

HEAT TRANSFER BIBLIOGRAPHY—JAPANESE WORKS

YASUO MORI

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

(Received 7 April 1976)

APPLICATION AND OUTLOOK

- K. Fujie, Recent development of heat transfer tubes, *J. Japan Soc. Mech. Engrs* **78**(678), 446 (1975).
H. Hirosue and H. Shinohara, Volumetric heat transfer coefficient in rotary dryers and coolers, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng, Japan)* **1**(5), 445 (1975).
M. Ishida, R. C. Bailie and T. Shirai, Application of thermodynamic and material—and energy—balance calculation to gasification processes, *Bull. Tokyo Inst. Tech. (English)* **122**, 1 (1974).
K. Kawahashi, S. Sasaki et al., Unsteady one-dimensional flow in resonance tube (with wall friction, heat transfer and interaction), *Trans. Japan Soc. Mech. Engrs* **40**(332), 965 (1974).
M. Kumagai and H. Nishimura, The analysis of flow dynamics and mixing along the coast—the case of thermal waste water, *Kagaku Kogaku (Chem. Engng, Japan)* **38**(10), 751 (1974).
H. Matsuyama and E. O'Shima, Representation of dynamics of multiphase heat exchangers, *Kagaku Kogaku (Chem. Engng, Japan)* **38**(7), 526 (1974).
T. Mizushima, T. Matsumoto, S. Morioka and T. Furuya, Fundamental study on spray quenching, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng, Japan)* **1**(1), 921 (1974).
Y. Mori, T. Nakada, K. Sanokawa, T. Izaki, T. Imatake and H. Iijima, Heat exchangers and its system for nuclear steel-making by use of high-temperature gas reactor, *J. Atomic Energy Soc. Japan* **17**(6), 303 (1975).
K. Nishikawa, Some opinions on the future of thermal engineering in Japan, *Rept. Res. Inst. Ind. Sci., Kyushu Univ.* **62**, 81 (1975).
I. Tanasawa, Recent progress in condensation heat transfer, *J. Japan Soc. Mech. Engrs* **78**(678), 439 (1975).
H. Taniguchi, K. Sugiyama, K. Taniguchi, M. Kobiyama, H. Hayasaka and K. Ito, A study on heat transfer in a furnace—a digital simulation of a furnace model using an electronic computer, *Bull. Fac. Engng, Hokkaido Univ.* **73**, 25 (1974).

CHANGE OF PHASE

- S. Aoki, A. Inoue and A. Mimura, Boiling and burnout phenomena during pressure transient, *Bull. Tokyo Inst. Tech. (English)* **121**, 97 (1974).
A. P. Boyes and A. B. Ponter, The influence of condensate drop size on the dropwise filmwise transition of pure vapors, *J. Chem. Engng, Japan (English)* **7**(4), 314 (1974).
T. Fujii, H. Uehara and K. Oda, Condensation heat transfer of carbon dioxide near the critical point, *Rep. Res. Inst. Ind. Sci., Kyushu Univ.* **60**, 49 (1974).
T. Fujishiro, K. Sanokawa, K. Torikai and M. Ouchi, Sodium pool boiling experiment (measurement of incipient boiling superheat and heat transfer coefficient), *Trans. Japan Soc. Mech. Engrs* **40**(336), 2311 (1974).
K. Fukuda and K. Iwamoto, Diffusion and evaporation of fission products in coated fuel particles, *J. Nucl. Sci. Tech. (English)* **12**(3), 181 (1975).
M. Hasatani, Y. Aoyama and S. Sugiyama, Solidification of iodine vapor on supercooled spherical solid surface from gas stream, *J. Chem. Engng, Japan (English)* **8**(1), 20 (1975).

- T. Hayakawa and M. Shigeta, Extraction from two-phase droplet with coalescence between droplet and bubble, *Kagaku Kogaku (Chem. Engng, Japan)* **38**(6), 445 (1974).
T. Hayakawa, J. Kawasaki and M. Muraki, Condensation of single vapor on a vertical surface, *Kagaku Kogaku (Chem. Engng, Japan)* **38**(11), 793 (1974).
Y. Hayashi and A. Takimoto, The condition of recondensation simultaneous heat and mass transfer, *Trans. Japan Soc. Mech. Engrs* **40**(340), 3428 (1974).
Y. Hayashi and A. Takimoto, The condition of recondensation on simultaneous heat and mass transfer (laminar free convection mass transfer from a vertical flat plate), *Trans. Japan Soc. Mech. Engrs* **42**(353), 261 (1976).
H. Hiroyasu, T. Kadota, T. Senda and T. Imamoto, Evaporation of a single droplet at elevated pressure and temperatures, *Trans. Japan Soc. Mech. Engrs* **40**(339), 3147 (1974).
H. Honda and T. Fujii, Laminar filmwise condensation on vertical grooved surface, *Rep. Res. Inst. Ind. Sci., Kyushu Univ.* **62**, 99 (1975).
A. Inoue and S. Aoki, On the dynamics of bubble growth under time-dependent pressure field, *Bull. Tokyo Inst. Tech.* **127**, 25 (1975).
R. Izumi, T. Ishimaru and K. Matsuaki, Heat transfer and pressure drop for refrigerant R-12 evaporating in a horizontal tube, *Kagaku Kogaku (Chem. Engng, Japan)* **38**(12), 884 (1974).
R. Izumi, T. Ishimaru and W. Aoyagi, Heat transfer and pressure drop for refrigerant R-12 condensing in a horizontal tube, *Kagaku Kogaku (Chem. Engng, Japan)* **1**(4), 381 (1975).
K. Katayama and M. Hattori, Research of heat conduction with freezing (1st Report, Numerical method on Stefan's problem), *Trans. Japan Soc. Mech. Engrs* **40**(333), 1404 (1974).
H. Katayama, The method of calculating the bubble point and the vapor composition by the BWR equation of state, *Bull. Coll. Engng, Hosei Univ.* **11**, 13 (1975).
Y. Katto and S. Yokoya, Behavior of a vapor mass in saturated nucleate and transitional pool boiling, *Trans. Japan Soc. Mech. Engrs* **41**(341), 294 (1975).
Y. Katto and M. Monde, Mechanism of burn-out in a high heat-flux boiling system with an impinging jet, *Trans. Japan Soc. Mech. Engrs* **41**(341), 306 (1975).
Y. Kikuchi, T. Takahashi, K. Haga and T. Okouchi, Incipient boiling of sodium flowing in a single-pin annular channel, *J. Nucl. Sci. Tech. (English)* **11**(5), 172 (1974).
Y. Kikuchi, K. Haga and T. Takahashi, Experimental study of steady-state boiling of sodium flowing in a single-pin annular channel, *J. Nucl. Sci. Tech. (English)* **12**(2), 83 (1975).
H. Kojima, H. Inayumi and T. Imanara, The rate of gas absorption accompanied by second-order chemical reaction in falling laminar liquid film, *Kagaku Kogaku (Chem. Engng, Japan)* **38**(9), 648 (1974).
K. Kuwahara and H. Hirota, Resisting anisotropy in oblique incidence evaporated films, *Japan Soc. Appl. Phys. (English)* **13**(5), 1093 (1974).
Y. Mori and K. Komotori, Boiling of single superheated drops in an immiscible liquid, *Trans. Japan Soc. Mech. Engrs* **41**(343), 919 (1975).
Y. Mori, K. Hijikata and T. Tanaka, Fundamental study of

