

HEAT TRANSFER BIBLIOGRAPHY— JAPANESE WORKS

YASUO MORI

Department of Physical Engineering, Tokyo Institute of Technology, Tokyo, Japan

APPLICATION AND OUTLOOK

- K. C. Cheng, Some design considerations for arctic pipelines (the effects on permafrost), *J. Japan Soc. Mech. Engrs* **80**(706), 934 (1977).
- S. Fujii, H. Kameyama, K. Yoshida and D. Kunii, Chemical reaction cycles for the recovery of low-level thermal energy, *J. Chem. Engng, Japan* (English) **10**(3), 224 (1977).
- K. Fukunishi, Coherence analysis of boiling water reactor noise, *J. Nucl. Sci. Tech.* (English) **14**(5), 351 (1977).
- S. Fukusako, Accretion of ice on ships, *J. Japan Soc. Mech. Engrs* **80**(709), 1301 (1977).
- Y. Fukuzawa and Y. Fujii-e, Performance characteristics of potassium heat pipe loaded with argon, *J. Nucl. Sci. Tech.* (English) **15**(2), 109 (1978).
- T. Hanzawa, K. Sakauchi, K. Kato and T. Tadaki, Velocity profile and temperature distribution in the horizontal epitaxial reactor, *J. Chem. Engng, Japan* (English) **10**(4), 313 (1977).
- T. Hanzawa, K. Sakauchi, U. Ito, K. Kato and T. Tadaki, Characteristics of the horizontal epitaxial reactor—in case of mass transfer control, *J. Chem. Engng, Japan* (English) **10**(4), 319 (1977).
- K. Ishibashi, H. Yokoyama, A. Yamanaka and N. Mitsuishi, Heat transfer in mechanically agitated gas-sparged systems, *Tech. Rep. Kyushu Univ.* **50**(5), 551 (1977).
- H. Kanoh, Approximation of the dynamics of heat exchangers by method of weighted residuals, *Tech. Rep. Osaka Univ.* (English) **27**(1386), 507 (1977).
- S. Kawahara, T. Murata, H. Yusa and N. Sagawa, Description of aerosol release associated with sodium burning, *J. Nucl. Sci. Tech.* (English) **14**(5), 343 (1977).
- K. Miyazaki and Y. Fujii-e, One-dimensional analysis on generation and propagation of pressure waves in compressible liquid resulting from fuel coolant interaction, *J. Nucl. Sci. Tech.* (English) **14**(5), 327 (1977).
- I. Mogi, S. Kawai and T. Machiyama, Experimental investigations on the fundamental properties of sintered metal matrix applied to heat exchangers—5. On the relations between space factor and thermal conductivity, *Bull. Sci. Engng Res. Lab. Waseda Univ.* **76**, 9 (1977).
- I. Mogi, S. Kawai and T. Machiyama, Some experimental investigations on indirect heat exchanger system with the coupling liquid of l.b.m. (the thermosyphon system applied to the air-cooled oil-cooler), *Bull. Sci. Engng Res. Lab. Waseda Univ.* **77**, 1 (1977).
- H. Nagano, Present status of cryogenic engineering, *J. Japan Soc. Mech. Engrs* **80**(709), 1273 (1977).
- Y. Naito, Moderator temperature coefficient in BWR core, *J. Nucl. Sci. Tech.* (English) **14**(11), 826 (1977).
- W. Nakayama, Cooling of electric machines (symbolic development of cooling techniques observed in turbogenerators), *J. Japan Soc. Mech. Engrs* **81**(711), 145 (1978).
- H. Nei and M. Hori, Wastage phenomena due to small leak sodium-water reaction (reaction temperature and wastage pattern), *Trans. Japan Soc. Mech. Engrs* **43**(368), 1418 (1977).
- K. Nishikawa, Y. Fujita and H. Ohta, On the availability of fossil fuel, *Rep. Res. Inst. Sci. Ind. Kyushu Univ.* **66**, 19 (1977).
- K. Nishikawa, Availability and second law analysis, *Rep. Res. Inst. Sci. Ind. Kyushu Univ.* **66**, 35 (1977).
- K. Nishikawa, Y. Fujita and H. Ohta, Availability accounting of boiler, *Heat Management Pollution Control* **29**(11), 53 (1977) and **29**(12), 43 (1977).
- M. Sekine, The heat exchanger for refrigeration system and its characteristics, *J. Japan Soc. Mech. Engrs* **80**(709), 1268 (1977).
- H. Yamashita, S. Yamaguchi and R. Izumi, Analysis of the dynamic characteristics of cross-flow heat exchangers with both fluids unmixed (on the transient response to a step change in the inlet temperature), *Trans. Japan Soc. Mech. Engrs* **43**(371), 2687 (1977).
- H. Yamashita, R. Izumi and S. Yamaguchi, An analysis of heat exchanger considering the temperature distribution perpendicular to heat exchanger surface, *Trans. Japan Soc. Mech. Engrs* **43**(375), 4230 (1977).

