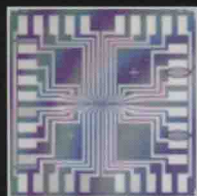
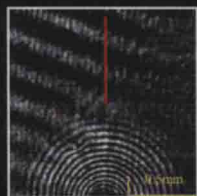


Boiling

RESEARCH AND ADVANCES



Edited by

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The Phase Change Research Committee
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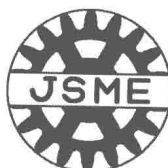
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Biographies

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Hitoshi Asano is an associate professor of the Department of Mechanical Engineering at Kobe University, Japan. He graduated from Kobe University in 1990. He started research on two-phase flow dynamics as a research associate of Kobe University after 3.5 years working in Daikin Industries, Ltd. He obtained the degree of Dr Eng. from Kobe University in 2000, and was promoted to associate professor in 2001. From 2001 to 2002 he visited the laboratory of Prof. Mueller-Steinhausen in Stuttgart University as a research fellow of the Alexander von Humboldt Foundation, and started the investigation into boiling heat transfer enhancement by thermal spraying. Currently, he is studying the effect of surface structures on boiling heat transfer including ONB, DNB, and dryout. His interests are also focused on thermofluid dynamics in compact heat exchangers for HVAC systems, gas-liquid two-phase flows in power systems, especially the effect of surface tension and gravity on gas-liquid two-phase flows in small-diameter tubes. He is a co-investigator of the JAXA (The Japan Aerospace Exploration Agency) project on two-phase flow experiments on board the international space station.

Zhihao Chen has been an associate professor in Tianjin University from June 2015. Before that he was an assistant professor in the Faculty of Engineering, Yokohama National University after receiving his PhD degree from same University in 2011. His research interest is phase-change heat transfer, especially in boiling and condensation. His studies focused on the high-accuracy measurement of microlayer structure and its contribution to boiling heat transfer, and the spontaneous movement of condensate drop during Marangoni condensation of binary vapor.

Masahiro Furuya is a deputy associate vice president and sector leader at Nuclear Technology Research Laboratory, Central Research Institute of Electric Power Industry (CRIEPI). He worked for CRIEPI since 1993 to date. He became a visiting professor at Tokyo Institute of Technology since 1995. He received his PhD from Delft University of Technology in the Netherlands in 2006. He received his PhD from M. Science and Engineering at the Graduate School of Tokyo Institute of Technology in 1993. His research concerns the field of heat transfer with phase change (boiling, condensation, melting, and solidification), material processing, and electro-chemistry. He is recognized in the Who's Who in the World of Marquis for his work in science field.

Yoshihiko Haramura is a professor in the Department of Mechanical Engineering of Kanagawa University. He received PhD degree from the University of Tokyo in 1984. He started his research career at Kanagawa University as a lecturer. He visited the laboratory of John H. Lienhard in the University of Houston from 1989 to 1990. He was promoted to professor in 1995. His research is focused on the area of pool boiling, especially on critical heat flux and transition boiling. He is also interested in heat transfer in Stirling engines and engines themselves.

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Yusuke Koiwa received his master degree (Master of Engineering) from the Tokyo University of Science, and was graduated from the Division of Mechanical Engineering, Graduate School of Science and Technology in March 2017.

Yasuo Koizumi has been an invited researcher of the Japan Atomic Energy Agency for the last 2 years. He received his PhD degree from the University of Tokyo in 1977. He started his research career at the Japan Atomic Energy Research Institute in 1977 as a research engineer for nuclear reactor safety. He stayed at the Idaho National Engineering Laboratory from 1981 through 1983. He moved to the Department of Mechanical Engineering of Kogakuin University in 1989. Then, he moved to the Department of Functional Machinery and Mechanics of Shinshu University in 2008. He retired as professor in 2014 and he has been in his present position since then. His research is focused in the areas of pool and flow boiling, critical heat flux, condensation heat transfer, and two-phase flow. He is also interested in heat transfer and fluid flow on the microscale. Since his research field is closely related to energy systems, he has great interest in thermal and nuclear power stations and energy supply in society.