- evaporation phenomena (3rd Report, Large evaporation rate), *Trans. Japan Soc. Mech. Engrs* **41**(345), 1508 (1975).
- Y. Mori, K. Hijikata and T. Nagatani, Fundamental study of the disappearance of a bubble nucleus in a liquid medium, *Trans. Japan Soc. Mech. Engrs* **41**(345), 1530 (1975).
- T. Munakata and A. Matsuda, A condensation on the comparison between mass transfer resistance of vapour and liquid phases in wetted-wall column, *Tech. Rep., Kyushu Univ.* **47**(5), 631 (1974).
- M. Murakami and K. Oshima, Kinetic approach to the evaporation and condensation problem, *Inst. Space Aero. Sci. Univ. Tokyo* **39**(15), 261 (1974).
- H. Nagasaka and K. Komotori, Incipience of boiling in non-uniform temperature field, *Trans. Japan Soc. Mech. Engrs* **41**(345), 1517 (1975).
- T. Nagatani, Y. Mori and K. Hijikata, Thermodynamic study of the stability of a gas bubble in a liquid drop, *Trans. Japan Soc. Mech. Engrs* **41**(343), 909 (1975).
- K. Nishikawa, S. Yoshida, K. Ohishi, I. Kitakoga and M. Furukawa, Heat transfer to high pressure water in boiling crisis region, *Tech. Rep., Kyushu Univ.* **48**(5), 679 (1975).
- K. Nishikawa, T. Ito, K. Matsumoto and T. Kuroki, A correlation of pool film boiling heat transfer from a horizontal cylinder of uniform surface temperature to sub-cooled liquids, *Tech. Rep., Kyushu Univ.* **48**(6), 815 (1975).
- K. Nishikawa, Y. Fujita and T. Matsuo, On the correlation of nucleate boiling heat transfer based on the bubble population, *Trans. Japan Soc. Mech. Engrs* **41**(347), 2141 (1975).
- K. Nishikawa and Y. Fujita, On the nucleation factor in nucleate boiling heat transfer, *Trans. Japan Soc. Mech. Engrs* **41**(347), 2151 (1975).
- M. Nishimura, Y. Hirabayashi and S. Sugiyama, Heat transfer accompanied by melting in a fixed bed of granular solids, *Kagaku Kogaku (Chem. Engng, Japan)* **38**(12), 877 (1974).
- Y. Ohta, K. Shimoyama and S. Ohigashi, Vaporization and combustion of single liquid fuel droplets in a turbulent environment, *Trans. Japan Soc. Mech. Engrs* **40**(333), 1422 (1974).
- P. S. V. K. Rao and P. K. Sarma, Effect of sub-cooling of film boiling heat transfer—droplet evaporation on a hot-plate, *J. Chem. Engng, Japan (English)* **7**(5), 341 (1974).
- A. Shima and T. Tsujino, The growth of spherical bubbles in superheated liquids, *Rep. Inst. High Speed Mech., Tohoku Univ.* **32**(287), 87 (1975).
- M. Sugawara, S. Fukusako and N. Seki, Experimental studies on the melting of a horizontal ice layer, *Trans. Japan Soc. Mech. Engrs* **40**(339), 3155 (1974).
- R. Takahashi, Derivation of transfer function in boiling loops, *Bull. Tokyo Inst. Tech.* **121**, 97 (1974).
- K. Takeuchi and T. Kajiyama, A study of the evaporation process of fuel droplet in the spray combustion, *Trans. Japan Soc. Mech. Engrs* **41**(343), 931 (1975).
- T. Takeyama, Consideration on the instability of transitional phenomena such as the boiling heat transfer characteristics, *J. Japan Soc. Mech. Engrs* **77**(662), 29 (1974).
- H. Tanaka, A theoretical study on dropwise condensation, *Trans. Japan Soc. Mech. Engrs* **40**(336), 2283 (1974).
- R. Toei, M. Okazaki and M. Asaeda, Studies on sublimation coefficient of ice, *J. Chem. Engng, Japan (English)* **8**(4), 277 (1975).
- R. Toei, M. Okazaki and M. Asaeda, The stability of plane sublimation and a model of zone sublimation in freeze-drying of porous bodies, *J. Chem. Engng, Japan (English)* **8**(4), 282 (1975).
- W. Yang, Theory on vaporization and combustion of liquid drops of pure substances and binary mixtures on heated surface, *Inst. Space Aero. Sci. Rep., Univ. Tokyo* **40**(15), 421 (1975).
- H. Yoshinobu and T. Sano, Frozen region formed around a point heat sink under a uniform stream of a liquid at small Reynolds number, *J. Phys. Soc. Japan (English)* **36**(4), 1192 (1974).

TWO PHASE FLOW

- H. Adachi, High speed two-phase flow—III. Theory on critical flow in constant-flow-area channel, *J. Atomic Energy Soc. Japan* **16**(5), 282 (1974).
- H. Adachi, High speed two-phase flow—IV. Two-phase discharge coefficient of large sharp-edged orifice, *J. Atomic Energy Soc. Japan* **16**(6), 322 (1974).
- T. Hara, A. Mitani, Y. Mori, K. Hijikata and M. Uchida, Acceleration of two-phase flow by boiling (1st Report, Experimental study of heat transfer performance), *Trans. Japan Soc. Mech. Engrs* **41**(349), 2691 (1975).
- K. Hashizume, Pressure drop and heat transfer in two-phase flow, *Trans. Japan Soc. Mech. Engrs* **40**(340), 3438 (1974).
- T. Hayakawa and M. Shigeta, Terminal velocity of two-phase droplet, *J. Chem. Engng, Japan* **7**(2), 140 (1974).
- N. Hayashi and K. Abe, Computer simulation of bubble motion, *Japan Soc. Appl. Phys. (English)* **14**(11), 1705 (1975).
- K. Hijikata and Y. Mori, Acoustic speed of bubble flow, *Trans. Japan Soc. Mech. Engrs* **40**(332), 1073 (1974).
- K. Hijikata and Y. Mori, Acceleration of two-phase flow by boiling (2nd Report, Theoretical study of acceleration mechanism), *Trans. Japan Soc. Mech. Engrs* **41**(349), 2700 (1975).
- S. Kamiyama and T. Yamasaki, Cavitation in mercury flow in the transverse magnetic field, *Rep. Inst. High Speed Mech. Tohoku Univ. (English)* **31**(282), 137 (1975).
- H. Kato, T. Miyazawa, S. Tamai and T. Iwasaki, A study of an air bubble pump for solid particles, *Trans. Japan Soc. Mech. Engrs* **40**(335), 1974 (1974).
- T. Katsuhara, Heat transfer of two-phase flow in a vertical duct of non-circular cross-section, *Bull. Kyushu Inst. Tech.* **(31)**, 35 (1975).
- T. Kinoshita, Investigation on the spray type two-phase (gas-liquid) fluid flow (1st Report, Compressible property of this fluid flow—theoretical analysis), *Trans. Japan Soc. Mech. Engrs* **41**(351), 3224 (1975).
- T. Kinoshita, Investigation on the spray type two-phase (gas-liquid) fluid flow (2nd Report, Compressible property of this fluid flow—experiment 1), *Trans. Japan Soc. Mech. Engrs* **41**(351), 3239 (1975).
- T. Kinoshita, Investigation on the spray type two-phase (gas-liquid) fluid flow (3rd Report, Compressible property of this fluid flow—experiment 2), *Trans. Japan Soc. Mech. Engrs* **41**(351), 3250 (1975).
- E. Kojima, T. Akehata and T. Shirai, Behavior of single air bubbles held stationary in downward flows, *J. Chem. Engng Japan (English)* **8**(2), 108 (1975).
- H. Kusuda and H. Imura, Stability of a liquid film in a counter-current annular two-phase flow, *Trans. Japan Soc. Mech. Engrs* **40**(332), 1082 (1974).
- I. C. Macedo and W. J. Yang, The drag of air bubbles rising in non-Newtonian liquids, *Japan Soc. Appl. Phys. (English)* **13**(3), 529 (1974).
- S. Matsumoto, S. Saito and S. Maeda, Simulation of gas-solid two-phase flow in horizontal pipe, *J. Chem. Engng. Japan (English)* **9**(1), 23 (1976).
- H. Matsumura and H. Ide, Studies on two-phase gas-liquid flow in rectangular channels (1st Report, Flow behavior and pressure drop with air-water flow in horizontal channels), *Res. Rept., Fac. Engng, Kagoshima Univ.* **17**, 25 (1975).
- T. Miyahara and Y. Shimizu, Gas-void fraction of a perforated plate—Gas-liquid concurrent and countercurrent flow, *J. Chem. Engng, Japan (English)* **7**(4), 312 (1974).
- T. Morimoto and A. Ousaka, A study on air-water two-phase flow in curved pipe, *Sci. Papers Fac. Engng, Tokushima Univ.* **19**, 57 (1974).
- M. Morioka, Theory of natural frequencies of two pulsating bubbles in infinite liquid, *J. Nucl. Sci. Tech. (English)* **11**(12), 554 (1974).
- F. Sakao and Y. Sueda, Measurement of effective viscosity of two-phase (gas-liquid) fluid in a laminar pipe flow, *Mem. Fac. Engng, Hiroshima Univ.* **5**(2), 45 (1974).
- Y. Sato and K. Sekoguchi, Liquid velocity distribution in

