

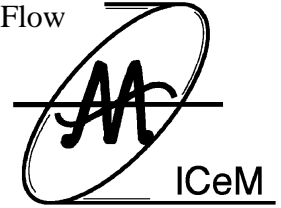


The International Information Center for Multiphase Flow

NEWSLETTER

No. 50, September 2018

The Japanese Society for Multiphase Flow



The 8th European-Japanese Two-Phase Flow Group Meeting (EJTPFGM) April 22-26, 2018, New York City

By Masahiro Kawaji

The 8th European-Japanese Two-Phase Flow Group Meeting was sponsored by the Japanese Society for Multiphase Flow (JSMF) and held at Watson Hotel in Manhattan, New York, on April 22-26, 2018. It was co-chaired by Prof. Masahiro Kawaji (City University of New York – City College) and Prof. Akio Tomiyama (Kobe University) on the Japanese side and Prof. John R. Thome (Ecole Polytechnique Fédérale de Lausanne, EPFL) and Prof. Paolo Di Marco (University of Pisa) on the European side. Prof. Kosuke Hayashi (Kobe University) was the Conference Secretary. This meeting was started in 1998 by late Prof. Iztok Zun and Prof. Goichi Matsui and has been held alternately in Europe and Japan every 3 years. It was intended to provide a discussion platform that would motivate generation of new research ideas and promote collaborations between

research groups in Europe and Japan through a better understanding of the latest research projects in progress. Unique features of this meeting included limited attendance of about 50 - 60 participants, presentations of works in progress, ample time for discussion, and abundant opportunities for fruitful interactions.

At the 8th meeting in New York, there was a good turnout with a total of 66 European and Japanese participants including nine spouses and four invited researchers from the US and two from Brazil. On Sunday, April 22, a Reception was held in the hotel lounge which was well attended by a large number of participants and their spouses. Members of the Virtual International Research Institute of Two-Phase Flow and Heat Transfer also met briefly following the Reception.

To Join ICeM:

Everybody, who is interested in Multiphase flow, is welcome to join ICeM. Please contact one of the following board members to register in ICeM member.

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There were 2 Keynote lectures given by Prof. Takeo Kajishima of Osaka University on natural convection in solid-liquid two-phase media, and Prof. John R. Thome (EPFL) on flow boiling in micro-pin-fin arrays. Prof. Thome also paid a tribute to our two-phase flow leaders and friends, Prof. Iztok Zun and Prof. Barry Azzopardi, who had passed away in 2016 and 2017, respectively.



Prof. Iztok Zun



Prof. Barry Azzopardi

There were 49 presentations given in 12 technical sessions over four days. One-page abstracts of all the presentations in a book of abstract were made available to the participants from a meeting website. On Day 1 (Monday, April 23), fifteen presentations were given in four sessions: Particles, Multiphase CFD, Nuclear Thermal Hydraulics and Instrumentation, and each session had between 3 and 5 presentations.



Photo 1: Audience in the meeting room

On Day 2, twelve presentations were made in three sessions: Boiling, Mini & Microchannels, Drag Reduction & Elongated Bubbles. In the evening, nearly all the participants and their spouses joined an excursion on a City Harbor Lights Cruise boat in which Manhattan's illuminated skyline (photo 1) as well as the Statue of Liberty could be viewed.



Photo 2: A view of Manhattan Skyline and the World Trade Center from a cruise boat

On Day 3, sixteen presentations were made in four sessions: Oil & Drops, Atomization, Cavitation & Microbubbles, Two-Phase Pipe Flow, and Boiling (II). Shortly after the technical sessions ended, all the participants boarded a chartered bus from the Watson Hotel to attend a Banquet held at a restaurant Molos on the New Jersey side of the Hudson River. Although it rained a little and was too foggy to clearly view the Manhattan skyline, all the participants enjoyed the dinner, drinks, and speeches (photo 3).



