17**(1), 179 (1991).

RADIATION

- R. Echigo, Control on heat transfer and combustion by means of thermal radiation (applications by gaseous solid suspensions and porous media), *J. Japan Soc. Mech. Engrs* **93**(864), 906 (1990).
- R. Echigo, Y. Yoshizawa, K. Hanamura and W. Ozawa, A new methane-steam reformer for a fuel cell by a pair of porous radiative converters, *Trans. Japan Soc. Mech. Engrs* **B57**(533), 309 (1991).
- K. Hanamura, R. Echigo and Y. Yoshizawa, Structure and transient behavior of radiation-controlled flame in a highly porous medium, *Trans. Japan Soc. Mech. Engrs* **B57**(533), 315 (1991).
- K. Hanamura, Y. Yoshizawa and R. Echigo, Analytical study on the structure of radiation controlled flame (2nd report, the behavior of the flame in a porous medium), *Trans. Japan Soc. Mech. Engrs* **B56**(529), 2816 (1990).
- Y. Hasegawa, Y. Yamada, Y. Nomura and M. Tamura, Monte Carlo simulation of light scattering and absorption

by living bodies, *Trans. Japan Soc. Mech. Engrs* **B56**(524), 1173 (1990).

S. Hirasawa and T. Uchino, Analysis on temperature distribution in a semiconductor wafer during rapid thermal annealing with lamp heaters, *Trans. Japan Soc. Mech. Engrs* **B56**(525), 1511 (1990).

K. Kamiuto and M. Iwamoto, Effects of correlated scattering on coupled heat transfers by conduction and radiation through a packed layer of glass beads, *J.S.M.E. Int. J., Series II* (English) **33**(4), 766 (1990).

M. Katsuki, Y. Mizutani, A. Ando, Y. Hattori, Y. Jinja and D. H. Lee, Numerical prediction of coaxial flow diffusion flames with radiative heat transfer, *J.S.M.E. Int. J., Series II* (English) **33**(4), 772 (1990).

K. Kudo, H. Taniguchi and K. Guo, Heat transfer simulation in a furnace for steam reformer, *Kagaku Kogaku Ronbunshu* (*Trans. Chem. Engng Japan*) **17**(1), 103 (1991).

K. Kudo, H. Taniguchi and Y. Kim, Study on the radiative energy transmission through packed spheres (application limits of continuous models), *Trans. Japan Soc. Mech. Engrs* **B56**(527), 2098 (1990).

K. Kudo, H. Taniguchi, Y. Kim and K. Miyoshi, Study on the radiative energy transmission through packed spheres (1st report, effects of parameters on the transmittance and reflectance), *Trans. Japan Soc. Mech. Engrs* **B56**(524), 1148 (1990).

T. Makino, T. Maeda, M. Edamura and A. Yoshida, Thermal radiation properties of molten salts (1st report, properties of alkaline metal nitrates), *Trans. Japan Soc. Mech. Engrs* **B56**(532), 3805 (1990).

T. Makino, T. Maeda, T. Yasuo and A. Yoshida, Thermal radiation properties of molten salts (2nd report, properties of alkaline metal chlorides and conductive-radiative transfer in the salts), *Trans. Japan Soc. Mech. Engrs* **B56**(532), 3810 (1990).

T. Miyauchi, T. Itonaga, M. Hirano and Y. Takahira, New numerical method for combined convective-radiative heat transfer, *Trans. Japan Soc. Mech. Engrs* **B56**(529), 2767 (1990).

Y. Mizutani and T. Yoshida, Combustion of lean flammable mixtures in an intense radiation field (effects of radiant heat flux on laminar Bunsen flames), *J.S.M.E. Int. J., Series II* (English) **33**(3), 569 (1990).

Y. Okamoto, F. Kaminaga, M. Osakabe, K. Maekawa, T. Ishii, N. Ouoka and M. Etou, Measurement of radiosity coefficient by means of an infrared radiometer, *Trans. Japan Soc. Mech. Engrs* **B57**(534), 699 (1991).

S. Tanaka, Some new exact configuration factors in radiation from spheres, *Rev. Kobe Univ. Mercantile Marine Part II* **38**, 71 (1990).

A. Tanigawa, K. Hanamura, R. Echigo and T. Tomimura, Effective heat exchange method by a pair of porous radiative converters, *Trans. Japan Soc. Mech. Engrs* **B57**(533), 302 (1991).

Y. Tsujikawa, Thermodynamics of radiative heat rejection from closed Brayton solar dynamic power, *Trans. Japan Soc. Mech. Engrs* **B57**(533), 292 (1991).

T. Tsukada, M. Hozawa and N. Imaishi, Effect of a radiation shield on thermal stress field during Czochralski crystal growth of silicon, *J. Chem. Engng Japan* (English) **23**(2), 186 (1990).

Y. Wang, X. Xu, K. Kudo and H. Taniguchi, Study on numerical analysis of radiation heat transfer by a method of analytic theory of numbers, *Bull. Fac. Engng Hokkaido Univ.* **154**, 19 (1991).

Y. Yoshizawa and K. Yoshida, A study of flame structures in the gas-solid two-phase system containing inert particle suspensions, *Trans. Japan Soc. Mech. Engrs* **B56**(527), 2115 (1990).

Y. Yoshizawa and K. Yoshida, A study of flame structures in the gas-solid two-phase systems containing inert particle suspensions (2nd report, effects of the diameter and radiative properties of the particles), *Trans. Japan Soc. Mech. Engrs* **B56**(532), 3915 (1990).

MASS TRANSFER

K. Hijikata and J. Mimatsu, The visualization of the distribution of the mass transfer rate by real-time holographic interferometry, *Trans. Japan Soc. Mech. Engrs* **B56**(524), 1126 (1990).

Y. Ichikawa and K. Sada, Development of an atmospheric diffusion evaluation method incorporating thermal and topographical effects (3) (study on turbulence data required for a Lagrangian particle dispersion model), Energy Lab. Rep. T89038, 1 (1990).