- two-phase bubble flow, *Trans. Japan Soc. Mech. Engrs* **41**(351), 3215 (1975).
- K. Sekoguchi, Y. Sata and T. Honda, Two-phase bubble flow (1st Report, An experimental investigation of sparsely populated air bubble in a water stream of vertical duct), *Trans. Japan Soc. Mech. Engrs* **40**(333), 1395 (1974).
- K. Sekoguchi, H. Fukui, T. Matsuoaka and K. Nishikawa, Investigation into the statistical characteristics of bubbles in two-phase flow, *Trans. Japan Soc. Mech. Engrs* **40**(336), 2295 (1974).
- K. Sekoguchi, Y. Kawakami and K. Nishikawa, Simulation on forced-flow boiling with air-water two-phase fluids, *Trans. Japan Soc. Mech. Engrs* **41**(346), 1889 (1975).
- A. Shima and Y. Tomita, On the impulse pressure accompanying spherical bubble collapse in liquids, *Rept. Inst. High Speed Mech., Tohoku Univ.* **31**(281), 97 (1975).
- A. Shima and T. Tsujino, The natural frequency of a bubble oscillating in a dilute polymer solution, *Rept. Inst. High Speed Mech., Tohoku Univ.* **32**(286), 75 (1975).
- T. Shirosuka and Y. Kawase, Shape of drops in non-Newtonian fluid systems, *J. Chem. Engng. Japan* (English) **8**(4), 336 (1975).
- M. Tamari and K. Nishikawa, The stirring effect of bubbles upon the heat transfer to a liquid (2nd Report, The case when air bubbles are injected into the liquid through two or three nozzles with a single hole), *Trans. Japan Soc. Mech. Engrs* **41**(341), 273 (1975).
- T. Tomita, T. Yamamoto, T. Takebayashi and T. Okazaki, Correlation of data on the apparent friction coefficient in upward two-phase flow of air-liquid mixtures, *J. Chem. Engng. Japan* (English) **8**(2), 113 (1975).
- T. Tomita and T. Okazaki, Statistical characters of large disturbance waves in upward two-phase flow of air-water mixtures, *J. Chem. Engng. Japan* (English) **7**(5), 329 (1974).
- T. Ueda, H. Tanaka and K. Ishida, Measurements of velocity, temperature and turbulence intensity distributions in falling liquid films, *Trans. Japan Soc. Mech. Engrs* **41**(350), 2933 (1975).
- H. Unno, K. Ootaguchi and I. Inoue, Characteristics of gas flow into froth layer on perforated plate, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng. Japan)* **1**(6), 650 (1975).
- K. Yoshioka and S. Hasegawa, An analysis of the displacement velocity of falling liquid boundary layer by two-dimensional heat conduction model, *Tech. Rep., Kyushu Univ.* **48**(5), 573 (1975).
- S. Yuu, Y. Uchiyama, T. Yokoyama and K. Iinoya, Velocity measurement of gas-solid two-phase flow by means of a Pitot tube, *Kagaku Kogaku (Chem. Engng. Japan)* **38**(3), 237 (1974).
- ### HEAT CONDUCTION
- K. Ito and T. Kondo, Optimal regulation of non-linear heat conduction system, *Trans. Japan Soc. Mech. Engrs* **40**(339), 3035 (1974).
- K. Katayama, N. Kobayashi, A. Saito, T. Kazama and M. Kitamura, Transient heat conduction in anisotropic solids (2nd Report, Heat flow across the connected surface), *Trans. Japan Soc. Mech. Engrs* **42**(353), 244 (1976).
- Y. Katto and K. Mori, On the characteristics of a point and line source in heat conduction, *Trans. Japan Soc. Mech. Engrs* **40**(336), 2255 (1974).
- T. Kumada, Thermal conductivity of suspension—measurements and discussions of the shaped effects of dispersions, *Trans. Japan Soc. Mech. Engrs* **41**(344), 1209 (1975).
- H. Matsuda, M. Hasatani and S. Sugiyama, Thermal conductivities of solids under crystal transformation and thermal decomposition reaction, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng. Japan)* **1**(6), 589 (1975).
- A. Saito and R. Shimomura, Heat conduction in heterogeneous solid mixtures (1st Report), *Trans. Japan Soc. Mech. Engrs* **40**(335), 2012 (1974).
- T. Saitoh, Numerical method by 7 point implicit difference formula for transient heat conduction problem, *Trans. Japan Soc. Mech. Engrs* **40**(337), 2617 (1974).
- Y. Sano and S. Tamaoka, Approximate calculation for heat conduction in solid, *J. Chem. Engng. Japan* (English) **8**(6), 500 (1975).
- M. Suzuki and T. Saito, An analysis of the thermal conductivity of steam in the high temperature and high pressure region—anomaly of the thermal conductivity in the critical region, *Mem. Fac. Engng., Kyoto Univ.* (English) **36**(3), 308 (1974).
- E. Yamada and K. Takahashi, Effective thermal conductivity of suspension (1st Report), *Trans. Japan Soc. Mech. Engrs* **40**(335), 2027 (1974).