Photo 3: Banquet at Molos restaurant on Day 3

On Day 4, six presentations were given in the session on bubbles, followed by a closing ceremony and the announcement of the next meeting to be organized by Prof. Rémi Revelin of INSA Lyon in France in 2021. As a Co-Chair and local host of this meeting, I was pleased to see both young and senior researchers presenting their latest research results with great enthusiasm. We can look forward to seeing new advances in two-phase flow research presented in the next meeting. Although the meeting schedule was tight, I trust that many participants and their

spouses enjoyed visiting popular attractions in New York City including Broadway shows, Times Square, Metropolitan Museum and a baseball game at Yankee stadium.

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**The 3rd International Symposium on Application of High-voltage, Plasmas & Micro/Nano Bubbles (Fine Bubble) to Agriculture and Aquaculture, (3rd ISHPMNB 2018)
9/May-12/May, 2018, Iwate, Japan**

by Koichi Takaki

The 3rd International Symposium on Application of High-voltage, Plasmas & Micro/Nano Bubbles (Fine Bubble) to Agriculture and Aquaculture, (3rd ISHPMNB 2018) was held at Iwate University, Morioka, Japan, May 9-12, 2018. This symposium was initiated further to provide an open forum for the introduction and discussion of the most current status of innovative scientific and technological achievements in the interdisciplinary versatile fields of high-voltage, plasmas and micro/nano bubbles (fine bubble) applied to agriculture, aquaculture and food safety. The symposium was chaired by Prof. Kiyoshi Yoshikawa (Rajamangala University of Technology Lanna(RMUTL)) and myself and vice-chair Dr. Yoshikatsu Ueda (Kyoto University), Chunhong Yuan(Iwate University), Kitchar Chaitanu(RMUTL), Supawadee Sriyam(RMUTL), Krischonme Bhumkittipich(RMUTL). This symposium held as an inter-university exchange agreement between Iwate University and Rajamangala University of Technology Lanna.

innovative devices, application processes, and integration technologies of both high voltage, plasma and micro/nano bubble (fine bubble) technologies. To develop these innovative technologies for the advanced practical devices, the understanding and development of basic and new high voltage, plasma and micro/nano bubble (fine bubble) technologies are essential and rather inevitable. In addition, feedback between engineering and agricultural researchers is strongly encouraged to accelerate the researches.



In 3rd ISHPMNB 2018, the scope covered an interdisciplinary variety of high voltage, plasma and micro/nano bubble (fine bubble) technologies including (but not limited to) newly-developed

In this context, this 3rd ISHPMNB 2018 was again very unique and most useful in developing rapidly emerging and innovative technologies relating to both high voltage, plasma and micro/nano bubble (fine bubble) technologies applied to agriculture, aquaculture and food safety. In 3rd ISHPMNB 2018, through the symposium topics related to interdisciplinary fields, we provided a forum sharing the research achievements in the fields related to high voltage, plasma and micro/nano bubble (fine bubble) R&D. In addition, key note lectures with novel topics which draw more attention to high voltage,

plasma, micro/nano bubble (fine bubble) -related R&D communities provided more in-depth discussion and understanding on these related R&D directions.

In 3rd ISHPMNB 2018, there were a total of 76 accepted research papers included 5 invited research and 6 plenary papers. Plenary lectures were given by Dr. Akinori Noguchi (International Research Institute, Japan), Prof. Seiichi Oshita (The University of Tokyo), Takahiro Tateishi (Iwate University), Takayuki Oshima (Gunma University), Kiyoshi Yoshikawa (RMUTL), and Takashi Hata (National

Institute of Technology, Kochi college.). Participants from Thailand, Japan, China, Romania, Pakistan and Ghana joined to the symposium.

For the participants to enjoy Iwate's food, a symposium banquet with "Morioka Sansa Odori" performance in the evening on May 10 was arranged. The 4th ISPHMNB will be held in May, 2019 at Ayutaya, Thailand hosted by Rajamangala University of Technology Thanyaburi.