T. Kadota and K. Kadowaki, Vapor concentration profile around two spheres in an air stream, *Trans. Japan Soc. Mech. Engrs* **B56**(524), 990 (1990).

T. Kashiwagi and T. Nomura, Heat and mass transfer enhancement technology in the process of steam absorption, *Refrigeration* **65**(757), 1117 (1990).

M. Kimura, K. Ono and A. Saima, Velocity and concentration fluctuations of turbulent buoyant round jets, *J.S.M.E. Int. J., Series II* (English) **33**(3), 562 (1990).

H. Kurokawa, Y. Koseki, A. Yamada, K. Ebara and S. Takahashi, Characteristics of heat and mass transfer in membrane distillation, *Kagaku Kogaku Ronbunshu* (*Trans. Chem. Engng Japan*) **16**(6), 1203 (1990).

T. Machama, H. Miyasato, Y. Miyagi and C. Afuso, Determination of surface concentration of diffused impurity by the modified bimetallic model, *Bull. Fac. Engng Univ. Ryukyus* **39**, 87 (1990).

I. Morioka and M. Kiyota, Absorption of water vapor into a wavy film of an aqueous solution of LiBr, *Trans. Japan Soc. Mech. Engrs* **B56**(526), 1785 (1990).

I. Morioka and M. Kiyota, Enhancement of absorption of water vapor into an aqueous LiBr solution film by an addition of surface active agent, *Sci. Papers Fac. Engng Tokushima Univ.* **35**, 33 (1990).

K. Sada and Y. Ichikawa, Development of an atmospheric diffusion evaluation method incorporating thermal and topographical effects (4) (turbulence intensity estimation methods using observation results), Energy Lab. Rep. T89039, 1 (1990).

I. Sekine and T. Kumada, Experimental study of the flow characteristics of falling films (measurement of wave shape of falling films by a capacity variation method), *Trans. Japan Soc. Mech. Engrs* **B56**(527), 1899 (1990).

K. Tanaka, On the numerical calculation of unsteady diffusion from a point source, *Sci. Engng Rev. Doshisha Univ.* **31**(2), 186 (1990).

K. Tanaka and S. Morita, Boundary element analysis of steady diffusion with first-order chemical reaction, *Sci. Engng Rev. Doshisha Univ.* **31**(4), 289 (1991).

K. Tanaka and S. Morita, Boundary element analysis of steady diffusion with zero-order chemical reaction, *Sci. Engng Rev. Doshisha Univ.* **31**(4), 311 (1991).

K. Tanishita and K. Nakanishi, Facilitated transport of carbon dioxide in a microporous membrane oxygenator, *Trans. Japan Soc. Mech. Engrs* **B56**(532), 3869 (1990).

K. Tanishita, J. Takada, M. Yazaki and A. Watabe, Carbon dioxide removal in the microporous membrane oxygenator, *Trans. Japan Soc. Mech. Engrs* **B56**(532), 3874 (1990).

T. Tsujino and M. Miura, Dynamic mechanism of hyperbaric oxygen therapy for gas embolism, *Trans. Japan Soc. Mech. Engrs* **B56**(525), 1415 (1990).

THERMAL PROPERTIES

T. Akiyama, G. Ogura, H. Ohta, R. Takahashi, Y. Waseda and J. Yagi, Thermal conductivities of dense iron oxides, *Tetsu to Hagane* (*J. Iron Steel Inst. Japan*) **77**(2), 231 (1991).

M. Endo, T. Hayasaka, Y. Sato, T. Yamamura and T. Ejima, Refractive indices and electronic polarizabilities of alkali halide melts, *Netsu Bussei* (*J. Japan Soc. Thermophys. Properties*) **5**(1), 6 (1991).