FORCED CONVECTION

- K. Chida, Heat transfer when a fluid and a solid thermal field are coupled, *Trans. Japan Soc. Mech. Engrs* **40**(335), 2020 (1974).
- Y. Daigo, N. Nishiwaki and A. Tuchida, Effect of rough surfaces on turbulent heat transfer (the second: effect of turbulence intensity on heat transfer), *Tech. Rep., Seikei Univ.* **17**, 1281 (1974).
- M. Fujii, T. Fujii and S. Fujiyama, Heat transfer in the turbulent boundary layer, *Rept. Res. Inst. Ind. Sci. Kyushu Univ.* **60**, 19 (1974).
- J. Hanawa, Transient heat transfer to laminar flow from a flat plate with heat capacity (numerical solution), *Trans. Japan Soc. Mech. Engrs* **41**(347), 2119 (1975).
- H. Hara and K. Endoh, The influence of ultrasonics on heat transfer from a single sphere in liquid, *J. Chem. Engng. Japan* (English) **7**(5), 385 (1974).
- N. Hattori, Forced convection heat transfer from a uniformly heated cylinder at relatively low Reynolds numbers, *Trans. Japan Soc. Mech. Engrs* **41**(348), 2429 (1975).
- T. Hayakawa and H. Takeda, Heat transfer of liquid in vertical concentration annuli, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng. Japan)* **1**(5), 546 (1975).
- K. Hirai, Local similarity solution of combined turbulent convection over a vertical plane surface, *Mem. Fac. Kobe Univ.* **21**, 83 (1975).
- M. Hirata and S. Morioka, Heat transfer of round water jet impinging normally on flat plate, *Trans. Japan Soc. Mech. Engrs* **42**(353), 236 (1976).
- M. Hishida and Y. Nagano, Temperature distribution for turbulent boundary layer flow in a circular pipe, *Bull. Nagoya Inst. Tech.* **26**, 331 (1974).
- A. Horikawa and K. Nakamura, Laminar heat transfer to non-Newtonian fluids, *Tech. Rep. Osaka Univ.* **24**(1179), 249 (1974).
- T. Igarashi and M. Hirata, Heat transfer in separated flows (3rd report, the case of equilateral triangular prisms), *Trans. Japan Soc. Mech. Engrs* **41**(348), 2437 (1975).
- T. Kameoka and K. Nakamura, Investigation on convective heat transfer from traverse plate with finned surface, *Trans. Japan Soc. Mech. Engrs* **40**(333), 1354 (1974).
- T. Kameoka and K. Nakamura, Investigation on convective heat transfer from plate finned surface (effect of inclination of traverse fin), *Trans. Japan Soc. Mech. Engrs* **41**(346), 1878 (1975).
- K. Kataoka, Heat-transfer in a Taylor vortex flow, *J. Chem. Engng. Japan* (English) **8**(4), 271 (1975).
- I. Katsumata, Heat transfer consideration in development processes of air-cooled turbine blade for aircraft engines, *J. Japan Soc. Mech. Engrs* **78**(678), 459 (1975).
- Y. Katto, H. Koizumi and T. Yamaguchi, Turbulent heat transfer of a gas flow on an evaporating liquid surface, *Trans. Japan Soc. Mech. Engrs* **40**(340), 3418 (1974).
- S. Kobayashi and A. Miyano, Study of the heat transfer coefficient (part II), *Bull. Nagoya Inst. Tech.* **25**, 313 (1973).
- S. Kotake, Momentum and heat transfer of non-Newtonian laminar flow past a flat plate, *Trans. Japan Soc. Mech. Engrs* **40**(333), 1089 (1974).
- R. Mitachi and R. Ishiguro, Heat transfer to the wall jet (Part 2, experiments of the radial turbulent field), *Trans. Japan Soc. Mech. Engrs* **41**(348), 2448 (1975).
- S. Mori, T. Shinke, M. Sakakibara and A. Tanimoto, Steady

- heat transfer to laminar flow between parallel plates with conduction in wall, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng. Japan)* **1**(3), 235 (1975).
- E. Naito, Laminar heat transfer in the entrance region of parallel plates (the case of uniform heat flux), *Chem. Engng. Japan* **38**(10), 739 (1974).
- M. Nishikawa, N. Kamata and S. Nagata, Heat transfer for highly viscous liquids in mixing vessel, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng. Japan)* **1**(5), 466 (1975).
- K. Nishikawa, S. Yoshida, M. Ohno and K. Ohishi, Improvement in heat transfer performance at high heat fluxes with internally grooved boiler-tubes, *Mem. Fac. Engng. Kyushu Univ. (English)* **35**(2), 37 (1975).
- M. Sakakibara, K. Endoh, S. Mori and A. Tanimoto, Effect of conduction in wall on convective heat transfer with laminar boundary layer from a flat plate inclined to main flow (wedge flow), *Chem. Engng. Japan* **38**(8), 612 (1974).
- M. Sakakibara and K. Endoh, Analysis of heat transfer in the entrance region with fully developed turbulent flow between parallel plates, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng. Japan)* **2**(1), 65 (1976).
- K. Suzuki, Non-isothermal turbulent boundary layer with foreign gas injection (1st report, a phenomenological theory predicting surface skin-friction), *Trans. Japan Soc. Mech. Engrs* **42**(353), 226 (1976).
- M. Takatsu, Heat transfer coefficient in quenching of hot plate with impinging air jets, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng. Japan)* **1**(4), 439 (1975).
- M. Tanaka and N. Mitsuishi, Non-Newtonian laminar heat transfer in convective annuli, *Chem. Engng. Japan* **38**(9), 664 (1974).
- A. Tsuge, H. Tanaka, M. Hirata and N. Nishikawa, Forced convection heat transfer to fluid near critical point flowing in a circular tube, *Trans. Japan Soc. Mech. Engrs* **40**(333), 1363 (1974).
- K. Urakawa, I. Morioka and T. Kobayashi, Performance of the nozzle for spray cooling, *Scient. Papers Fac. Engng. Tokushima Univ.* **19**, 45 (1974).