Koichi Takaki, Professor
Iwate University

The 26th International Conference on Nuclear Engineering (ICONE-26) July 22-26, 2018, London, England

by Hideharu Takahashi

The 26th International Conference on Nuclear Engineering (ICONE-26) was held from June 22-26, 2018 at the Novotel London West in London, England, where the conference venue is just a 3-minute walk from Hammersmith Underground Station and less than 20-minutes travel from Central London or Heathrow, with the theme of "Nuclear Power – Powering the World, One Atom at a Time".

It was chaired by Dr. Guoqiang Wang (Westinghouse Electric Company LLC) in ASME, Dr. Nobuyuki Ueda (CRIEPI) in JSME, Dr. Zengguang Lei (China National Nuclear Corporation) in CNS, Dr. Jenifer Baxter (IMechE) in IMechE and co-sponsored by ASME, JSME, CNS and IMechE.

The conference was also supported by 3 sponsors including Westinghouse Electric Company LLC and 5 exhibitors including ACFEN. Total attendance was over 900 and 762 technical presentations were given for ICONE.

The ICONE-26 covered wide range of topics comprised of following tracks: (1) Operations & Maintenance, Engineering, Modifications, Life extension, Life Cycle and Balance of Plant; (2) Nuclear Fuel and Material, Reactor Physics and Transport Theory; (3) Plant Systems, Structures, Components and Materials; (4) Instrumentation and Control (I&C) and Influence of Human Factors; (5) Advanced Reactors and Fusion Technologies; (6) Nuclear Safety, Security, and Cyber Security; (7)



Photo 1 Opening ceremony & keynote plenary session at Cemant Hall

Codes, Standards, Licensing, and Regulatory Issues; (8) Thermal-Hydraulics and Safety Analyses; (9) Computational Fluid Dynamics (CFD); (10) Decontamination & Decommissioning, Radiation Protection, and Waste Management; (11) Mitigation Strategies for Beyond Design Basis Events; (12) Nuclear Education and Public Acceptance; (13) Innovative Nuclear Power Plant Design and SMRs; (14) Risk Assessments and Management; (15) Computer Code Verification and Validation, as well as (16) Student Paper Competition.

In the student paper competition (TRACK-16), 98 students from all over the world were selected. The goal of the student program is to raise the students' awareness and fully engage them in their nuclear engineering career and also keep them updated on the

current situation and future trends in the nuclear industry. The selected students competed for the Akiyama Memorial Award, established by the JSME in memory of the Prof. Akiyama. The medal was awarded to Mr. Nak-Kyun Cho of University of Strathclyde, UK, based on the quality of technical paper, presentation, and poster session. In addition, paper awards and poster awards were given to selected students from the regional of ASME, JSME and CNS.

ICONE Award were given to Dr. Guoqiang Wang, Dr. Yanping Huang (Nuclear Power Institute of China), Prof. Kazuyuki Takase (Nagaoka University of Technology) for their many years of service and

contribution to the ICONE.

The ICONE-27 will be held at Tsukuba International Congress Center in Tsukuba, Ibaraki, Japan, May 19-24, 2019. As a related conference, International Topical Workshop on Fukushima Decommissioning Research (FDR2019) will be held at J-Village in Naraha, Fukushima, Japan, May 24-26, 2019.

Hideharu Takahashi,
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Him and him
Multiphase Flow Handbook, Second Edition
Editors: Efstathios E. Michaelides, Clayton T. Crowe and John D. Schwarzkopf
July 2018, Fort Worth TX, USA

by Efstathios E. (Stathis) Michaelides

A great deal of research in multiphase flow and heat transfer has occurred since the first edition of the Handbook and a lot of additional information is now available, especially in the area of numerical modeling. The objective of the second edition of this Handbook is to provide the reader with the fundamental principles of multiphase flow, new discoveries, as well as useful current information for research, engineering design, and the classroom. The second edition is a thoroughly updated and reorganized revision of the Handbook. The structure of this publication reflects recent changes, modern applications, research accomplishments, and future directions of the multiphase flow discipline. Several new chapters have been added, primarily on significant modern applications and new research directions.