- T. Fujimoto and M. Niwa, Thermal characteristics of clothing materials, *Netsu Bussei (J. Japan Soc. Thermophys. Properties)* **5**(1), 23 (1991).
- M. Fukushima, N. Watanabe and T. Kamimura, Measurements of the vapor-liquid coexistence curves and the critical parameters of HCFC123 and HFC134a, *Trans. JAR* **7**(2), 85 (1990).
- M. Fukushima, N. Watanabe and T. Kamimura, Measurements of the PVT properties of HCFC123 and HFC134a, *Trans. JAR* **7**(3), 243 (1990).
- I. Hatta, H. Yao, R. Kato and A. Maesono, Development of ac calorimetric method for thermal diffusivity measurement III. Heat loss in the measurement of fine wires, *Jap. J. Appl. Phys. (English)* **29**(12), 2851 (1990).
- S. Hirasawa, T. Watanabe, T. Torii, T. Uchino and T. Doi, Measurement of thermal radiative properties of silicon wafers with oxide film and nitride film at 950°C, *J.S.M.E. Int. J., Series II (English)* **33**(2), 290 (1990).
- Y. Idemoto and K. Fueki, Melting point of superconducting oxides as a function of oxygen partial pressure, *Jap. J. Appl. Phys. (English)* **29**(12), 2729 (1990).
- N. Kagawa, H. Ikeda, H. Kawano, M. Uematsu and K. Watanabe, Thermodynamic state surface and cycle analysis for refrigerant 22+refrigerant 114 system, *Trans. Japan Soc. Mech. Engrs* **B57**(534), 597 (1991).
- K. Kamiuto, Examination of Bruggeman's theory for effective thermal conductivities of packed beds, *J. Nucl. Sci. Technol. (English)* **27**(5), 473 (1990).
- H. Kanzaki, K. Sato and M. Kumagai, A study of a technique to predict the equivalent thermal conductivity of an electric coil, *Trans. Japan Soc. Mech. Engrs* **B56**(526), 1753 (1990).
- A. Kanzawa, Thermal properties of a plasma, *Netsu Bussei (J. Japan Soc. Thermophys. Properties)* **4**(1), 3 (1990).
- S. Kawai and Y. Taki, A study of physical properties of brown coal liquid fraction, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng Japan)* **16**(4), 835 (1990).
- H. Kawaji and T. Atake, Present studies of thermophysical properties of high-temperature ceramic superconductors, *Netsu Bussei (J. Japan Soc. Thermophys. Properties)* **4**(2), 77 (1990).
- H. Kiyohashi, Estimation of *in situ* effective thermal conductivities of hot dry rocks, *Netsu Bussei (J. Japan Soc. Thermophys. Properties)* **4**(1), 26 (1990).
- Y. Maezawa, H. Sato and K. Watanabe, Saturated liquid densities of a binary HFC 152a+CFC 114 system, *Trans. Japan Soc. Mech. Engrs* **B56**(529), 2690 (1990).
- T. Mikita, Review of the research on transport properties of alternative refrigerants, *Refrigeration* **65**(757), 1153 (1990).
- T. Mitsuya, Y. Kumagai, S. Fujiwara and T. Kumasaka, A study of toner fusing for electrophotography (2nd report, evaluations of toner thermophysical properties and discussions of the effects), *Trans. Japan Soc. Mech. Engrs* **B56**(530), 3101 (1990).
- I. Morioka and M. Kiyota, Diffusion coefficients of aqueous solution of LiBr at high concentrations, *Sci. Papers Fac. Engng Tokushima Univ.* **35**, 25 (1990).
- T. Morita, K. Fukuda and H. Kutsuna, Measurements of thermal properties of molten salt mixtures, *Rev. Kobe Univ. Mercantile Marine Part II* **38**, 129 (1990).
- A. Nagashima, Thermophysical properties of high temperature liquids, *Netsu Bussei (J. Japan Soc. Thermophys. Properties)* **4**(2), 69 (1990).
- S. Nakahara and Y. Arai, Prediction of interfacial tensions for water-hydrocarbon-acetic acid ternary systems, *Netsu Bussei (J. Japan Soc. Thermophys. Properties)* **4**(1), 42 (1990).
- N. Nakazawa, M. Akabori, Y. Nagasaka and A. Nagashima, Measurement of the thermal diffusivity of molten salts by the forced Rayleigh scattering method (measurement of molten alkali metal chlorides at temperatures above 1000°C), *Trans. Japan Soc. Mech. Engrs* **B56**(525), 1467 (1990).
- E. Nemoto and K. Kawashimo, A study of the heat conduction of superconductors (3rd report, measurements and mechanism of thermal conductivities of high- T_c oxide superconductors), *Trans. Japan Soc. Mech. Engrs* **B56**(529), 2738 (1990).
- A. Nishibayashi, H. Ohta and Y. Tomota, Measurement of thermal diffusivity of Zirconia/NiCrAlY composite sprayed coatings by laser flash method, *J. Fac. Engng Ibaraki Univ.* **38**, 49 (1990).
- S. Nishijima and T. Okuda, Database on organic composite materials for cryogenic use, *Cryogenic Engng* **25**(5), 294 (1990).
- K. Nogi and K. Ogino, Wettability of solid oxides by liquid metals and interfacial phenomena between liquid metals and solid oxides, *Netsu Bussei (J. Japan Soc. Thermophys. Properties)* **5**(1), 31 (1991).
- J. Ode, A. Kawamura and T. Nakajima, Measurement of thermal diffusivity of thin metals, *Rep. Tokyo Metropolitan Industrial Technol. Center* **19**, 111 (1990).
- Y. Sakakibara, I. Yamada, S. Hiraoka and T. Aragaki, Thermal conductivity of polystyrene above and below the glass transition temperature, *J. Chem. Engng Japan (English)* **23**(4), 499 (1990).
- S. Sato and Y. Oyanagi, Thermal characteristics of molten polymers, *Res. Rep. Kogakuin Univ.* **68**, 46 (1990).
- S. Sato, O. Yunoki, M. Kobayashi and Y. Oyanagi, *p-v-T* properties and thermal diffusivity of general-purpose engineering plastics, *Res. Rep. Kogakuin Univ.* **68**, 59 (1990).
- H. Shibata, Y. Waseda and H. Ohta, The measurements of thermal diffusivity in the direction parallel or perpendicular to the sample surface of films by the laser flash method, *Netsu Bussei (J. Japan Soc. Thermophys. Properties)* **4**(1), 36 (1990).
- I. Takahashi and A. Sugawara, Precise measurement of thermophysical properties of solids by a direct electrical heating method (5th report, measurement of thermal expansion and specific heat by using a rectangular rod sample), *Trans. Japan Soc. Mech. Engrs* **B56**(525), 1424 (1990).
- H. Takamatsu and Y. Ikegami, Program for thermophysical properties of binary mixtures by the SRK equation of state, *Rep. Inst. Adv. Mater. Study Kyushu Univ.* **4**(1), 39 (1990).
- H. Takamatsu and Y. Ikegami, Program package for thermophysical properties of binary mixtures by the BWR equation of state, *Rep. Inst. Adv. Mater. Study Kyushu Univ.* **4**(1), 23 (1990).
- H. Takamatsu and Y. Ikegami, Comparison of equations of state for estimating thermodynamic properties of pure R22, pure R114 and their mixtures, *Rep. Inst. Adv. Mater. Study Kyushu Univ.* **4**(1), 1 (1990).
- K. Tanishita, Thermophysical properties on biological tissue, *Netsu Bussei (J. Japan Soc. Thermophys. Properties)* **4**(1), 12 (1990).
- I. Tokura, H. Saito, K. Kishinami and Y. Takekawa, Application of the transient hot-wire method on thermal conductivity measurement of solid-liquid mixtures, *Mem. Muroran Inst. Technol.* **40**, 63 (1990).
- T. Tsuboi, Y. Seguchi and T. Suzuki, The melting temperature of thin lead films, *J. Phys. Soc. Japan (English)* **59**(4), 1314 (1990).
- K. Watanabe, Current status of thermophysical property research on CFC alternative refrigerants (mainly on thermodynamic properties), *Refrigeration* **65**(757), 1144 (1990).
- E. Yamada, K. Takahashi and K. Tokita, The effective thermal conductivity of leathers, *Netsu Bussei (J. Japan Soc. Thermophys. Properties)* **4**(2), 95 (1990).
- A. Yamauchi and Y. Nagashima, Trial of laboratory automation to the experimental measurement of diffusion coefficient in liquid phase, *Res. Rep. Sasebo College Technol.* **27**, 27 (1990).