NATURAL CONVECTION

- T. Abe and R. Ishiguro, Natural convection over a heated and upward facing horizontal plate (1st Report, Numerical analysis), *Trans. Japan Soc. Mech. Engrs* **41**(352), 3577 (1975).
- T. Aihara, Effects of inlet boundary conditions on numerical solutions of free convection between vertical parallel plates, *Rept. Inst. High Speed Mech. Tohoku Univ. (English)* **28**, 1 (1973).
- T. Fujii and M. Fujii, Free convection of water near 4°C—Consideration on the coefficient of thermal expansion, *Rept. Res. Inst. Sci., Kyushu Univ.* **60**, 53 (1974).
- T. Fujii and I. Morioka, Laminar boundary layer of free convection in a temperature stratified environment, *Trans. Japan Soc. Mech. Engrs* **40**(334), 1674 (1974).
- K. Futagami and F. Abe, Forced and free combined convective heat transfer in an inclined tube (2nd Report, Turbulent region), *Trans. Japan Soc. Mech. Engrs* **41**(347), 2107 (1975).
- K. Futagami and F. Abe, Studies on forced and free combined convective heat transfer for transition region in a horizontal tube, *Mem. Ehime Univ. Sec. 3 (Engng.)* **8**(3), 175 (1976).
- T. Hanzawa and U. Ito, Heat transfer by natural convection in an enclosed cavity—a part of bottom is heated, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng. Japan)* **1**(5), 450 (1975).
- T. Hoshino, H. Saito and H. Yukawa, The effect of ultrasonic vibrations on free convective heat transfer from heated wire, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng. Japan)* **1**(1), 99 (1975).
- K. Hotta, N. Yamamura and K. Iinoya, Dynamics of naturally cooled hot gas duct, *J. Chem. Engng. Japan (English)* **7**(6), 455 (1974).
- N. Imaishi and K. Fujinawa, Theoretical study of the stability of two-fluid layers, *J. Chem. Engng. Japan (English)* **7**(2), 81 (1974).
- R. N. Jana, Hydromagnetic free convective flow past a vertical flat plate with variable viscosity and thermal conductivity, *Japan Soc. Appl. Phys. (English)* **13**(9), 1443 (1974).
- H. Kawamura, M. Seki, Y. Shiiwa and K. Sanokawa, Experimental studies on heat transfer by natural convection and pool boiling of sodium in a strong magnetic field, *J. Nucl. Sci. Tech. (English)* **12**(5), 280 (1975).
- T. Kokugan, T. Kinoshita, N. Taniguchi and M. Shimizu, Natural convection flow rate in a heated vertical tube, *J. Chem. Engng. Japan (English)* **8**(6), 445 (1975).
- T. Masuoka and T. Katsuhara, An experimental study of natural convection in an annular insulating layer, *Bull. Kyushu Inst. Tech. (29)*, 37 (1974).
- O. Miyatake and T. Fujii, A numerical analysis of natural convective heat transfer between vertical parallel plates with unequal heat fluxes, *Rept. Res. Inst. Ind. Sci., Kyushu Univ.* **62**, 87 (1975).
- K. Nishikawa and K. Miyabe, Free convective heat transfer to a supercritical fluid, *Trans. Japan Soc. Mech. Engrs* **40**(340), 3459 (1974).
- K. Noto, Combined laminar free- and forced-convection with blowing or suction, *Trans. Japan Soc. Mech. Engrs* **41**(348), 2455 (1975).
- M. Takeuchi, Y. Ota and Y. Tanaka, Laminar natural convection heat transfer in a thermally stratified field, *Trans. Japan Soc. Mech. Engrs* **40**(332), 1046 (1974).
- H. Tanaka, T. Fujii and O. Miyatake, Effect of temperature-dependence of non-Newtonian viscosity on natural convective heat transfer from a vertical isothermal surface to a non-Newtonian sutterby fluid, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng. Japan)* **1**(6), 655 (1975).
- H. Tanaka, T. Fujii and O. Miyatake, Similarity solution of free convective heat-transfer of power-law fluid from a vertical plate with uniform surface heat flux, *Rept. Res. Inst. Ind. Sci., Kyushu Univ.* **61**, 41 (1975).
- S. Tanno, S. Ohtani and Y. Okamura, Natural convection in horizontal liquid layer with evaporation process (convective flow pattern and surface temperature distribution of Benard cell), *Chem. Engng. Japan* **38**(11), 787 (1974).
- Y. Tsuchiya, The anomalous behavior of oscillating temperature fluctuation near the threshold of thermal convection, *J. Japan Soc. Mech. Engrs* **40**(1), 20 (1975).
- K. Yamamoto, Natural convection about a heated sphere in a porous medium, *J. Japan Soc. Mech. Engrs* **37**(4), 1164 (1974).
- H. Yamashita, T. Ito and K. Nishikawa, Investigation of variable property problem concerning natural convection from vertical plate with prescribed uniform heat flux, *Trans. Japan Soc. Mech. Engrs* **41**(344), 1219 (1975).

MASS TRANSFER

- K. Aihara, N. Ukawa, M. Hozawa and T. Tadaki, Gas phase mass transfer characteristics of counter current and co-current wetted-wall column in a laminar region, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng. Japan)* **1**(1), 39 (1975).
- M. Doi, A new variational approach to the diffusion and the flow problem in porous media, *J. Phys. Soc. Japan* **40**(2), 567 (1976).
- T. Hanzawa, U. Ito and K. Kato, Mass transfer in the horizontal Epitaxial reactor, *Chem. Engng. Japan* **38**(9), 671 (1974).
- M. Harada, T. Imamura, K. Fujiyoshi and W. Eguchi, Interfacial resistance in liquid-liquid mass transfer, *J. Chem. Engng. Japan (English)* **8**(3), 233 (1975).
- K. Hashimoto, M. Teramoto, K. Miyamoto, T. Tada and S. Nagata, Evaluation of mass transfer effects on consecutive catalytic reaction using an internal-recycle catalytic reactor, *J. Chem. Engng. Japan (English)* **7**(2), 116 (1974).
- T. Hirose, Perturbation solution of continuous phase mass transfer in Stokes flow and inviscid flow around a fluid sphere, *Tech. Rep., Kyushu Univ.* **48**(6), 849 (1975).