The material of the second edition of the Handbook is divided in the following entities:

- A) Fundamentals.
- B) Descriptions, theory, and modeling of specific types of multiphase flow and heat transfer equipment and processes.
- C) Significant applications.

The first two chapters of the Handbook pertain to fundamental concepts and numerical methods that are currently used in all types and applications of multiphase flow. Chapters 3 to 13 describe general types of multiphase flow in a variety of applications, such as gas-solid flows; compressible multiphase flows; flows in porous media; boiling and condensation; turbulence interactions; bubble dynamics and cavitation, etc. Chapters 14 and 15 cover the theory and practice of the processes of aggregation and industrial separation of particles, bubbles and drops. Chapters 16 to 21 examine significant applications of multiphase flow, heat, and mass transfer from fluidized bed reactors, to nanofluids, to multiphase flow with non-Newtonian fluids.

With more than 1,800 pages, the second edition of the Handbook contains up-to-date information on all aspects of multiphase flow and heat transfer. The twenty-one chapters of the Handbook, written by sixty-two prominent authors from all the continents of the planet, provide a truly global and thorough look at this discipline. The chapters are well coordinated to offer the best way to search and obtain

information; to maintain a good balance between the three main types of multiphase systems (gas-solid, liquid-solid, and gas-liquid); and to provide up-to-date and accurate information on the flow, heat and mass transfer from particles, bubbles and drops.

<https://www.crcpress.com/Multiphase-Flow-Handbook-Second-Edition/Michaelides-Crowe-Schwarzkopf/p/book/9781498701006>

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Information about the author:

Stathis Michaelides is the senior Editor of the 2nd Edition of this Handbook. He has written more than 150 journal papers and six books on multiphase flow, heat transfer, and energy conversion. He is currently the holder of the Moncrief Chair in the Department of Engineering, TCU.

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10th International Conference on Multiphase Flow

Rio de Janeiro, Brazil, May 19 - 24, 2019

<http://www.icmf2019.com.br/>

Conference Overview

The 10th ICMF will be held in Rio de Janeiro, Brazil, from May 19 – 24, 2019 at Windsor Barra Hotel, and will be devoted to all aspects of Multiphase Flow. Experts and professional researchers from all over the world will attend and make presentations of their research results and recent advancements. It will be a great opportunity to share and promote the exchange of new ideas, results and techniques, but also to extend social networking.

The first edition of ICMF was held in Tsukuba (Japan) in 1991. The second edition took place in Kyoto (Japan) in 1995. During this conference, it was decided to establish an International Governing Board which oversees the major aspects of the conference and makes decisions about future conference locations. Due to the great importance of the field, it was furthermore decided to hold the conference every three years successively in Asia including Australia, Europe including Africa, Russia and the Near East and America. Since the first edition ICMF has grown into the largest conference in the field of multiphase flow.

Scientific Topics

Bio-Fluids
 Bubbly Flows
 Boiling, Condensation, Evaporation
 Cavitation/Nucleation
 Collision, Agglomeration and Breakup
 Colloidal and Suspension Dynamics
 Computational Techniques for Multiphase Flows
 Droplet Flows
 Environmental and Geophysical Flows
 Experimental Methods for Multiphase Flows
 Fluidization

Fluid-Structure Interactions
 Granular Media
 Industrial Applications
 Interfacial Flows
 Instabilities
 Micro- and Nano-Scale Multiphase Flows
 Mixing
 Modelling of Multiphase Flows
 Multiphase Flow in Heat and Mass Transfer
 Non-Newtonian Multiphase Flows
 Particle, Bubble and Drop Dynamics
 Particle-Laden Flows
 Reactive Multiphase Flows
 Turbulence in Multiphase Flows

Venue

Windsor Convention & Expo Center
 Avenida Lúcio Costa, 2630 - Barra da Tijuca, Rio de Janeiro - RJ. CEP 20031-204
<http://windsorexpocenter.com.br/en/>

Key Dates

Early registration rate: on or before January 31, 2019
 Regular registration rate: March 29 - May 17, 2019
 Cancellation deadline: April 12, 2019
 Abstract deadline: October 10, 2018
 Notification of abstract acceptance: December 14, 2018
 Full paper submission: February 22, 2019

Contact Address

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Future Meetings

Following list includes conference name, place, date and contact information.