CHANGE OF PHASE

- T. Fujii, H. Honda, T. Nagata, S. Nozu and M. Fujii, Condensation of refrigerant 11 inside a horizontal tube (2nd report, Heat transfer), *Trans. Japan Soc. Mech. Engrs* **43**(373), 3435 (1977).
- T. Fujii, H. Uehara, K. Mihara and Y. Kato, Forced convection condensation in the presence of noncondensables, *Rep. Res. Inst. Sci. Ind. Kyushu Univ.* **66**, 53 (1977).
- T. Fujita and T. Ueda, Heat transfer to falling liquid films and film breakdown (2nd report, Saturated liquid films with nucleate boiling), *Trans. Japan Soc. Mech. Engrs* **43**(373), 3389 (1977).
- Y. Fujita, K. Nishikawa and K. Hirahara, Study on thermal boundary layer at heat transfer in nucleate pool boiling, *Trans. Japan Soc. Mech. Engrs* **43**(376), 4586 (1977).
- Y. Fujita and K. Nishikawa, On the pressure factor in nuclear boiling heat transfer, *Mem. Fac. Engng Kyushu Univ.* **36**(4), 303 (1977).
- T. Hashizumi, S. Kawai and T. Machiyama, Some experimental investigations on the performance of heat exchanger with boiling, *Bull. Sci. Engng Res. Lab. Waseda Univ.* **75**, 1 (1977).
- Y. Hayashi and K. Aoki, A study on frost deposition on flat surface (classification of the growth of frost layer according to the structure), *Trans. Japan Soc. Mech. Engrs* **43**(368), 1384 (1977).
- Y. Hayashi, Frost deposition and its prevention, *J. Japan Soc. Mech. Engrs* **80**(709), 1233 (1977).
- A. Higashi, Morphology and properties of ice crystals, *J. Japan Soc. Mech. Engrs* **80**(709), 1239 (1977).
- S. Ishigai, M. Kaji, T. Watanabe and A. Yamaji, Pool boiling heat transfer from horizontal plates to liquid nitrogen under atmospheric pressure, *Tech. Rep. Osaka Univ.* (English) **27**(1384), 485 (1977).
- I. Katsumata and M. Hirata, Disappearance of DNB conditions for strong forced convection boiling heat

- transfer in a tube, *Trans. Japan Soc. Mech. Engrs* **43**(375), 4257 (1977).
- K. Kikkawa, S. Kawai and T. Machiyama, Experimental notes on intube boiling and condensing heat transfer coefficient of low-finned-tubes with inner-fins for refrigerant use, *Bull. Sci. Engng Res. Lab. Waseda Univ.* **77**, 45 (1977).
- Y. Kikuchi, Y. Daigo and A. Ohtsubo, Local sodium boiling behind local flow blockage in simulated LMFBF fuel sub-assembly, *J. Nucl. Sci. Tech. (English)* **14**(11), 774 (1977).
- Y. Kikuchi and K. Haga, Transient boiling of sodium in a single-pin geometry under loss of flow conditions, *J. Nucl. Sci. Tech. (English)* **15**(2), 100 (1978).
- F. Kono and H. Kubo, Frost heave on roads and the preventing method, *J. Japan Soc. Mech. Engrs* **80**(709), 1296 (1977).
- K. Kudo and M. Hirata, Sodium vapor deposition onto a horizontal flat plate above liquid sodium surface (2nd report, analysis of sodium vapor deposition rate with sodium mist growth within main flow region), *Trans. Japan Soc. Mech. Engrs* **43**(368), 1407 (1977).
- T. Kumada, T. Abe and R. Ishiguro, Natural evaporation of sodium under the conditions of mist formation, *Trans. Japan Soc. Mech. Engrs* **43**(370), 2278 (1977).
- T. Mizushima, R. Ito, S. Yamashita and H. Kamimura, Film condensation of superheated pure vapor in a vertical tube, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng, Japan)* **3**(3), 296 (1977).
- T. Mizushima, R. Ito, S. Hiraoka, S. Koda, A. Kabashima and T. Nakamura, Heat transfer under solidification of liquid on agitated vessel wall, *J. Chem. Engng, Japan (English)* **10**(2), 160 (1977).
- I. Mogi, S. Kawai and T. Machiyama, Some notes on the observations of boiling behaviors on the surface of sintered metal matrix, *Bull. Sci. Engng Res. Lab. Waseda Univ.* **76**, 1 (1977).
- M. Monde and Y. Katto, Study of burn-out in a high heat-flux boiling system with an impinging jet (Part 1, Behavior of the vapour-liquid flow), *Trans. Japan Soc. Mech. Engrs* **43**(373), 3399 (1977).
- M. Monde and Y. Katto, Study of burn-out in a high heat-flux boiling system with an impinging jet (Part 2, Generalized nondimensional correlation for the burn-out heat flux), *Trans. Japan Soc. Mech. Engrs* **43**(373), 3408 (1977).
- Y. Nagashima and M. Inoue, On the condensation of steam with air, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng, Japan)* **3**(5), 525 (1977).
- H. Nishihara and Y. Bessho, Acoustic emission in subcooled nucleate pool boiling, *J. Nucl. Sci. Tech. (English)* **14**(6), 407 (1977).
- S. Nishio and M. Hirata, Study on the leidenfrost temperature (1st report, Experimental study on the fundamental characteristics of the leidenfrost temperature), *Trans. Japan Soc. Mech. Engrs* **43**(374), 3856 (1977).
- Y. Onishi, Kinetic theory of evaporation and condensation of a vapor gas between concentric cylinders and spheres, *J. Phys. Soc. Japan* **42**(6), 2023 (1977).
- T. Saito, S. Fukuda, S. Saito, T. Morita and H. Uchida, Pressure variation relating to steam condensation in water, *Rep. Engng Res. Inst. Tokyo Univ.* **36**, 83 (1977).
- Y. Sano and S. Tamaoka, Drying of a drop of PVA-water solution, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng Japan)* **3**(5), 518 (1977).
- M. Sato, Vaporization of liquid films by means of rotating discs, *Trans. Japan Soc. Mech. Engrs* **43**(368), 1392 (1977).
- N. Seki, S. Fukusako and M. Tanaka, Drying phenomena in a horizontal wetted porous layer under high heat flux, *Trans. Japan Soc. Mech. Engrs* **43**(367), 1086 (1977).
- M. Suzuki, I. Nishiwaki and M. Akiyama, Study on the freezing process of water droplet under supercooled conditions, *Trans. Japan Soc. Mech. Engrs* **43**(375), 4268 (1977).
- H. Yamamoto and T. Ishibachi, Calculation of condensation heat transfer coefficient of fluted tubes—the effect of gravitation and valley flow, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng, Japan)* **3**(5), 522 (1977).
- M. Yanadori, M. Uchida, K. Hijikata and Y. Mori, Condensation heat transfer on downward cooled surface in container with noncondensable gas, *Trans. Japan Soc. Mech. Engrs* **43**(374), 3848 (1977).
- Y. Yasukawa, On the surface temperature and the bubble growth near the burnout point in boiling heat transfer, *Trans. Japan Soc. Mech. Engrs* **43**(371), 2679 (1977).
- K. Yoshikawa, S. Kawai and T. Machiyama, Some trials on the improvements of condensing heat transfer coefficient of finned-tube, *Bull. Sci. Engng Res. Lab. Waseda Univ.* **78**, 62 (1977).