- T. Hirose, Y. Mori and Y. Sato, Solid-liquid films on single spheres, *J. Chem. Engng. Japan* (English) 7(1), 19 (1975).
- T. Inoue and T. Kato, Mass and heat transfer from a sphere under pressure, *J. Chem. Engng. Japan* (English) 8(4), 289 (1975).
- R. Ito, Y. Hirata and Y. Inoue, Combined laminar forced and natural convection mass transfer from a vertical plate, *J. Chem. Engng. Japan* (English) 8(3), 223 (1975).
- K. Kawazoe and Y. Takeuchi, Mass transfer in adsorption on bidisperse porous materials (macro- and micro-pore series diffusion model), *J. Chem. Engng. Japan* (English) 7(6), 431 (1974).
- K. Kondo and F. Nakashio, Pore diffusion effects on complex reactions, *Kagaku Kogaku Ronbunshu* (Trans. Chem. Engng. Japan) 2(1), 104 (1976).
- Y. Kurosaki, Coupled heat and mass transfer in a laminar flow around a flat plate with a uniform heat flux, *Trans. Japan Soc. Mech. Engrs* 40(332), 1066 (1974).
- K. Miura, T. Miura and S. Ohtani, Effect of surrounding glass beads on heat and mass transfer from a water droplet, *Kagaku Kogaku Ronbunshu* (Trans. Chem. Engng. Japan) 1(3), 241 (1975).
- K. Miura, T. Miura and S. Ohtani, Heat and mass transfer from a floating drop in an ascending air current, *Chem. Engng. Japan* 38(4), 305 (1974).
- H. Miyashita, K. Saeki, H. Ueda and T. Mizushima, Transport phenomena in laminar flow of a liquid film on a horizontal cylinder, *Kagaku Kogaku Ronbunshu* (Trans. Chem. Engng. Japan) 1(6), 611 (1975).
- T. Miyauchi, K. Matsumoto and T. Yoshida, Liquid film coefficient of mass transfer in low Peclet number region for sphere packed beds, *J. Chem. Engng. Japan* (English) 8(3), 228 (1975).
- O. Miyawaki, H. Tsujikawa and Y. Uraguchi, Turbulent mixing in multi-nozzle injection tubular mixer, *J. Chem. Engng. Japan* (English) 7(1), 52 (1974).
- T. Mizushima, F. Ogino and S. Takeshita, Eddy diffusivity in a turbulent pipe flow with uniform fluid injection and suction through the wall, *J. Chem. Engng. Japan* (English) 8(3), 217 (1975).
- S. Nakahara and Y. Hyodo, Mass transfer from single sphere in Taylor vortex, *Kagaku Kogaku Ronbunshu* (Trans. Chem. Engng. Japan) 1(5), 549 (1975).
- M. Nishikawa, K. Inui, Y. Yonezawa and S. Nagata, Mass transfer from solid particle in spouted vessel, *Kagaku Kogaku Ronbunshu* (Trans. Chem. Engng. Japan) 2(1), 42 (1976).
- K. Onda, H. Takeuchi, M. Fujine and Y. Makino, Study of mass transfer between phases by a diaphragm cell, *J. Chem. Engng. Japan* (English) 8(1), 78 (1975).
- T. Sakai, M. Seo and N. Ohi, Mass transfer resistance and selectivity in catalytic simultaneous gas-liquid reaction with suspended solid, *Kagaku Kogaku Ronbunshu* (Trans. Chem. Engng. Japan) 1(2), 155 (1975).
- Y. Sano, N. Yamaguchi and T. Adachi, Mass transfer coefficient for suspended particles in agitated vessels and bubble columns, *J. Chem. Engng. Japan* (English) 7(4), 255 (1974).
- T. Shirotsuka and Y. Kawase, Motion and mass transfer of liquid spheres in viscoelastic fluid systems, *Chem. Engng. Japan* 38(1), 797 (1974).
- Y. Takeuchi and K. Kawazoe, Diffusion of carbon dioxide within molecular sieve particles—evaluation of intraparticle diffusivity based on macro- to micro-pore series diffusion model, *J. Chem. Engng. Japan* (English) 9(1), 46 (1976).
- K. Tojo, K. Miyanami and T. Yano, Mass transfer in a multistage vibrating disk column with cocurrent gas-liquid flow, *J. Chem. Engng. Japan* (English) 7(2), 126 (1974).
- H. Unno and I. Inoue, Liquid mixing and mass transfer of 2-stage perforated tray, *Kagaku Kogaku Ronbunshu* (Trans. Chem. Engng. Japan) 1(2), 221 (1975).
- H. Unno and I. Inoue, Mass transfer on perforated tray, *Kagaku Kogaku Ronbunshu* (Trans. Chem. Engng. Japan) 1(1), 33 (1975).
- M. Yamaguchi, T. Katayama and K. Ueyama, Drag coefficients and mass transfer in the continuous phase of single drops at low Reynolds numbers, *J. Chem. Engng. Japan* (English) 7(5), 334 (1974).
- M. Yamaguchi, T. Fujimoto and T. Katayama, Experimental studies of mass transfer rate in the dispersed phase and moving behavior for single oscillating drops in liquid-liquid systems, *J. Chem. Engng. Japan* (English) 8(5), 361 (1975).
- Wen-Jei Yang and Jen-Wuu Ou, Mass diffusion from gas bubbles moving in liquids with chemical reaction, *Japan Soc. Appl. Phys.* 14(8), 1229 (1975).

LIQUID METAL, M.H.D. AND PLASMA

- S. Aoki, Current studies on liquid metal heat transfer, *J. Japan Soc. Mech. Engrs* 78(678), 426 (1975).
- Y. Fujie, M. Saito, S. Inoue and T. Suita, Analysis of two-phase liquid metal M.H.D. induction converter, *J. Nucl. Sci. Tech.* 12(4), 199 (1975).
- Y. Fujie, M. Saito, S. Inoue and T. Suita, Influence of void and velocity variation on two-phase liquid metal M.H.D. induction converter characteristics, *J. Nucl. Sci. Tech.* 12(5), 259 (1975).
- T. Futami, T. Tsuchiya and A. Sano, Instability of sodium heated steam generator—experiences and problems, *J. Phys. Soc. Japan* (English) 77(672), 1105 (1974).
- M. Harada, M. Tanigaki, Y. Toyota and W. Eguchi, Self-diffusion in liquid metals, *J. Chem. Engng. Japan* (English) 8(5), 350 (1975).
- R. Ishiguro, T. Kumada, K. Sugiyama and E. Ikezaki, Heat transfer around a circular cylinder in liquid sodium cross-flow, *J. Atomic Energy Soc., Japan* 17(5), 250 (1975).
- T. Kajikawa, Boundary-layer cooling effect on semi-hot wall type M.H.D. channel, *Japan J. Appl. Phys.* 13(4), 711 (1974).
- A. Kanzawa and S. Nonouchi, Distributions of current density and heat flux around a cylindrical probe in an atmospheric pressure plasma, *Chem. Engng. Japan* 38(9), 643 (1974).
- A. Kanzawa and M. Hirai, Heat transfer from the high-energy electron to the metal target, *Trans. Japan Soc. Mech. Engrs* 42(354), 575 (1976).
- M. Omiya and A. Kanzawa, Effect of Joule heating on plasma heat transfer, *Kagaku Kogaku Ronbunshu* (Trans. Chem. Engng. Japan) 2(1), 47 (1976).
- S. Shiota, Diffusion boundary layer in a weakly ionized gas, *J. Phys. Soc. Japan* (English) 36(3), 857 (1974).
- K. Sudou and Y. Tomita, Flow of liquid metals with a transversely applied magnetic field (3rd report), *Trans. Japan Soc. Mech. Engrs* 40(332), 983 (1974).
- K. Sudou and Y. Tomita, Flow of liquid metals with a transversely applied magnetic field (6th report, turbulent flow in the entrance region), *Trans. Japan Soc. Mech. Engrs* 41(347), 2090 (1975).
- K. Takano, K. Onda and Y. Mori, Calculation of the performance of large scale diagonal M.H.D. generator, *Trans. Japan Soc. Mech. Engrs* 40(331), 837 (1974).
- M. Tanatsugu, S. Inoue, Y. Fujie and T. Suita, Influence of void and flow region on liquid metal M.H.D. induction generator using two-phase flow, *J. Nucl. Sci. Tech.* 11(9), 378 (1974).
- T. Yamanishi, Liquid metal M.H.D. power generation, *J. Japan Soc. Mech. Engrs* 78(684), 1028 (1975).