Chieko Kondou is an associate professor at the Division of System Science in Nagasaki University. She worked as an engineer on air conditioners and commercial refrigeration systems in Hitachi Appliances Inc. for 7 years and received her PhD from Kyushu University in 2008. She worked as a visiting scholar under the supervision of Prof. Hrnjak at the University of Illinois at Urbana-Champaign from 2009 to 2011. During that period, they investigated condensation flow in the presence of superheated vapor at pressures just below the critical point. She started her academic career at Prof. Koyama's laboratory in Kyushu University in 2011. Her research interest is the development of heat pump systems using environmentally benign refrigerants for air conditioning, industrial heating, and refrigeration applications.

Shigeru Koyama has been a professor at Kyushu University. He received his PhD degree from Kyushu University in 1980. He worked as a research engineer at Instrument Research Laboratory in Showa Denko Ltd. for 2 years. In 1982, he started his academic career at Kyushu University as an associate professor at the Research Institute of Industrial Science. In 1995, he was promoted to a professor of the Institute of Advanced Material Study in Kyushu University. He has been working as a professor at the Faculty of Engineering Sciences in Kyushu University since 2006. He has also been working as a WPI professor at the International Institute for Carbon-Neutral Energy since 2010. He has been involved in clarifying the heat and mass transfer mechanisms in condensation, evaporation, and adsorption.

Tomoaki Kunugi graduated and received an MS degree from Keio University. He received PhD from the University of Tokyo. He worked at Japan Atomic Energy Research Institute from 1979 to 1997, and he moved to Tokai University in 1998 and moved again to Kyoto University in 1999. He became a full professor of Kyoto University in 2007. He is an international authority in computational multiphase flow and heat transfer technology and is a specialist in nuclear reactor thermal-hydraulics, safety technology, and fusion nuclear technology. He was the first to develop the automatic liquid-crystal thermometry and found the leakage heat flow inside the heat transfer

plate by using the numerical simulation coupled with the measured surface temperature via this liquid-crystal thermometry. He has been developing several CFD codes including RANS, LES, and DNS for single-phase flows and DNS for multiphase flows including phase change phenomena. He found the turbulence structure of turbulent free-surface flows with deformed interfaces. He also invented a new heat transfer enhancement augmentation by a nano- and microscale porous layer formed on the surface without the pressure drop increase. In this decade, he focused on the understanding of the heat transfer mechanisms of both pool and flow boiling phenomena via a computational fluid dynamics for multiphase flows compared to the ultra-high time-spatial resolution experimental data which are taken by himself. He has published over 300 archival publications, including monographs and textbooks, journal papers, and contributions at international conferences.

Wei Liu is a principal researcher at the Development Group for Thermal-Hydraulics Technology, Nuclear Science and Engineering Center, Japan Atomic Energy Agency (JAEA). She received her bachelor degree in engineering from Shanghai Jiao Tong University, China, in 1992, and her PhD in engineering from the University of Tsukuba, Japan, in 2000. Her research interests include thermal hydraulics in light water reactors and fundamental researches such as CHF, boiling, and two-phase flow.

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Yuichi Mitutake graduated from Saga University in 1989. He started his research career at the Heavy Apparatus Engineering Laboratory of Toshiba Corporation in 1989 as an engineer in the field of thermo-hydrodynamic analysis in thermal and nuclear power plant components. He moved to the Department of Mechanical Engineering of Saga University as a research associate in 1995. Then, he has been in the present position from 2014. He received PhD from Saga University in 2003. His research field focuses on critical heat flux during pool and external flow boilings, transient transition boiling heat transfer during liquid column jet or spray jet impinging on hot surface, measurement technique of transient heat transfer with inverse heat conduction analysis, and development of hydrogen storage system with metal hydride alloy. Recently his focus is on fundamental quenching and wetting phenomena in material production processes.

Masanori Monde is Vice President at Saga University. He has received his PhD from the University of Tokyo, Department of Mechanical Engineering. In 1976, he has served as a lecturer in the Department of Mechanical Engineering, Saga University. In 1989, he joined as a professor in the Department of Mechanical Engineering, Saga University. In 2014, he is an Emeritus Professor at Saga University.

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Shinichi Morooka is Professor of Cooperative Major of Nuclear Energy at Waseda University. He graduated from the Department of Mechanical Engineering at Waseda University in 1977. He received Dr. Eng. degree from Waseda University in 1980. His research field includes thermal-hydraulics of nuclear power plant. He has worked at Toshiba Corporation in thermal-hydraulics R&D Center of nuclear power plants for about 30 years. He has a great deal of experience in developing components for actual nuclear power plants.