TWO PHASE FLOW

- T. Furuta, S. Tsujimoto, M. Toshima, M. Okazaki and R. Toei, Concentration distribution of particles in solid-liquid two-phase flow through vertical pipe, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng, Japan)* **4**(1), 105 (1978).
- H. Hashimoto and T. Matsutani, Study on gas-liquid two-phase flow mechanism by sampling probe, *Mem. Inst. High Speed Mech. Tohoku Univ.* **39**(368), 1 (1977).
- J. Kawasaki, T. Hamatani, N. Nakazawa and T. Haya-kawa, Hammering in a horizontal cocurrent flow of steam and cold water, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng, Japan)* **3**(2), 137 (1977).
- H. Masuda, N. Mitsui and K. Iinoya, Experimental study of the electric pulses generated by flowing gas-solid suspension of low concentration, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng, Japan)* **3**(5), 457 (1977).
- H. Masuda, N. Mitsui and K. Iinoya, Electric current generated by gas-solid suspension flowing through a bend, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng, Japan)* **3**(5), 508 (1977).
- H. Matsumura and H. Ide, Studies on two-phase gas-liquid flow in rectangular channels (Report 3, Effect of hydraulic equivalent diameter on flow behaviour and pressure drop), *Res. Rep. Fac. Engng Kagoshima Univ.* **19**, 35 (1977).
- T. Minota and N. Murakami, Shock wave structure in gas-particle mixture, *J. Phys. Soc. Japan* **43**(3), 1792 (1977).
- M. Nakagawa, K. Hijikata and Y. Mori, A study of supersonic bubble flow (2nd report, Effect of velocity difference between gas and liquid), *Trans. Japan Soc. Mech. Engrs* **43**(369), 1851 (1977).
- H. Nishimura, M. Yasuda and S. Yasukawa, Measurement of flow in gas-liquid mixed-phase flow (on the upward flow of air-water system), *Res. Rep. Fac. Engng Niigata Univ.* **26**, 79 (1977).
- K. Ohba, I. Kishimoto and M. Ogasawara, Simultaneous measurement of local liquid velocity and void fraction in bubbly flows using a gas laser—part II. Local properties of turbulent bubbly flow, *Tech. Rep. Osaka Univ. (English)* **27**(1358), 229 (1977).
- K. Ohba, I. Kishimoto and M. Ogasawara, Simultaneous measurement of local liquid velocity and void fraction in bubbly flows using a gas laser—part III. Accuracy of measurement, *Tech. Rep. Osaka Univ. (English)* **27**(1383), 475 (1977).
- Y. Sato, T. Honda, S. Saruwatari and K. Sekoguchi, Two-phase bubble flow (2nd report, Influences of liquid stream velocity and channel size on air bubble motion), *Trans. Japan Soc. Mech. Engrs* **43**(370), 2288 (1977).
- K. Sekoguchi, K. Hori, M. Nakasatomi and K. Nishikawa, On ripple of annular two phase flow (2nd report, Characteristics of wave and interfacial friction factor), *Trans. Japan Soc. Mech. Engrs* **43**(370), 2297 (1977).
- K. Sekoguchi, T. Fukano, Y. Kawakami and H. Shimizu, Film thickness in gas-liquid two-phase flow (1st report, Effect of orifice inserted into tube), *Trans. Japan Soc. Mech. Engrs* **43**(373), 3417 (1977).
- K. Sekoguchi, T. Fukano, Y. Kawakami and H. Shimizu, Film thickness in gas-liquid two-phase flow (2nd report,

Effect of four-rectangular-obstacle inserted into tube, *Trans. Japan Soc. Mech. Engrs* **43**(373), 3427 (1977).

Y. Sudo and Y. Kato, Experimental study of a completely separated two-component two-phase critical flow, *J. Fac. Engng Tokyo Univ., Ser. B*, **34**(2), 315 (1977).