12th European Fluid Mechanics Conference (EFMC12)

Vienna, Austria, September 9 - 13, 2018

Chair: H. C. Kuhlmann

<http://www.efmc12.conf.tuwien.ac.at/>

Scaling Limits in Models of Statistical Mechanics

Oberwolfach, Germany, September 9 - 15, 2018

<https://www.mfo.de/www/schedule/2018/all>

Advances in Computational Statistical Physics

CIRM Luminy, Marseille, France, September 17 - 21, 2018

<https://conferences.cirm-math.fr/1866.html>

29th IAHR Symposium on Hydraulic Machinery and Systems (IAHR 2018)

Kyoto, Japan, September 17 - 21, 2018

Chair: C. Kato (The University of Tokyo)

Chair: K. Miyagawa (Waseda University)

<http://www.iahrkyoto2018.org/index.html>

School & Workshop on Quantum and Nano Thermodynamics

Älvkarleby, Sweden, September 27 - 29, 2018

<http://nerg.itu.edu.tr/wqnt2018.html>

8th International Conference on Vortex Flow Mechanics (ICVFM 2018)

Xi'an, China, October 15 - 18, 2018

Chair: B. Chen (Xi'an Jiaotong University)

<http://icvfm2018.xjtu.edu.cn/index.html>

The 12th International Topical Meeting on Nuclear Reactor Thermal-Hydraulics, Operation and Safety (NUTHOS-12)

Qingdao, China, October 14 - 18, 2018

Chair: G. Li (CNS)

Chair: J.H. Kim (KAIST)

Chair: H. Ninokata (POLIMI)

<http://www.nuthos-12.org/>

NANOBUBBLE 2018

Suzhou, China, October 16 - 19, 2018

Conference Chair: Jun Hu (SINAP)

<http://nanobubble2018.csp.escience.cn/dct/page/1>

2018 AIChE Annual Meeting

Pittsburgh, PA, U.S.A., October 28 - November 2, 2018

<https://www.aiche.org/conferences/aiche-annual-meet>

ing/2018

Emergence of Structures in Particle Systems: Mechanics, Analysis and Computation

Oberwolfach, Germany, October 28 - November 3, 2018

<https://www.mfo.de/www/schedule/2018/all>

The 29th International Symposium on Transport Phenomena (ISTP29)

Honolulu, Hawaii, U.S.A., October 30 - November 2, 2018

Chair: M. Ishizuka (Toyama Prefectural University)

<https://www.istp29.net/>

The 15th International Conference on Flow Dynamics (ICFD2018)

Sendai, Japan, November 7 - 9, 2018

Chair: Y. Hattori (Tohoku University)

Chair: Y. Ju (Princeton University)

<http://www.ifs.tohoku.ac.jp/icfd2018/>

71st Annual Meeting of the APS Division of Fluid Dynamics

Atlanta, United States, November 18 - 20, 2018

<http://www.aps.org/meetings/index.cfm>

5th SM² Meeting – Statistical Mechanics of Soft Matter 2018

Auckland, New Zealand, December 6 - 7, 2018

Chair: S. Hendy (University of Auckland)

Chair: G. Willmott (University of Auckland)

<http://smsq.github.io/>

Complex Fluids and Soft Matter Conference (COMPFLU-18)

Roorkee, India, December 6 - 9, 2018

<https://www.iitr.ac.in/compflu2018/>

21st Australasian Fluid Mechanics Conference (21AFMC)