MEASUREMENT

- M. Ara and E. Suzuki, Localization of the temperature sensor by using optical fiber, *Res. Rep. Kogakuin Univ.* **69**, 161 (1990).

- Y. Era, Simultaneous measurement of concentration and velocity by applying hot-wire techniques (1st report, principle of analysis and practical use), *Trans. Japan Soc. Mech. Engrs* **B56**(528), 2358 (1990).
- Y. Era and A. Muramatsu, Simultaneous measurement of concentration and velocity by applying hot-wire techniques (2nd report, an illustration and experiment in the turbulent mixing region), *Trans. Japan Soc. Mech. Engrs* **B56**(528), 2364 (1990).
- E. Hihara, I. Fujita and T. Saito, Measurement of liquid surface temperature by an infrared radiation thermometer, *Trans. JAR* **7**(3), 275 (1990).
- S. Hinata, J. E. S. Venart, A. C. M. Sousa, M. Sakurai, M. Nakazawa and I. Ichimura, Miniature optical fibre sensor used to measure the local void fraction, *Trans. Japan Soc. Mech. Engrs* **B56**(525), 1433 (1990).
- Y. Igarashi, S. Inagaki and K. Nishida, Fundamental study on flow measurement of extremely small flow rates of a liquid, *Trans. Japan Soc. Mech. Engrs* **B56**(523), 719 (1990).
- Y. Ikeda, T. Nakajima, M. Utsunomiya and R. Matsumoto, Burst digital correlator for LDV signal processing (comparison of BDC with BSA in a simulation), *Trans. Japan Soc. Mech. Engrs* **B56**(523), 817 (1990).
- T. Kadota, Y. Taniguchi and K. Kadowaki, EXCIPLEX method for remote probing of a fuel droplet temperature, *Trans. Japan Soc. Mech. Engrs* **B56**(525), 1516 (1990).
- T. Kashiwagi and S. Yasu, Three-dimensional flow visualization of shock wave using double-pulsed holographic interferometry (1st report, three-dimensional measurement of shock wave configuration generated from the flying U-shaped pin in a supersonic flow and its data processing), *Trans. Japan Soc. Mech. Engrs* **B56**(529), 2616 (1990).
- H. Kimoto, H. Iizuka and K. Hamabe, Precise and handy measurement of the temperature profile appearing on a temperature-sensitive liquid-crystal film, *Trans. Japan Soc. Mech. Engrs* **B57**(533), 262 (1991).
- M. Maeda, M. Katsuyama and M. Sasabe, Evaluation of gas temperature by using vibrational-rotational spectrum of carbon monoxide, *Tetsu to Hagane (J. Iron Steel Inst. Japan)* **76**(9), 1474 (1990).
- A. Makino, N. Araki, Y. Nitta and Y. Mihara, Laser diagnostics with CARS for the measurement of gas temperature, *Rep. Fac. Engng Shizuoka Univ.* **41**, 9 (1990).
- A. Mizuno and T. Ito, A hotwire calibration method of 3-dimensional apparent setting angles (1st report, apparent angle of an inclined hotwire and its calibration algorithm), *Trans. Japan Soc. Mech. Engrs* **B56**(527), 1965 (1990).
- A. Mizuno and T. Ito, A hotwire calibration method of 3-dimensional apparent setting angles (2nd report, entire calibration procedure including velocity characteristics), *Trans. Japan Soc. Mech. Engrs* **B56**(527), 1971 (1990).
- Y. Nagano, T. Tsuji and M. Tagawa, Error analysis of turbulent flow measurements with X-probes, *Trans. Japan Soc. Mech. Engrs* **B56**(529), 2590 (1990).
- T. Nakajima, Y. Ikeda and R. Matsumoto, Burst digital correlator for LDV signal processing (2nd report, theoretical evaluation of burst digital correlator), *Trans. Japan Soc. Mech. Engrs* **B56**(527), 2137 (1990).
- K. Nara, H. Kato and M. Okaji, A derivation of a universal correction function for the magneto-resistance of newly introduced Japanese industrial standard platinum resistance thermometer GR 0705, *Cryogenic Engng* **25**(6), 394 (1990).
- K. Nara, H. Kato and M. Okaji, Thermopower measurement of a thermocouple under magnetic fields, *Cryogenic Engng* **26**(1), 46 (1991).
- T. Ni-imi, T. Fujimoto, K. Kondo and N. Shimizu, Development of a method of temperature measurement in the rarefied gas flow using the visualized images by LIF (temperature measurement using two laser beams with different wavelength), *Trans. Japan Soc. Mech. Engrs* **B56**(529), 2608 (1990).
- Y. Okamoto, F. Kaminaga, T. Takanezawa and Y. Marui, Visualization study of thermal fluid flow, *J. Fac. Engng Ibaraki Univ.* **38**, 205 (1990).
- Y. Suzuki and N. Kasagi, Error evaluation of hot-wire measurement in wall turbulence using a direct numerical simulation data base, *Trans. Japan Soc. Mech. Engrs* **B56**(532), 3724 (1990).
- K. Tabei and H. Shirai, Temperature and/or density measurements of asymmetrical flow fields by means of the moiré-schlieren method (method of transformation of moiré-data and its application to the temperature measurement of a combustion flame from a rectangular burner), *J.S.M.E. Int. J., Series II (English)* **33**(2), 249 (1990).
- S. Takagi, Slant hot-wire inclination measurement using dual laser beams, *J. Japan Soc. Aeronaut. Space Sci.* **39**(444), 51 (1991).
- T. Tanaka, K. Torigoe, T. Kawaguchi and Y. Tsuji, Measurement of solid concentration in suspension using supersonic waves, *Trans. Japan Soc. Mech. Engrs* **B57**(534), 501 (1991).
- K. Tsubouchi, S. Yoshida, T. Satoh and K. Ikeuchi, A fiber LDV system for measurement of atomized droplets away from the trailing edge of a fixed blade in two-phase flow, *J.S.M.E. Int. J., Series II (English)* **33**(3), 511 (1990).
- T. Tsuji, Y. Nagano, M. Tagawa and M. Higashi, Measurement of temperature fluctuations in a flow with cold-wire sensors (instantaneous temperature profile and frequency response of sensors), *Trans. Japan Soc. Mech. Engrs* **B56**(529), 2704 (1990).
- K. Wakai, S. Shimizu and M. Kondo, Measurement of two-dimensional temperature and density distributions by a 2-band-absorption CT (theoretical investigations), *Trans. Japan Soc. Mech. Engrs* **B56**(532), 3932 (1990).
- S. Yasu, T. Tamaki, S. Nagano and T. Kashiwagi, Three-dimensional flow visualization of shock wave using double-pulsed holographic interferometry (2nd report, flow visualization for three-dimensional shock structures in rotating aeroengine fan blade rows), *Trans. Japan Soc. Mech. Engrs* **B56**(529), 2626 (1990).
- F. Yoshino, R. Waka and A. Nakamura, Numerical experiments on the output of a hot-wire anemometer (the mean velocity of high turbulence intensity flow with a normal distribution), *Trans. Japan Soc. Mech. Engrs* **B56**(525), 1330 (1990).