M. Toda, J. Yonehara, T. Kimura and S. Maeda, Transition velocities in horizontal solid-liquid two-phase flow, *Kagaku Kogaku Ronbunshi (Trans. Chem. Engng, Japan)* **3**(5), 497 (1977).

M. Toda, K. Shimazaki and S. Maeda, Pressure drop of three-phase flow in horizontal pipes, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng, Japan)* **4**(1), 56 (1978).

M. Yamamashu and T. Yokomizo, On the cavitation bubble flow and cavitation shock around cylindrical flow, *Trans. Japan Soc. Mech. Engrs* **43**(369), 1829 (1977).

O. Yokomizo and I. Sumida, Two-phase flow instability caused by density head pressure drop, *J. Nucl. Sci. Tech. (English)* **14**(11), 839 (1977).

HEAT CONDUCTION

H. Abe and K. Koga, Thermal conductivity of some practical insulators around 100mK, *Jap. J. Appl. Phys. (English)* **16**(9), 1583 (1977).

M. Fujitsu, M. Hasatani and S. Sugiyama, Effective thermal conductivity of insulating-refractory material, *J. Chem. Engng, Japan (English)* **10**(3), 242 (1977).

K. Terao and S. Yawata, Thermal conductivity of water near 4.0°C, *Jap. J. Appl. Phys. (German)* **16**(1), 39 (1977).

I. Ukita and M. Abe, Analog simulation of problem of heat conduction using electric resistive circuits and analog memories, *Mem. Fac. Engng Kyoto Univ. (English)* **39**(1), 1 (1977).

FORCED CONVECTION

F. Kaminaga, H. Uchida and T. Saito, Heat transfer model of quenching in reflooding phase, *J. Fac. Engng Univ. Tokyo, Ser. B* **34**(1), 59 (1977).

K. Kikkawa, S. Kawai and T. Machiyama, Experimental notes on tube-side heat-transfer coefficient of low-finned-tube with inner-fins, *Bull. Sci. Engng Res. Lab. Waseda Univ.* **76**, 32 (1977).

H. Koyama, S. Ōsawa and R. Izumi, Studies on the convective heat transfer from rotating cones, *Trans. Japan Soc. Mech. Engrs* **43**(369), 1867 (1977).

N. Numata, N. Nishiwaki and A. Tsuchida, Heat transfer at separated zone with slit injection (experimental studies at separated zone behind a cylinder), *Tech. Rep. Seikei Univ.* **24** (1977).

N. Numata, N. Nishiwaki and A. Tsuchida, Heat transfer at separated zone with slit injection (experimental studies at separated zone behind a fence), *Tech. Rep. Seikei Univ.* **25** (1977).

T. Obokata, A. Okajima and Y. Tanida, Flow and heat transfer around a circular cylinder in a pulsating flow of low Reynolds number, *Trans. Japan Soc. Mech. Engrs* **43**(367), 1103 (1977).

N. Seki, M. Sugawara and S. Fukusako, Experimental study of heat transfer in a horizontal melt layer heated at its upper wall, *Bull. Fac. Engng Hokkaido Univ. (English)* **85**, 43 (1977).

N. Seki, S. Fukusako and H. Inaba, Heat transfer in a vertical glass wool layer under constant heat flux to the wall, *Bull. Fac. Engng Hokkaido Univ. (English)* **85**, 53 (1977).

H. Yamamoto, N. Seki and S. Fukusako, Heat transfer in a rectangular groove with heated bottom surface in laminar forced flow, *Trans. Japan Soc. Mech. Engrs* **43**(371), 2662 (1977).

NATURAL CONVECTION

T. Fujii and M. Fujii, A numerical analysis on the turbulent free convection (1st report, for the case of air), *Trans. Japan Soc. Mech. Engrs* **43**(374), 3825 (1977).

S. Fukusako, M. Sugawara and N. Seki, Onset of free convection and free convective heat transfer in a horizontal melt layer of ice, *J. Japan Soc. Mech. Engrs* **80**(702), 445 (1977).

K. Gotoh, S. Yanase and J. Minushima, The instability of natural convection in a vertical fluid layer in the presence of an adverse temperature gradient, *J. Phys. Soc. Japan* **43**(3), 1773 (1977).

N. Hattori and S. Kotake, Combined free and forced-convection heat-transfer for fully developed laminar flow in horizontal conduits (experiments), *Trans. Japan Soc. Mech. Engrs* **43**(373), 3379 (1977).

N. Hattori and S. Kotake, Combined free and forced convection heat transfer for fully developed laminar flow in horizontal concentric annuli, *Bull. Inst. Space Aeronaut. Sci. Tpkyo Univ.* **13**(1-A), 19 (1977).

T. Igarashi, Natural convective oscillatory flow in an enclosed space (2nd report, the case of a line heat source placed along the axis of a horizontal rectangular chamber, *Trans. Japan Soc. Mech. Engrs* **43**(374), 3839 (1977).

R. Ishiguro, T. Abe and H. Nagase, Natural convection over a heated and upward-facing horizontal plate (3rd report, Appearance of periodic flow patterns), *Trans. Japan Soc. Mech. Engrs* **43**(375), 4223 (1977).

K. Kikuchi, Influence of nonuniform alternating electric field on natural convection heat transfer, *Trans. Japan Soc. Mech. Engrs* **43**(373), 3477 (1977).