He came back to Waseda University as a professor in 2010. Now, he optimizes the heat transfer performance for Light Water Reactor components using Computed Fluid Dynamics code and experimental technologies. Target Components are Nuclear Fuel, Separator system, Steam Generator, so on. He constructs flow mechanism, develops our own simulation code based on flow mechanisms, and predicts the heat transfer performance of fuel assembly.

Shoji Mori received his PhD from Kyushu University in 2003. He joined the Department of Chemical Engineering at Yokohama National University as a research associate in 2004. He became an associate professor in 2007. From 2009 to 2011, he studied cryopreservation and thermal therapies at Bioheat and Mass Transfer Laboratory, Department of Mechanical Engineering, University of Minnesota, Minneapolis, as a visiting professor (Prof. John C. Bischof). His research interests are currently focusing on novel thermal systems using porous materials and bio-transport phenomena.

Niro Nagai has been a professor in the Field of Mechanical Engineering at the University of Fukui since 2013. He received his PhD degree from the University of Tokyo in 1996. He started his research career at Fukui University in 1993 as a research associate for heat transfer engineering, especially boiling heat transfer. He stayed at the University of California Berkeley from 2000 to 2001. He continued working at the Field of Mechanical Engineering of University of Fukui from 1993 until now. His research is focused in the areas of pool and flow boiling, liquid–solid contact situations in high heat flux boiling and near MHF point. He is also interested in utilization of shallow geothermal energy, hydrogen production by water electrolysis, and application of heat pipe.

Taku Nagatake received PhD degree from Kyoto University, Japan, in 2010. He joined Japan Atomic Energy Agency and started his research. Now he is a research engineer of Development Group of Thermal-Hydraulics Technology. His main subject is development of numerical simulation method for melting behavior and thermal-hydraulic behavior in a spent fuel pool at a severe accident condition.

Gyoko Nagayama received her PhD degree from Kyushu Institute of Technology in 2001. She was a postdoctoral fellow in the Hong Kong University of Science and Technology (2001–2002), an assistant professor in Tokuyama College of Technology (2003–2005), a visiting associate professor in the University of British Columbia (2011). She has been an associate professor in the Department of Mechanical Engineering, Kyushu Institute of Technology since 2005. Having been engaged in the research of engineering thermophysics, presently, she focuses on nano/microscale interfacial transport phenomena at the liquid–vapor interface, solid–liquid–vapor triple phase interface and its application in micro fuel cell and micro heat pipe.

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Hiroyasu OHTAKE has been a professor in the Department of Mechanical Engineering at Kogakuin University. He received PhD degree from the University of Tokyo in 1992. His research focuses on the areas of pool and flow boiling, critical heat flux, condensation, and two-phase flow. He is also interested in heat transfer and fluid flow in micro-nano scale.

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Hidetoshi Ohkubo started his research career at the Institute of Industrial Science at the University of Tokyo in 1982 as a research associate. He received PhD from the University of Tokyo in 1993. He moved to the Department of Mechanical Engineering of Tamagawa University in 1995 as an associate professor. Then, he has been in the present position from 2004. His research focuses on the areas of boiling, frosting, and thermal storage.

Tomio Okawa started his research career at the Central Research Institute of the Electric Power Industry in 1990 and earned a doctor of engineering degree from the Tokyo Institute of Technology in 1995 after receiving bachelor's and master's degrees from Tokyo Institute of Technology. Then, he moved to the Department of Mechanical Engineering at Osaka University in 1999, and to his present position (University of Electro-Communications) in 2011. His main research areas are multiphase flow and heat transfer with phase change. His research topics include numerical stability of

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Hiroyo Sakashita received PhD degree in 1998 from Hokkaido University, Japan. He started his research career in 1981 as a research assistant at the Department of Nuclear Engineering, Hokkaido University. He is currently an associate professor at the Division of Energy and Environmental Systems at Hokkaido University. His current research interest is in the areas of boiling heat transfer, especially the mechanism of critical heat flux, critical heat flux enhancement using binary mixtures and nanofluids, and boiling behaviors at high pressures. He is also interested in the thermal-hydraulic problems of nuclear engineering.

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