HEAT EXCHANGER

- M. Abe, Corrosion of heat exchanger, *Refrigeration* **65**(758), 1248 (1990).
- H. Aoki and H. Mitsui, Tubular heat exchangers with internal longitudinal fins for metal hydride reaction beds, *Trans. Japan Soc. Mech. Engrs* **B57**(534), 604 (1991).
- K. Aoki and M. Hattori, Heat exchanger operating with frosting, *Refrigeration* **65**(758), 1242 (1990).
- B. Direcksataporn, T. Arakawa and S. Kawai, Investigations on a simplified lumped-parameter model of steam liquid heat exchangers, *Bull. Sci. Engng Res. Lab. Waseda Univ.* **128**, 1 (1990).
- R. Echigo, H. Yoshida, K. Hanamura and H. Mori, Fine-tube heat exchanger woven with threads, *Trans. Japan Soc. Mech. Engrs* **B56**(530), 3094 (1990).
- S. Esaki, T. Fukano, S. Shigemitsu, T. Matsusita and K. Toda, The tube side flow rate distribution in a horizontal multi-tube heat exchanger, *Trans. Japan Soc. Mech. Engrs* **B56**(528), 2247 (1990).
- T. Fujii, Fouling of heat transfer equipment, *Refrigeration* **65**(758), 1256 (1990).
- I. Fukuhara and K. Tsuji, Thermal efficiency in a direct contact heat exchanger of gas and liquid, *Trans. JAR* **7**(3), 257 (1990).
- K. Hamaguchi, Y. Hiratsuka and H. Miyabe, Effect of regenerator geometry on the Stirling engine performance (2nd report, regenerator diameter), *Trans. Japan Soc. Mech. Engrs* **B56**(526), 1857 (1990).
- Y. Hayashi, A. Takimoto, O. Matsuda and T. Kitagawa, Study on mist cooling for heat exchanger (development of

high-performance mist-cooled heat transfer tubes), *J.S.M.E. Int. J.*, Series II (English) **33**(2), 333 (1990).

M. Hiramatsu, T. Ishimaru and K. Matsuzaki, Research on fins for air conditioning heat exchangers (1st report, numerical analysis of heat transfer on louvered fins), *J.S.M.E. Int. J.*, Series II (English) **33**(4), 749 (1990).

M. Hiramatsu, T. Oohara, S. Kamiya and S. Susa, Automotive compact heat exchangers, *Refrigeration* **65**(758), 1233 (1990).

Y. Hiratsuka, K. Hamaguchi and H. Miyabe, Effect of regenerator geometry on the Stirling engine performance (1st report, regenerator length), *Trans. Japan Soc. Mech. Engrs* **B56**(526), 1850 (1990).

A. Hirota, Air to air heat exchanger, *Refrigeration* **65**(758), 1214 (1990).

M. Kanzaka and M. Iwabuchi, Study on the heat transfer of heat exchangers for the Stirling engine (1st report, heat transfer in a heated tube under the reversing flow condition), *Trans. Japan Soc. Mech. Engrs* **B56**(531), 3451 (1990).

M. Kanzaka and M. Iwabuchi, Study on the heat transfer of heat exchangers for the Stirling engine (2nd report, performance of the heat exchangers for the test Stirling engine), *Trans. Japan Soc. Mech. Engrs* **B57**(533), 297 (1991).

Y. Kato, Y. Sugita, K. Onda, S. Sato, Y. Hotta and T. Nosetani, *In-situ* evaluation of enhanced heat transfer tubes for surface condenser, *Thermal Nucl. Power* **41**(11), 1439 (1990).

A. Kishimoto and A. Kawada, Shell and tube heat exchanger, *Refrigeration* **65**(758), 1208 (1990).

V. Lueprasitsakul, S. Hasebe, I. Hashimoto and T. Takamatsu, Study of energy efficiency of a wetted-wall distillation column with internal heat integration, *J. Chem. Engng Japan* (English) **23**(5), 580 (1990).

Y. Matsubara, A valuation method of regenerator efficiency, *Cryogenic Engng* **25**(6), 400 (1990).

A. Miyara, S. Koyama and T. Fujii, Effects of characteristics of heat exchangers on the performance of a heat pump cycle using NARBs, *Trans. JAR* **7**(1), 65 (1990).