T. Masuoka, T. Katsuhara, Y. Nakazono and S. Isozaki, Flow patterns and onset of convection in porous media of two different layers, *Trans. Japan Soc. Mech. Engrs* **43**(367), 1096 (1977).

H. Nakamura and Y. Asako, Laminar free convection from a horizontal cylinder with uniform cross section of arbitrary shape, *Trans. Japan Soc. Mech. Engrs* **43**(371), 2649 (1977).

H. Nakamura, A. Matsuura, J. Kiwaki, S. Hiraoka and I. Yamada, Combined free and forced laminar convection in triangular ducts, *J. Chem. Engng, Japan (English)* **10**(2), 109 (1977).

N. Seki, S. Fukusako and M. Nakaoka, Study on free convection heat transfer with density inversion of water between two horizontal concentric cylinders, *Trans. Japan Soc. Mech. Engrs* **43**(372), 3064 (1977).

N. Seki, S. Fukusako and H. Inaba, Effect of natural convection on equivalent heat conductivity of a vertical layer packed with glass wool, *Bull. Fac. Engng Hokkaido Univ. (English)* **84**, 59 (1977).

S. Tsuruno and I. Iguchi, Study on combined free and forced convection heat transfer for laminar flow, *Dig. Res. Fac. Mem. Nat. Def. Acad.* **21**, 52 (1977).

A. Yamanaka and N. Mitsuishi, An experimental study on combined forced and natural convective heat transfer from spheres to power-law fluids, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng, Japan)* **3**(2), 195 (1977).

MASS TRANSFER

A. Endo, M. Suzuki and S. Ohtani, Mass transfer from heterogeneous surface (three dimensional diffusion within stagnant boundary film), *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng, Japan)* **3**(4), 398 (1977).

T. Furuta, M. Okazaki and R. Toei, Mass transfer to a rotating sphere in a stream, *J. Chem. Engng, Japan (English)* **10**(4), 286 (1977).

V. M. H. Govindarao and H. Lekshminayanan, Mass transfer with surface reaction in arrays of cylinders at low Reynolds and high Peclet numbers (flow parallel to the axis of the cylinders), *J. Chem. Engng, Japan (English)* **10**(6), 435 (1977).

H. Honda and M. Yajima, Heat transfer in an incompressible laminar viscous flow past a flat plate with injection, *Trans. Japan Soc. Mech. Engrs* **43**(374), 3835 (1977).

M. Hozawa and T. Tadaki, Mass transfer from single drops in liquid-liquid systems (combined effects of free and forced

- convections), *J. Chem. Engng, Japan* (English) **10**(5), 403 (1977).
- M. Ishida, Y. Nakano and K. Sato, Transport phenomena of gas in a porous medium with chemical reaction, *Kagaku Kogaku (Chem. Engng, Japan)* **41**(12), 646 (1977).
- C. Kanaoka, H. Emi and M. Kano, Deposition of aerosol particles in the region of tube entrance, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng, Japan)* **4**(1), 81 (1978).
- H. Koyama, Heat and mass transfer between rotating coaxial cones (1st report, On the coaxial 30-degree cone with inner rotating cone), *Trans. Japan Soc. Mech. Engrs* **43**(375), 4246 (1977).
- T. Maruyama, K. Fujii and T. Mizushima, Turbulent mass transfer to a wall in unsteady pipe flows, *J. Chem. Engng, Japan* (English) **10**(6), 421 (1977).
- M. Nagasaka and H. Hirai, Binary diffusion coefficients of carbon disulfide in gases, *J. Chem. Engng, Japan* (English) **10**(4), 253 (1977).
- S. Nakahara, Mass transfer from single sphere in Taylor vortex—the case accompanied by instantaneous chemical reaction, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng, Japan)* **3**(5), 435 (1977).
- K. Shirakata and T. Iijima, Measurement of anisotropy of diffusion coefficient in plate cell, *J. Nucl. Sci. Tech. (English)* **14**(6), 462 (1977).
- S. Takahashi, The diffusion coefficients of $^{14}\text{CO}_2$ in the $\text{CO}_2\text{-N}_2$ system at high pressure, *J. Chem. Engng, Japan* (English) **10**(4), 258 (1977).
- S. Takahashi, The diffusion coefficient of ^{14}C -labelled ethylene in normal ethylene at high pressure, *J. Chem. Engng, Japan* (English) **10**(5), 339 (1977).
- T. Tomida, M. Kuniyoshi and T. Okazaki, Study on a tubular gas-liquid reactor effects of liquid properties on the liquid-side volumetric mass transfer coefficient in upward two-phase flow, *Bull. Fac. Engng Tokushima Univ. (English)* **14**, 63 (1977).
- K. Tanaka and N. Okamoto, Unsteady state mass transfer accompanied by natural and diffusion-induced convection in ammonia-water system, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng, Japan)* **3**(6), 600 (1977).
- K. Tanaka and N. Okamoto, Simultaneous heat and mass transfer with 0-order chemical reaction (1st report, Analytical solution for linearized model), *Sci. Engng Doshisya Univ.* **17**(3,4), 256 (1977).
- K. Tanaka and N. Okamoto, Simultaneous heat and mass transfer with 0-order chemical reaction (2nd report, Numerical calculations), *Sci. Engng Doshisya Univ.* **18**(2), 137 (1977).
- Y. Tonooka, I. Inoue and Y. Mori, Radial mixing phenomena in a porous tube with uniform fluid injection through the tube wall, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng, Japan)* **3**(2), 166 (1977).
- H. Unno and T. Akehata, To estimate the rate of oxygen mass transfer into water based on flow patterns and mass transfer models, [1] state near the gas-liquid interface, *Kagaku Kogaku (Chem. Engng, Japan)* **41**(10), 539 (1977).
- H. Unno and T. Akehata, To estimate the rate of oxygen mass transfer into water based on flow patterns and mass transfer models, [2] models for mass transfer processes, *Kagaku Kogaku (Chem. Engng, Japan)* **41**(11), 612 (1977).
- H. Unno and T. Akehata, To estimate the rate of oxygen mass transfer into water based on flow patterns and mass transfer models, [3] approximate values for mass transfer coefficient, *Kagaku Kogaku (Chem. Engng, Japan)* **41**(12), 658 (1977).
- H. Unno and T. Akehata, To estimate the rate of oxygen mass transfer into water based on flow patterns and mass transfer models, [4] estimation of mass transfer coefficient, *Kagaku Kogaku (Chem. Engng, Japan)* **42**(2), 108 (1978).
- I. Yabe and D. Kunii, Dispersion phenomena of gas molecules diffusing from a gas bubble into a liquid, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng, Japan)* **3**(3), 255 (1977).
- M. Yamaguchi and T. Katayama, Experimental studies on mass transfer in continuous and dispersed phases for single drops moving through liquid field at intermediated Reynolds numbers, *J. Chem. Engng, Japan* (English) **10**(4), 280 (1977).
- N. Yamakawa, Heat and mass transfer in frost deposition (1st Report), *Kagaku Kogaku (Chem. Engng, Japan)* **41**(5), 256 (1977).
- N. Yamakawa, Heat and mass transfer in frost deposition (2nd Report), *Kagaku Kogaku (Chem. Engng, Japan)* **41**(6), 322 (1977).
- T. Yonemoto, T. Chida, S. Takahashi and T. Tadaki, Effect of Grashof number on the rate of mass transfer from the wall of a rectangular duct, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng, Japan)* **3**(5), 429 (1977).
- N. Yutani and N. Ototake, Analysis of the behavior of randomly moving particles (theoretical self-diffusivity of particles), *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng, Japan)* **3**(4), 364 (1977).