Adelaide, Australia, December 10 - 13, 2018

Chair: R. Kelso

<http://www.afms.org.au/21afmc.html>

----- 2019 -----

Statistical Physics Approaches to Systems Biology

Havana, Cuba, February 4 - 15, 2019

<http://www.fisica.uh.cu/statphys/>

12th International Conference on Thermal Engineering: Theory and Applications

Gandhinagar, Gujarat, India, February 23 - 26, 2019

Chair: S. S. Kachhwaha

Chair: M. Z. Saghir

<https://www.ictea.ca/>**4TH Thermal and Fluids Engineering Conference (ASTFE)**

Las Vegas, NV, United States, April 14 - 17, 2019

Chair: D. W. Pepper (University of Nevada)

Co-chair: W. Strasser (Eastman Chemical Company)

<https://www.astfe.org/tfec2019/>**10th International Conference on Multiphase Flow (ICMF2019)**

Rio de Janeiro, Brazil, May 19 - 24, 2019

Chair: O. Rodriguez (Universidade de São Paulo)

Chair: N. Mangiavacchi (Universidade do Estado do Rio de Janeiro)

Abstract deadline: October 10, 2018

<http://www.icmf2019.com.br/>**27th International Conference on Nuclear Engineering (ICONE27)**

Tsukuba, Ibaraki, Japan, May 19 - 24, 2019

Chair: K. Okamoto (The University of Tokyo)

Chair: L. Cizelj (Jozef Stefan Institute)

Chair: Z. Lei (China National Nuclear Corporation)

<http://www.icone27.org/>**XXVI Sitges Conference on Statistical Mechanics**

Sitges, Spain, June 3 - 7, 2019

<http://www.ffn.ub.es/sitges/>**9th International Symposium on Radiative Transfer (RAD-19)**

Athens, Greece, June 3 - 7, 2019

Chair: B. W. Webb (Brigham Young University)

Chair: D. Lemonnier (ISAE-ENSMA)

<http://www.ichmt.org/site/2/rad-19>**9th International Granulation Workshop (2019)**

Lausanne, Switzerland, June 26 - 28, 2019

<https://www.sheffield.ac.uk/agglom/2019/index>**Thermodynamics 2019**

Punta Humberia, Huelva, Spain, June 26 - 28, 2019

<http://efce.info/Thermodynamics+2019.html>**Frontiers of Quantum and Mesoscopic Thermodynamics 2019 (FQMT19)**

Prague, Czech Republic, July 14 - 20, 2019

Chair: V. Špička (Czech Academy of Sciences)

<http://fqmt.fzu.cz/19/>**14th International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics (HEFAT 2019)**

Wicklow, Ireland, July 22 - 24, 2019

Chair: JP Meyer (University of Pretoria)

<https://www.eiseverywhere.com/ehome/349879/752623/?&t=37e84e64acfd67aa345e8e3046e4d5ab>**27th International Colloquium on the Dynamics of Explosion and Reactive Systems (27thICDERS)**

Beijing, PRC, July 28 - August 2, 2019

The 11th International Symposium on Turbulence and Shear Flow Phenomena (TSFP11)

Southampton, UK, July 30 - August 2, 2019

Chair: M. Oberlack (Technische Universität Darmstadt)

<http://tsfp11.org/>**3rd International Symposium on Convective Heat & Mass Transfer (CONV-19)**

Cesme, Turkey, August, 2019

International Conference on Power Engineering (ICOPE-19)

China, October 21 - 25, 2019

The 11th International Symposium on Measurement Techniques for Multiphase Flows (ISMTMF'19)

Zhenjiang, November 2 - 8, 2019

72nd Annual Meeting of the APS Division of Fluid Dynamics

Seattle, United States, November 24 - 26, 2019

<http://www.aps.org/meetings/index.cfm>**The 7th International Conference on Jets, Wakes and Separated Flows (ICJWSF 2019)**

Hong Kong, December 2 - 5, 2019

----- 2020 -----

73rd Annual Meeting of the APS Division of Fluid Dynamics

Chicago, United States, November 22 - 24, 2020

<http://www.aps.org/meetings/index.cfm>

----- 2021 -----

74th Annual Meeting of the APS Division of Fluid Dynamics

Phoenix, United States, November 21 - 23, 2021

<http://www.aps.org/meetings/index.cfm>

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