H. Nakata, Finned tube heat exchanger, *Refrigeration* **65**(758), 1201 (1990).

T. Ohara, T. Yamamoto and H. Fujita, Evaporative heat transfer and pressure drop in a rib-roughened flat channel (vertical upflow and downflow in a cross-ribbed channel), *Trans. Japan Soc. Mech. Engrs* **B56**(526), 1721 (1990).

T. Ohara, T. Yamamoto and H. Fujita, Evaporative heat transfer and pressure drop in a rib-roughened flat channel (effects of rib height and spacing of transverse rib roughness), *Trans. Japan Soc. Mech. Engrs* **B57**(533), 268 (1991).

B. Prahlad, P. D. Kale and K. K. Rajan, Thermal performance tests on a sodium-to-sodium heat exchanger, *J. Nucl. Sci. Technol.* (English) **27**(6), 547 (1990).

I. Sakai and T. Matsuhisa, Heat transfer characteristics of heat storage type heat transfer element for gasturbine, *Trans. Japan Soc. Mech. Engrs* **B56**(531), 3489 (1990).

H. Shidara, M. Kikuchi and M. Kanzaki, Heat transfer of pseudoplastic fluids in plate-type heat exchangers, *Kagaku Kogaku Ronbunshu* (Trans. Chem. Engng Japan) **16**(5), 1110 (1990).

M. Sugawara, S. Uemura, R. Yajima, T. Takahashi and T. Fujita, Melting of frost on a heat exchanger of a heat pump (a continuing report, effect of frost volume on the waffle fin heat exchanger), *Trans. Japan Soc. Mech. Engrs* **B56**(531), 3457 (1990).

H. Takemi, Maintenance of heat exchanger, *Refrigeration* **65**(758), 1260 (1990).

H. Takeuchi and K. Sato, Solid-circulation heat-collector from air without frost formation, *Kagaku Kogaku Ronbunshu* (Trans. Chem. Engng Japan) **16**(5), 859 (1990).

X. Tang, H. Yoshida, J. H. Yun and R. Echigo, Numerical analysis of unsteady heat transfer characteristics of a Stirling engine regenerator, *Trans. Japan Soc. Mech. Engrs* **B56**(525), 1440 (1990).

Y. Yagi and S. Mochizuki, Development of a modified

single-blow method (an application to parallel plate heat transfer surfaces), *Trans. Japan Soc. Mech. Engrs* **B56**(529), 2724 (1990).

M. Yanadori and T. Masuda, Heat transfer in the melting process of phase-change materials around a horizontal single pipe and a heat exchanger with horizontal pipes connected by a U-bend, *Trans. Japan Soc. Mech. Engrs* **B56**(524), 1090 (1990).

HEAT PIPE AND THERMOSYPHON

T. Fukano and K. Kadoguchi, Local heat transfer in a reflux condensation inside closed two-phase thermosyphon, *Trans. Japan Soc. Mech. Engrs* **B56**(525), 1475 (1990).

K. Fukuda, S. Hasegawa, T. Kondoh, K. Nakagawa, S. Tamura and K. Okabe, Thermal characteristics of double tube two-phase thermosyphon, *Trans. Japan Soc. Mech. Engrs* **B57**(534), 687 (1991).

H. Imura and M. Yoshida, Heat transfer characteristics in two-phase double-tube thermosyphons, *Trans. Japan Soc. Mech. Engrs* **B56**(532), 3816 (1990).

T. Ito, T. Imajo, T. Chino, K. Sawabe, H. Nagayoshi, T. Namai, S. Sugihara, Y. Koike, H. Yuki and K. Kamikawa, Development of the compacted underground transformer by using heatpipe and reduction of its installing handhole size, Energy Lab. Rep. W89039 (1990).

Y. Kobayashi and A. Okumura, Numerical analysis of vapor flow in the condenser region of a VHCP or thermosyphon, *Trans. Japan Soc. Mech. Engrs* **B56**(530), 3064 (1990).

M. Mochizuki, Application of heat pipe in cooled region, *Trans. JAR* **7**(3), 201 (1990).

H. Muramoto, Heat pipe, *Refrigeration* **65**(758), 1219 (1990).

T. Ueda and T. Miyashita, On the performance limit of closed two-phase thermosyphons, *Trans. Japan Soc. Mech. Engrs* **B56**(526), 1746 (1990).

K. Yoshioka and M. Hiraoka, The study of a high-performance heat pipe with a specified pedestal-artery channel, *Rep. Fac. Engng Oita Univ.* **22**, 1 (1990).

HEAT PUMP/REFRIGERATOR AND THERMAL STORAGE

M. Goto, N. Inoue, Y. Sasaki and H. Amemiya, Performance of a vapour compression heat pump system using a non-azeotropic refrigerant mixture, *J. Tokyo Univ. Mercantile Marine* (Natural Sci.) **41**, 81 (1990).

Y.-L. He, H. Nishitani and E. Kunugita, Operational flexibility of an absorption refrigeration system, *Kagaku Kogaku Ronbunshu* (Trans. Chem. Engng Japan) **16**(5), 998 (1990).

H. Inaba and T. Fukuda, Numerical simulation of thermal performance of a salt-gradient solar pond in a cold climate, *Trans. Japan Soc. Mech. Engrs* **B56**(523), 788 (1990).

T. Kashiwagi, K. Omata, Y. Nagaoka, K. Fujikura and N. Nishiyama, High-performance absorption cycle with the circulation of auxiliary refrigerant (1st report, cycle simulation), *Trans. Japan Soc. Mech. Engrs* **B56**(530), 3018 (1990).

M. Kobiyama, H. Saito, K. Kishinami, A. Yokota and H. Watanabe, Thermal utilization of underground environments (on storage of cold energy), *Mem. Muroran Inst. Technol.* **40**, 15 (1990).

O. Miyatake and K. Fujita, Thermal storage efficiency of a cylindrical water tank, *Kagaku Kogaku Ronbunshu* (Trans. Chem. Engng Japan) **16**(4), 780 (1990).