BOUNDARY LAYER

- S. Iida, Second order boundary-layer solutions for the stagnation flow of a circular cylinder, *Trans. Japan Soc. Mech. Engrs* **43**(369), 1796 (1977).
- S. Iida, Non-linear stability of a two-dimensional stagnation flow, *Trans. Japan Soc. Mech. Engrs* **43**(374), 3789 (1977).
- K. Matsuno and R. Kawamura, Laminar boundary layer with heat-transfer on a conical body, *Bull. Inst. Space Aeronaut. Sci. Tokyo Univ.* **13**(1-A), 53 (1977).
- K. Matsuno and R. Kawamura, Laminar boundary layer with gas injection on a conical body, *Bull. Inst. Space Aeronaut. Sci. Tokyo Univ.* **13**(3-A), 685 (1977).
- K. Nakagawa, M. Hayakawa and Y. Kobashi, Boundary layer transition in unsteady flow (1st report, Laminar velocity profile and its instability), *Trans. Japan Soc. Mech. Engrs* **43**(367), 1005 (1977).
- S. Tokuda, Laminar boundary layer over a flat plate with small velocity fluctuation on the wall (2nd report, 3-dimensional fluctuation), *Trans. Japan Soc. Mech. Engrs* **43**(368), 1371 (1977).
- S. Yamashita, I. Nakamura and Y. Furuya, The laminar boundary layer developing on a spinning thin cylinder in axial flow (approximate solution for a relatively small speed ratio), *Trans. Japan Soc. Mech. Engrs* **43**(376), 4529 (1977).
- H. Yano, T. Oshima and A. Kieda, An approximate method of solving laminar boundary layer of nonelastic non-Newtonian fluids, *Sci. Engng Doshisya Univ.* **17**(3,4), 176 (1977).

TURBULENCE

- Y. Fujita, H. Yano, J. Funaki and A. Kieda, Incompressible turbulent boundary layers on rough wall with adverse pressure gradients, *Sci. Engng Doshisya Univ.* **17**(3,4), 166 (1977).
- M. Hishida, Y. Nagano and Y. Nakamura, Temperature distribution in the turbulent boundary layer in a circular pipe, *Trans. Japan Soc. Mech. Engrs* **43**(375), 4237 (1977).
- R. Ito, Y. Hirata, O. Kita, S. Seno, K. Omodaka and R. Fukui, Experimental study on behavior of turbulence in a fully developed pipe flow, *J. Chem. Engng, Japan* (English) **10**(3), 194 (1977).
- A. Kamoi and H. Tanaka, Studies on a two-dimensional impinging jet considering initial turbulence (1st report, Influence of initial turbulence on characteristics of a two-dimensional free jet), *Trans. Japan Soc. Mech. Engrs* **43**(371), 2569 (1977).
- A. Kamoi and H. Tanaka, Studies on a two-dimensional impinging jet considering initial turbulence (2nd report, Static behaviour of boundary layer in the stagnation region), *Trans. Japan Soc. Mech. Engrs* **43**(372), 2957 (1977).
- S. Kinoshita, S. Yamaguchi and R. Izumi, A study on the turbulent mixing of a co-axial round jet considering the

variation of the eddy Reynolds number, *Trans. Japan Soc. Mech. Engrs* **43**(371), 2586 (1977).