RADIATION

- R. Echigo, S. Hasegawa and K. Kamiuto, Composite heat transfer in a pipe with thermal radiation of two-dimensional transfer, *Trans. Japan Soc. Mech. Engrs* 40(333), 1340 (1974).
- R. Echigo, K. Kamiuto and S. Hasegawa, An analytical method on composite heat transfer with predominant radiation (analysis by integral equation), *Trans. Japan Soc. Mech. Engrs* 41(346), 1871 (1975).
- S. Hasegawa, R. Echigo and Y. Tani, Radiative heat transfer by multiphase medium with uniform heat fluxes, *Trans. Japan Soc. Mech. Engrs* 40(334), 1664 (1974).
- S. Hasegawa, R. Echigo and Y. Tani, Simultaneous radiative and convective heat transfer in laminar flow between parallel

- flat plates with uniform heat fluxes, *Mem. Fac. Engng, Kyushu Univ.* (English) **34**(2), 133 (1974).
- S. Hasegawa, R. Echigo, K. Ichimiya and K. Kamiuto, Augmentation of heat transfer by thermal radiation shielding plate placed in a duct, *Trans. Japan Soc. Mech. Engrs* **41**(343), 900 (1975).
- K. Kanemaru, R. Echigo and S. Hasegawa, Examinations on the radiative-extinction functions in a cylindrical medium, *Trans. Japan Soc. Mech. Engrs* **41**(347), 2132 (1975).
- S. Kubo, Steady one-dimensional radiative heat transfer with emission, reflection and external radiation, *J. Phys. Soc. Japan* (English) **36**(3), 869 (1974).
- S. Kubo, Steady radiative heat transfer from a point heat source in a uniform flow of an optically thick gas, *J. Phys. Soc. Japan* (English) **37**(1), 223 (1974).
- S. Kubo, Flow of a radiating gas induced by buoyant force in radiation layer, *J. Phys. Soc. Japan* (English) **37**(5), 1457 (1974).
- S. Kubo, Secondary flow induced by local temperature change in radiation layer, *J. Phys. Soc. Japan* (English) **38**(5), 1494 (1975).
- S. Kubo, Steady radiative heat transfer from a wire heat source in a uniform flow of an optically thick gas, *J. Phys. Soc. Japan* (English) **39**(2), 513 (1975).
- T. Kunitomo and K. Kodama, Radiation from luminous flame at high pressures, *Trans. Japan Soc. Mech. Engrs* **40**(331), 824 (1974).
- M. Kuriyama, K. Katayama, Y. Takuma and Y. Hasegawa, The effect of radiation heat transfer on the thermal conductivity measurement of the infrared transmitting materials, *Trans. Japan Soc. Mech. Engrs* **41**(352), 3588 (1975).
- H. Masuda, Radiative heat transfer in cylinder-row system, *Trans. Japan Soc. Mech. Engrs* **40**(335), 2004 (1974).
- Y. Mori, K. Hijikata and Y. Yamada, Effect of radiation heat transfer on the performance of high temperature heat exchanger, *Trans. Japan Soc. Mech. Engrs* **41**(349), 2681 (1975).

ROTATING SURFACES

- T. Furuta, T. Jimbo, M. Okazaki and R. Toei, Mass transfer to a rotating sphere in an axial stream, *J. Chem. Engng, Japan* (English) **8**(6), 456 (1975).
- Y. Furuya, I. Nakamura and S. Yamashita, On boundary layers on rotating bodies, *J. Japan Soc. Mech. Engrs* **78**(681), 752 (1975).
- A. Iguchi, K. Komori and K. Izumi, Heat and mass transfer from a rotating disk with a source flow, *Trans. Japan Soc. Mech. Engrs* **40**(331), 813 (1974).
- S. Kuwabara and R. Takaki, Secondary flow around a circular cylinder in rotatory oscillation, *J. Phys. Soc. Japan* (English) **38**(4), 1180 (1975).
- M. Sakamoto, Convective mass transfer of a rotating tube revolving about an axis parallel to itself, *Trans. Japan Soc. Mech. Engrs* **40**(338), 2912 (1974).
- O. Tajima, N. Nishikawa, M. Hirata and H. Tanaka, A study on the rotating disk blood oxygenator, *Trans. Japan Soc. Mech. Engrs* **40**(334), 1686 (1974).

MEASUREMENT TECHNIQUES

- M. Enai and N. Aratani, A simultaneous measuring method of thermal diffusivity, thermal conductivity and specific heat and its experimental results applied to a wet building material, *Bull. Fac. Engng Hokkaido Univ.* **75**, 11 (1975).
- K. Etori, Remarks on shifts of thermal diffusivity of a solid by finite width of heat pulse, *Japan. J. Appl. Phys.* (English) **14**(9), 1345 (1975).
- T. Furuta, M. Okazaki and R. Toei, The effect of the insulation part of an isolated electrode on measurements of local mass transfer coefficients by electrochemical method, *J. Chem. Engng, Japan* (English) **7**(5), 350 (1974).
- Y. Ishibashi and Y. Takagi, Comments on specific heat measurements, *Japan. J. Appl. Phys.* (English) **14**(5), 637 (1975).

- S. Ito, S. Urushiyama and K. Ogawa, Measurement of three dimensional fluctuating liquid velocities, *J. Chem. Engng, Japan* (English) **7**(6), 462 (1974).
- K. Kataoka, S. Hayashi and K. Kubota, Unsteady diffusion method for measuring diffusivity of ferrocyanide ion, *Chem. Engng, Japan* **38**(1), 819 (1974).
- K. Kobayashi, Rapid measuring techniques of thermophysical properties by transient methods, *J. Japan Soc. Mech. Engrs* **77**(668), 754 (1974).
- T. Kokugan, N. Ishizaka and M. Shimizu, A new method for measuring thermal diffusion factor of gas mixture, *J. Chem. Engng, Japan* (English) **7**(6), 467 (1974).
- T. Kumada and K. Kobayashi, Device and method for measuring thermophysical properties by stepwise heating, *J. Nucl. Sci. Tech.* **12**(3), 154 (1975).
- Y. Miyairi and N. Mitsuishi, Measurements of thermal conductivities by a comparative method in unsteady state system, *Tech. Rep., Kyushu Univ.* **47**(4), 397 (1974).
- S. Shimizu, Measurement of the instantaneous value of gas temperatures by means of infrared radiation, *J. Japan Soc. Mech. Engrs* **77**(668), 739 (1974).

PACKED AND FLUIDIZED BEDS

- N. Arai, Y. Fujishiro and S. Sugiyama, Axial mixing of particles in vibro-inclined fluidized bed, *Kagaku Kogaku (Chem. Engng, Japan)* **38**(3), 255 (1974).
- N. Arai and S. Sugiyama, Studies of fluidization of moist particles, *J. Chem. Engng, Japan* (English) **7**(4), 247 (1974).
- M. Asaeda, S. Yoneda and R. Toei, Flow of rarefied gases through packed beds of particles, *J. Chem. Engng, Japan* (English) **7**(2), 93 (1974).
- T. Chiba, K. Terashima and H. Kobayashi, Lateral distribution of bubble sizes in two-dimensional gas-fluidized bed, *J. Chem. Engng, Japan* (English) **8**(2), 167 (1975).
- M. Hasatani, K. Ito, M. Yamakawa and S. Sugiyama, Effective thermal conductivity of packed bed of hollow spheres, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng, Japan)* **1**(5), 544 (1975).
- K. Hashimoto, K. Muroyama, K. Fujiyoshi and S. Nagata, Radial effective thermal conductivity in gas-liquid cocurrent flow through packed beds, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng, Japan)* **2**(1), 53 (1976).
- T. Hirama, M. Ishida and T. Shirai, The lateral dispersion of solid particles in fluidized beds, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng, Japan)* **1**(3), 272 (1975).
- T. Hirose, Y. Mori and Y. Sato, Solid-liquid mass transfer in falling liquid films on single spheres, *J. Chem. Engng, Japan* (English) **7**(1), 19 (1974).
- T. Hirose, M. Toda and Y. Sato, Liquid phase mass transfer in packed bed reactor with cocurrent gas-liquid downflow, *J. Chem. Engng, Japan* (English) **7**(3), 187 (1974).
- S. Ito, K. Ogawa, A. Kimura and S. Urushiyama, Turbulence in jet region of jet mixing, *Kagaku Kogaku (Chem. Engng, Japan)* **38**(9), 639 (1974).
- S. Ito, T. Kajiiuchi, Y. Nakatani and S. Matsui, The behavior of bubbles in fluidized beds of gas-solid system, *Kagaku Kogaku (Chem. Engng, Japan)* **38**(11), 824 (1974).
- H. Izawa and H. Inoue, Concentration stability of fluidized bed reactor, *J. Chem. Engng, Japan* (English) **8**(3), 239 (1975).
- G. Jimbo and R. Yamazaki, The effect of local pore distribution in a packed bed on Kozeny's constant, *Kagaku Kogaku (Chem. Engng, Japan)* **38**(4), 299 (1974).
- K. Kato and U. Ito, The estimation of cloud volume from gas particle mass transfer experiment in fluidized bed, *J. Chem. Engng, Japan* (English) **7**(1), 40 (1974).
- K. Kato, U. Ito, N. Takeuchi and K. Hirota, Bed expansion and the axial effective thermal conductivity of screen-packed fluidized bed, *Kagaku Kogaku (Chem. Engng, Japan)* **38**(11), 805 (1974).
- M. Kuramae and T. Tanaka, Analysis of the liquid moisture moving rate through unsaturated packed granular bed, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng, Japan)* **1**(4), 387 (1975).