Y. Nagaoka, K. Fujikura, N. Nishiyama, T. Kashiwagi and K. Omata, High-performance absorption cycle with the circulation of auxiliary refrigerant (2nd report, experiments and characteristics analysis), *Trans. Japan Soc. Mech. Engrs* **B56**(530), 3026 (1990).

K. Ozaki, N. Endo, A. Yabe and T. Kobayashi, High performance heat pump systems accompanying two-phase compression process (COP improvement in quasi-static com-

pression), *Trans. Japan Soc. Mech. Engrs* **B57**(533), 202 (1991).

P.-M. Ranger, H. Matsuda and P. L. Goff, Modelling of a new type of absorption heat pump combining rectification and 'reverse-rectification', *J. Chem. Engng Japan* (English) **23**(5), 530 (1990).

A. Tominaga, Thermoacoustic refrigeration, *Cryogenic Engng* **25**(3), 132 (1990).

A. Tominaga, Thermoacoustic theory of regenerator in refrigerator, *Cryogenic Engng* **26**(1), 30 (1991).

H. Umeyama and H. Kimura, Study on optimum drive of thermal energy storage system utilizing an aquifer, *Trans. Japan Soc. Mech. Engrs* **B57**(534), 638 (1991).

H. Umeyama and T. Ohtaka, Thermal design of snow-melt road, utilizing short-term thermal energy storage under the road, *Trans. Japan Soc. Mech. Engrs* **B56**(532), 3860 (1990).

H. Umeyama and Y. Satoh, A cogeneration system for a heavy snow fall zone based on aquifer thermal energy storage, *J.S.M.E. Int. J., Series II* (English) **33**(4), 757 (1990).

OUTLOOK

Y. Hayashi, Heat transfer control in combined flow, *J. Japan Soc. Mech. Engrs* **93**(864), 914 (1990).

Y. Kaya, Global warming and modern civilization, *J. Japan Soc. Mech. Engrs* **93**(863), 810 (1990).

S. Kotake, Heat transfer control with molecular dynamics, *J. Japan Soc. Mech. Engrs* **93**(864), 900 (1990).

M. Murakami, Progress in space cryogenics, *Cryogenic Engng* **25**(6), 373 (1990).

W. Nakayama, Thermal management technology for microelectronics, *J. Japan Soc. Mech. Engrs* **93**(864), 932 (1990).

H. Niitsuma, Geothermal energy extraction in future, *J. Japan Soc. Mech. Engrs* **94**(866), 86 (1991).

N. Nishiwaki, Heat transfer in high precision machining, *J. Japan Soc. Mech. Engrs* **93**(864), 928 (1990).

S. Nishio, Material structure and cooling control, *J. Japan Soc. Mech. Engrs* **93**(864), 922 (1990).

T. Ota, Heat transfer control in separated flow, *J. Japan Soc. Mech. Engrs* **93**(864), 912 (1990).

A. Saito and S. Okawa, Control of freezing of supercooled water, *J. Japan Soc. Mech. Engrs* **93**(864), 920 (1990).

H. Shikata, Mechanisms of warming trend of earth and countermeasures against it, *Thermal Nucl. Power* **42**(2), 149 (1991).

M. Suzuki, Critical phenomena in phase transformation and fractals, *Tetsu to Hagane* (*J. Iron Steel Inst. Japan*) **76**(10), 1607 (1990).

H. Uehara, Ocean energy, *J. Japan Soc. Mech. Engrs* **93**(860), 560 (1990).

A. Yabe, Heat transfer control utilizing electric fields, *J. Japan Soc. Mech. Engrs* **93**(864), 902 (1990).

A. Yoshizawa, Turbulence researches in engineering and science, *J. Japan Soc. Mech. Engrs* **93**(862), 764 (1990).

MISCELLANEOUS

T. Aihara, Active control of heat transfer with temperature, pressure, and magnetization dependence of fluid physical properties, *J. Japan Soc. Mech. Engrs* **93**(864), 904 (1990).

S. Enya and T. Yano, Heat transfer control in mechatronics of heavy industries, *J. Japan Soc. Mech. Engrs* **93**(864), 934 (1990).

M. Fujii and M. Ikeuchi, Time-current characteristics and minimum fusing current of R113 on a horizontal wire, *Trans. Japan Soc. Mech. Engrs* **B56**(527), 2034 (1990).

Y. Fukuoka and M. Ishizuka, New package cooling technology using low melting point alloys, *Jap. J. Appl. Phys.* (English) **29**(7), 1377 (1990).

K. Hijikata, M. I. Flik and T. Nagasaki, Thermal packaging limit for hybrid superconductor-semiconductor electronic

circuits, *Trans. Japan Soc. Mech. Engrs* **B56**(529), 2747 (1990).

H. Inaba and H. Otake, Fundamental study on measurement of water saturation rate in a snow layer, *Trans. Japan Soc. Mech. Engrs* **B56**(526), 1794 (1990).

K. Ishibashi and S. Tsuge, Aerothermochemical considerations on direct reductive heating of a flat steel plate, *Tetsu to Hagane* (*J. Iron Steel Inst. Japan*) **76**(3), 345 (1990).

H. Ishiguro, T. Tanaka, Y. Yamada, M. Y. Mashita, S. Kotake and M. Takeuchi, Study on the heat transfer aspect of thermal burns caused by mats with warm water circulation, *Trans. Japan Soc. Mech. Engrs* **B56**(525), 1457 (1990).

H. Ito, Y. Umeda, Y. Nakamura, T. Watanabe and T. Mizutani, Three-dimensional unsteady heat transfer analysis of an indirect heating furnace with a bolts-packed work, *Kagaku Kagaku Ronbunshu* (*Trans. Chem. Engng Japan*) **16**(2), 204 (1990).