H. Maekawa and M. Kobayashi, Basic study on turbulence model of heat transfer (heat transfer with isotropic turbulence of initial period of decay), *Trans. Japan Soc. Mech. Engrs* **43**(370), 2250 (1977).

Y. Miyake, K. Jyowo and M. Iguchi, A turbulent boundary layer on a flat plate with mainstream containing turbulence and vorticity, *Trans. Japan Soc. Mech. Engrs* **43**(372), 3001 (1977).

T. Mizushima, F. Ogino and T. Fukuda, Heat transfer for turbulent flow with injection in a porous tube, *J. Chem. Engng, Japan* (English) **10**(6), 428 (1977).

Y. Nagano and M. Hishida, Structure of turbulent temperature and velocity fields in the entrance region, *Trans. Japan Soc. Mech. Engrs* **43**(373), 3367 (1977).

Y. Nakaïke and T. Tadaki, The onset of interfacial turbulence in a hanging drop, *Kagaku Kogaku Ronbunshu* (*Trans. Chem. Engng, Japan*) **4**(1), 49 (1978).

Y. Senoo and M. Nishi, The diffusion rate and a simple calculation method of turbulent boundary layer, *Trans. Japan Soc. Mech. Engrs* **43**(367), 997 (1977).

M. Shirakashi and Y. Tomita, The structure of turbulent diffusion (1st report, Diffusion from a finite-width source and diffusion in a mixing region of laminar and turbulent flows), *Trans. Japan Soc. Mech. Engrs* **43**(374), 3808 (1977).

T. Tanaka and E. Tanaka, Experimental studies of radial turbulent jets (3rd report, Flow before an attachment point of attaching jet flow), *Trans. Japan Soc. Mech. Engrs* **43**(372), 2985 (1977).

S. Yuu, F. Shimoda, Y. Fukui and T. Jotaki, Particle turbulent diffusion in a dust laden plane jet, *Kagaku Kogaku Ronbunshu* (*Trans. Chem. Engng, Japan*) **4**(1), 74 (1978).

LIQUID METAL, M.H.D. AND PLASMA

S. Arai, Y. Tomita and K. Sudou, Flow of liquid metals with a transversely applied magnetic field (8th report, Influence of channel side walls and aspect ratio on laminar and transition flows), *Trans. Japan Soc. Mech. Engrs* **43**(369), 1842 (1977).

T. Hayashi, T. Honda and A. Kanzawa, Heat transfer from rarefied ionized argon gas, *Kagaku Kogaku Ronbunshu* (*Trans. Chem. Engng, Japan*) **3**(5), 485 (1977).

T. Honda and A. Kanzawa, Decay of argon plasma ejected into helium, nitrogen, hydrogen and methane gas flows, *Kagaku Kogaku Ronbunshu* (*Trans. Chem. Engng, Japan*) **3**(5), 479 (1977).

K. Ikuta and K. Yamanaka, MHD instability of plasma column with an embedded ion beam, *J. Phys. Soc. Japan* **43**(1), 301 (1977).

M. Ishikawa and J. Umoto, Effects of internal and external connection of electrodes in diagonal type nonequilibrium plasma MHD generator, *J. Nucl. Sci. Tech.* (English) **15**(2), 7 (1978).

R. N. Jana, N. Datta and B. S. Mazumder, Magnetohydrodynamic couette flow and heat transfer in a rotating system, *J. Phys. Soc. Japan* **42**(3), 1034 (1977).

J. Kitamura, M. Ogawa and T. Okada, Temperature fluctuation of sodium in annular flow channel heated by single-pin with blockage, *J. Nucl. Sci. Tech.* (English) **15**(1), 10 (1978).

S. Shioda, Boundary layer in a plasma blanketed by a low pressure neutral gas, *J. Phys. Soc. Japan* **43**(3), 1755 (1977).

M. Suzuki and A. Kanzawa, Charged particle density profiles in the flat plate boundary-layer in the atmospheric pressure plasma, *Trans. Japan Soc. Mech. Engrs* **43**(371), 2695 (1977).

RADIATION

Y. Kurosaki, The effects of heating or cooling walls on the heat transfer by simultaneous radiation and convection in a flow between parallel flat plates, *Trans. Japan Soc. Mech. Engrs* **43**(375), 4205 (1977).

J. H. Lee and R. Kawamura, Nonequilibrium flow around blunt body with thermal radiation, *Inst. Space Aeronaut. Sci. Rep. Tokyo Univ.* (English) **546**, 1 (1977).

T. Makino and T. Kunitomo, Dispersions of optical constant and emissivities of iron and steel in the temperature range up to curie point, *Trans. Japan Soc. Mech. Engrs* **43**(376), 4585 (1977).

H. Masuda, Radiation heat transfer between specularly and diffusely reflecting surfaces, *Trans. Japan Soc. Mech. Engrs* **43**(373), 3357 (1977).

Y. Mori, T. Taira and K. Watanabe, Radiation effects on heat transfer in heat exchangers (1st report, Heat transfer in tube), *Trans. Japan Soc. Mech. Engrs* **43**(371), 2670 (1977).