- A. Matsuura, T. Akehata and T. Shirai, Simplified calculation method for effective thermal conductivity and wall heat transfer coefficient in packed beds, *Kagaku Kogaku (Chem. Engng, Japan)* **38**(7), 536 (1974).
- A. Matsuura, T. Akehata and T. Shirai, Delta-response by two point measurement method—axial mixing of liquid in gas-liquid cocurrent downflow through packed beds, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng. Japan)* **2**(1), 98 (1976).
- S. Morooka, M. Nishinaka and Y. Kato, Overall capacity coefficient of mass transfer between bubble phase and emulsion phase in free and eight-step fluid beds, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng. Japan)* **2**(1), 71 (1976).
- S. Nagata, M. Nishikawa, M. Itaya and K. Ashiwake, Study of heat transfer for aerated mixing vessel and aerated tower, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng. Japan)* **1**(5), 460 (1975).
- T. Miyauchi, Concept of successive contact mechanism for catalytic reaction in fluid beds, *J. Chem. Engng. Japan (English)* **7**(3), 201 (1974).
- T. Miyauchi, Behaviour of successive contact model for catalytic reaction in fluid beds, *J. Chem. Engng. Japan (English)* **7**(3), 207 (1974).
- S. Mukataka and J. Kobayashi, Micromixing model and experimental study in a continuous flow stirred tank reactor, *Kagaku Kogaku (Chem. Engng, Japan)* **38**(9), 653 (1974).
- Y. Murata, H. Sano, T. Kurokawa and R. Takasaki, Particle-liquid heat transfer in an agitated vessel, *Kagaku Kogaku (Chem. Engng, Japan)* **38**(5), 373 (1974).
- K. Muroyama, M. Uegaki, K. Hashimoto and S. Nagata, Radial liquid dispersion in gas-liquid cocurrent flow through packed beds, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng, Japan)* **1**(5), 520 (1975).
- S. Nagata, M. Nishikawa, M. Hattori and T. Kayama, Heat transfer to half ellipsoidal impeller in highly viscous non-Newtonian liquids, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng, Japan)* **1**(1), 68 (1975).
- M. Nishinaka, S. Morooka and Y. Kato, Holdup of gas bubbles in fluid beds, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng, Japan)* **1**(1), 81 (1975).
- K. Shimada, M. Suzuki and J. Kato, Liquid-phase mass transfer coefficient and gas holdup in a packed-bed cocurrent upflow column, *J. Chem. Engng. Japan (English)* **9**(1), 29 (1976).
- T. Otake, S. Tone, M. Kawashima and T. Shibata, Behavior of rising bubbles in a gas-fluidized bed at elevated temperature, *J. Chem. Engng. Japan (English)* **8**(5), 388 (1975).
- L. Otten and G. A. Turner, Frequency response measurements of packed beds of hollow epoxy spheres, *J. Chem. Engng. Japan (English)* **7**(4), 251 (1974).
- S. Sakai, K. Oya, H. Takahashi and H. Yanai, Approximate calculus for temperature profile in moving bed heated externally, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng, Japan)* **1**(3), 334 (1975).
- Y. Sato, T. Hirose and T. Ida, Upward cocurrent gas-liquid flow in packed beds, *Kagaku Kogaku (Chem. Engng, Japan)* **38**(7), 534 (1974).
- T. Takahashi, Y. Akagi, K. Fujita and T. Kishimoto, Flooding velocities of gas-liquid contactors of column type, *J. Chem. Engng. Japan (English)* **7**(3), 223 (1974).
- H. Takeuchi, Y. Maeda and K. Onda, Liquid mixing and mass transfer in a packed bubble column, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng, Japan)* **1**(3), 267 (1975).
- I. Tanaka and H. Shinohara, Elutriation of fines from batch fluidized bed—the case of large initial concentration of fines, *J. Chem. Engng. Japan (English)* **7**(6), 474 (1974).
- R. Toei, R. Matsuno, M. Oichi, K. Kubo and T. Yanagida, The behavior of bubbles in a two-dimensional fluidized bed with a perforated gas distributor, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng, Japan)* **1**(6), 57 (1975).
- R. Toei, R. Matsuno, M. Oichi and K. Yamamoto, Deformations and splittings of a bubble in a two-dimensional fluidized bed—experimental results, *J. Chem. Engng. Japan (English)* **7**(6), 447 (1974).
- R. Toei, R. Matsuno, M. Oichi and K. Yamamoto, Deformation and splittings of a bubble in a two-dimensional fluidized bed—theoretical calculations, *J. Chem. Engng. Japan (English)* **7**(6), 451 (1974).
- S. Tone, H. Seko, H. Matsuyama and T. Otake, Catalytic cracking of methyl-cyclohexane over silica alumina catalyst in gas fluidized bed, *J. Chem. Engng. Japan (English)* **7**(1), 44 (1974).
- Y. Tonooka and I. Inoue, Radial mixing in a packed bed, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng, Japan)* **1**(1), 51 (1975).
- N. Wakao, Y. Iida and S. Tanisyo, Determination of fluid dispersion coefficients in packed beds, *J. Chem. Engng. Japan (English)* **7**(6), 438 (1974).
- R. Yamazaki, Y. Kanagawa and G. Jimbo, Heat transfer in vibro-fluidized bed—effect of pulsated flow, *J. Chem. Engng. Japan (English)* **7**(5), 373 (1974).
- R. Yamazaki, T. Okita and G. Jimbo, The analysis of slugging phenomena in fluidized beds, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng, Japan)* **1**(2), 143 (1975).
- T. Yokota, Y. Hidaka and T. Yasutomi, Mass transfer from the surface of a body submerged in a gas fluidized bed, *Kagaku Kogaku Ronbunshu (Trans. Chem. Engng, Japan)* **1**(4), 399 (1975).
- K. Yoshida and D. Kunii, Complex reaction in fluidized beds—simulation of gasification, *J. Chem. Engng. Japan (English)* **7**(1), 34 (1974).