I. Ito, Heating tower, *Refrigeration* **65**(758), 1228 (1990).

M. Iwakuma, K. Funaki and K. Yamafuji, Quench protection of superconducting transformers, *Cryogenic Engng* **25**(3), 172 (1990).

N. Izutani, Temperature and humidity control in a lunar base, *Refrigeration* **66**(759), 8 (1991).

T. Katayama, A. Ishii, J. Tsutsumi, M. Nishida, T. Hayashi, Y. Shiotsuki, H. Kitayama and K. Takayama, Field observation of thermal environment around a park with a water surface, *Engng Sci. Rep. Kyushu Univ.* **11**(4), 403 (1990).

T. Katayama, A. Ishii, M. Nishida, O. Ishihara, T. Hayashi, Y. Shiotsuki, J. Tsutsumi, I. Saitoh, S. Iwamoto, M. Ohguro, H. Kitayama, K. Takayama, S. Maeda and E. Caro, Cooling effects of green on thermal environment in a built-up area (surveys on amount of green and air temperature), *Engng Sci. Rep. Kyushu Univ.* **12**(2), 215 (1990).

I. Kinoshita and Y. Nishi, Study on thermal hydraulics of FBR decay heat removal system (evaluation of temperature difference on upper tube sheet of IHX), *Energy Lab. Rep.* T90017 (1991).

M. Kobiyama, H. Matsumoto, K. Tanifuzi, T. Yamamoto and S. Morohashi, The condensation and collection of solar energy by a reflection sheet, *Mem. Muroran Inst. Technol.* **40**, 35 (1990).

A. Kumakawa, M. Sasaki, K. Sato, H. Tamura, F. Ono, H. Sakamoto and N. Yatsuyanagi, Hot gas side heat transfer characteristics of LOX/H₂ and LOX/HC type propellants, *Tech. Rep. Nat. Aerospace Lab.* (English) TR-1062T (1990).

Y. Kurosaki, Roles of thermal control in polymer injection molding process, *J. Japan Soc. Mech. Engrs* **93**(864), 930 (1990).

K. Kuwano, Present state of mass-concrete cooling system, *Refrigeration* **65**(754), 805 (1990).

S. Maruyama, T. Aihara and R. Viskanta, Transient behavior of an active thermal insulation system, *Trans. Japan Soc. Mech. Engrs* **B56**(524), 1140 (1990).

I. Morioka and M. Kiyota, Room temperature inside vinyl-sheet house above a heated fish pond, *Sci. Papers Fac. Engng Tokushima Univ.* **34**, 21 (1990).

S. Motakef and H. Ozoe, A comparative study of thermal conditions at onset of plastic flow in various semiconductors, *J.S.M.E. Int. J., Series II* (English) **34**(1), 65 (1991).

K. Nakabe, Y. Matsuoka, M. Taga, K. Hayashi, K. Kamiya and H. Matsuura, On predictable method of temperature distribution of piston head, *J. Fac. Sci. Technol. Kinki Univ.* **26**, 131 (1990).

Y. Nawata, Solar cooling and heating system aided by a photovoltaic array, *Res. Rep. Yatsushiro Nat. College Technol.* **12**, 1 (1990).

M. Nishi and S. Shimamoto, Transient heat transfer in superconducting devices, *J. Japan Soc. Mech. Engrs* **93**(864), 936 (1990).

M. Nishimura, Y. Bando, H. Sota, M. Hayashi and M. Minatani, Effect of number and setting position of transparent partitioning films on collection characteristics of

- 'volume heat trap' solar collector, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng Japan)* **16**(5), 1038 (1990).
- Y. Obata, K. Yasue, Y. Yamada and T. Nishio, Estimation of latent heat in the heat treatment of cast iron, *Rep. Government Industrial Res. Inst. Nagoya* **39**(12), 481 (1990).
- S. Okada, T. Aihara, J.-K. Kim and K. Kuroda, Numerical analysis of stability limit of an immersion-cooled, pancake-type superconducting coil, *Cryogenic Engng* **25**(5), 323 (1990).
- Y. Okamoto, F. Kaminaga, K. Satou, M. Takashima, Y. Horiuchi and T. Shibutani, Thermal cooling techniques of electronic components, *J. Fac. Engng Ibaraki Univ.* **38**, 187 (1990).
- J. Saeki and A. Kaneda, Flow analysis of an epoxy compound for low-pressure transfer molding in a circular cross-sectional channel, *J.S.M.E. Int. J.*, Series II (English) **33**(3), 486 (1990).
- K. Sawase, Y. Kurosaki, M. Shikano and A. Higo, Characteristics of a water sprinkler system with variable flow rates for melting snow on railway tracks, *Trans. Japan Soc. Mech. Engrs* **B56**(529), 2678 (1990).
- K. Shioda, Y. Hashidate and M. Kumagai, Numerical simulation of electron behavior and beam heating on the material surface, *Trans. Japan Soc. Mech. Engrs* **B56**(531), 3425 (1990).
- M. Tanaka, I. Yamashita and F. Chisaka, Flow and heat transfer characteristics of the Stirling engine regenerator in an oscillating flow, *J.S.M.E. Int. J.*, Series II (English) **33**(2), 283 (1990).
- O. Tanaka and T. Fukano, Prediction of the water level at the onset of dryout for a multitube one-through boiler, *Trans. Japan Soc. Mech. Engrs* **B56**(526), 1801 (1990).
- T. Tanaka, Consideration of increase of system performance in solar thermal high-temperature utilization systems, *Trans. Japan Soc. Mech. Engrs* **B56**(526), 1806 (1990).
- I. Tanasawa, Controlled heat transfer in cryopreservation of biological materials, *J. Japan Soc. Mech. Engrs* **93**(864), 926 (1990).
- A. Tominaga, Thermoacoustic theory of dream pipe, *Cryogenic Engng* **25**(5), 300 (1990).
- A. Yoshida, K. Tominaga and S. Watatani, Field investigation on heat transfer in an urban canyon, *Trans. Japan Soc. Mech. Engrs* **B56**(524), 1155 (1990).