N. Seki, S. Fukusako and M. Sugawara, Internal laminar heat transfer of a radiating gas with gas-property variation, *Bull. Fac. Engng Hokkaido Univ.* (English) **82**, 1 (1976).

N. Seki, S. Fukusako and M. Sugawara, Radiation effect on developing free convection from two-dimensional isothermal vertical parallel plates, *Bull. Fac. Engng Hokkaido Univ.* (English) **83**, 73 (1977).

N. Seki, S. Fukusako and M. Sugawara, Radiation effect of the heat transfer of a two-dimensional laminar wall jet, *Bull. Fac. Engng Hokkaido Univ.* (English) **84**, 51 (1977).

S. Tanaka and T. Kunitomo, A numerical analysis of radiative-convective heat transfer from an extended surface by the Monte Carlo method (1st report, Finned plane surface), *Trans. Japan Soc. Mech. Engrs* **43**(370), 2240 (1977).

Y. Yamada, Y. Mori and K. Hijikata, Effect of radiation heat transfer on the performance on high temperature heat exchanger (case of radiating gas), *Trans. Japan Soc. Mech. Engrs* **43**(369), 1879 (1977).

PACKED AND FLUIDIZED BEDS

T. Chiba and H. Kobayashi, Solid exchange between the bubble wake and the emulsion phase in a gas fluidized bed, *J. Chem. Engng, Japan* (English) **10**(3), 206 (1977).

T. Hirano, M. Yumiyama, M. Tomita and H. Yamaguchi, Lateral thermal diffusivity in packed fluidized beds of horizontal flow type, *Kagaku Kogaku Ronbunshu* (*Trans. Chem. Engng, Japan*) **3**(4), 344 (1977).

K. Ikeda, C. Fujino and Y. Yamauchi, Heat and mass transfer in the nonisothermal fixed bed adsorption column with nonlinear equilibrium, *Bull. Fac. Engng Yokohama Nat. Univ.* **26**, 117 (1977).

T. Koya, Y. Hasegawa and D. Kunii, Behavior of a coarse solid put onto the surface of a fluidized bed, *Kagaku Kogaku Ronbunshu* (*Trans. Chem. Engng, Japan*) **4**(1), 108 (1978).

A. Matsuura, T. Akehata and T. Shirai, Friction factor of gas-liquid concurrent downflow through packed beds, *Kagaku Kogaku Ronbunshu* (*Trans. Chem. Engng, Japan*) **3**(2), 122 (1977).

A. Matsuura, T. Akehata and T. Shirai, Effect of latent heat on temperature profile for concurrent air-water downflow in packed beds, *Kagaku Kogaku Ronbunshu* (*Trans. Chem. Engng, Japan*) **3**(5), 528 (1977).

K. Moroyama, K. Hashimoto and T. Tomita, Heat transfer from wall in gas-liquid cocurrent packed beds, *Kagaku Kogaku Ronbunshu* (*Trans. Chem. Engng, Japan*) **3**(6), 612 (1977).

M. Nakamura, Transport of solid particle in fluidized bed, *Kagaku Kogaku* (*Chem. Engng, Japan*) **41**(6), 333 (1977).

G. K. Roy and K. C. Biswal, Prediction of semifluidization velocity and packed bed formation for heterogeneous in liquid-solid systems, *J. Chem. Engng, Japan* (English) **10**(4), 331 (1977).

K. Wakabayashi, S. Yamaguchi, T. Matsumoto and T. Mita, Liquid moisture movement in a fine particle bed during drying process, *Kagaku Kogaku Ronbunshu* (*Trans. Chem. Engng, Japan*) **3**(2), 189 (1977).

N. Wakao, B. Shiozawa and K. Nojo, Coefficient of axial gas thermal dispersion and particle-to-gas heat transfer in

incipient fluidization, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng, Japan)* 3(5), 515 (1977).

R. Yamazaki, Transport of solid particle in fluidized bed, *Kagaku Kogaku (Chem. Engng, Japan)* 41(6), 330 (1977).

MEASUREMENT TECHNIQUES

K. Matsuoka, H. Kishige, M. Nishida and G. Kamimoto, Studies on flush mounted electrostatic probe measurements in argon plasma flow, *Trans. Japan Soc. Mech. Engrs* 43(369), 1859 (1977).

A. Nagashima, H. Murata and S. Takizawa, Thermal conductivity measurement of liquids by a transient hot-wire method (1st report, Measurement at atmospheric pressure), *Trans. Japan Soc. Mech. Engrs* 43(370), 2268 (1977).

J. Ochiai, I. Tanasawa and Y. Utaka, On errors in heat

transfer measurements in dropwise condensation, *Trans. Japan Soc. Mech. Engrs* 43(370), 2261 (1977).

M. Seki, H. Kawamura, N. Ueda and H. Maeda, Development of thin-film thermometer to measure transient plasma heat flux in diverter assembly, *J. Nucl. Sci. Tech. (English)* 14(7), 534 (1977).

M. Tsukamoto, K. Imani, E. Ibe and S. Izumi, Response time of plated thermocouple in notched well, *J. Nucl. Sci. Tech. (English)* 14(9), 685 (1977).

M. Yamazaki and T. Miyauchi, Measurement of temperature in bubble and emulsion phases in fluid-bed, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng, Japan)* 3(3), 261 (1977).

T. Yoshida, Inevitable error and its countermeasure when using chromel-alumel thermocouples, *Kagaku Kogaku (Chem. Engng, Japan)* 41(8), 432 (1977).