

The Information Center for Multiphase Flow

NEWSLETTER

No.4

April 1995

ICeM

The Japan Society of Multiphase Flow

Multiphase Flow Research and Symposium/Conferences in Italy

Multiphase flow studies in Italy started in the early sixties mainly related with engineering and safety problems of gas-liquid flow in light water nuclear reactors. The CNEN (National Committee for Nuclear Energy, now ENEA, National Board for the New Technologies, the Energy and the Environment) was created with its laboratories at the Casaccia Center 30 Km north of Rome, to pursue such studies in addition to studies on the nuclear fuel and its reprocessing. Other national laboratories such as CISE (Center for Information, Studies and Experiences) and later the SIET Company (Society for Information on Thermal Hydraulic Experiences), and University laboratories (Polytechnic of Turin,

Polytechnic of Milan, University of Genoa and University of Pisa) made up the multiphase flow research school in Italy. Pressure drop, void fraction distribution, flow regimes, critical heat flux, boiling heat transfer, post-dryout heat transfer, rewetting, critical flow, flooding, unsteady flows etc. are the most investigated topics either from the basic viewpoint, with small scale facilities, or from reactor relevant view-point, using semi-scale facilities. Much of the knowledge accomplished in these experiments, especially the results achieved from basic research, was later used, and research extended, to tackle and solve engineering problems of gas-liquid flow in industrial boilers and chemical reactors.

(This article is continued on the next page.)

To Join ICeM:

Everybody, who has an interest in "multiphase flow", can become a member of ICeM. ICeM welcomes his/her joining. Please contact either of the following to register in ICeM.

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At present, researches in gas-liquid systems are actively conducted at ENEA (direct contact boiling of immiscible liquids, boiling of binary mixtures, CHF for fusion reactors thermal-hydraulic design, heat pipe for space applications), Pisa University (falling film heat transfer, gas-liquid interface stability with electric fields, jet impingement heat transfer, annular flow, flow regimes, slug flow, bubble dynamics), University of Genova (annular flow), Polytechnic of Milan (pressure drop, CHF), University of Padova (condensation of refrigerants on finned and smooth tubes), University of Brescia (CHF in capillary tubes).

In the recent years, multiphase flow research was more and more focused on liquid-solid, gas-solid, and gas-liquid-solid flow, to solve engineering problems of chemical and petrochemical industry, and combustion technology. Fluids-dynamics of circulating fluidized bed burners is extensively studied at the Universities of Naples, Salerno and Turin (Polytechnic), at the laboratories of the Thermal Research Center of ENEL (National Board for Electric Energy) at Pisa, ENEL/CRT. Separation of very fine particles and particulate flows in the chemical industry and for burning of non-gaseous fuel and erosion of turbine blades are studies at the University of Pisa and at Pisa ENEL/CRT laboratories. Optimization of the design of cyclone separators is under way at the University of Bologna, while flow pattern and fluid-dynamics of water-coal slurries is studied at University of Trieste, Snamprogetti and ENEL/CRT of Pisa. The latter, together with the Pisa University, is also involved in the study of atomisers especially for low NO_x burners and for pulverized-coal combustors and furnaces. Oil transportation problems (three-phase flow) are studied by University of Pisa, ENEA Casaccia Center, AGIP and ENEL/CRT of Pisa.

Numerical modelling of turbulent gas/fluid-particle/droplet flows, devoted to combustion

problems is performed at Pisa ENEL/CRT, ENEA (Bologna and Saluggia Centers), Universities of Roma and Naples.

Regarding the measurement techniques, ENEA (Casaccia Center) developed optical probes, heated and micro thermocouples, hot wire anemometry, high speed photography, laser holography, laser doppler anemometry and diagnostic expert systems. Microwaves techniques for the measurement of void fraction in fluidized beds, gas-solid flow rate and solid mixtures concentration were used at ENEL/CRT of Pisa, where, in co-operation with CISE, use of venturimeters for gas-solid flow rate measurements was pursued. Proton magnetic resonance relaxation method to analyse additive-surface interactions in coal-water slurries is developed by University of Rome and Bologna, with Snamprogetti.

Many kinds of multiphase flow meetings have been held in Italy during the last 20 years. UIT (Italian Union of Thermofluid-dynamics) holds every year, the early fifties 1983, the National Heat Transfer Conference. ATI (Italian Association of Thermotechnics) holds every year, since 1956 the National Congress, where multiphase flow plays a relevant role. ANIMP (Italian Association for Industrial Plants) holds every two years, since 1990, a national conference on multiphase flow in industrial plants. The European Two-Phase Flow Group Meeting was held in Rome in 1972, 1984 and 1991, in Piacenza in 1994, in Ispra in 1966 1979 and 1990, and in Milan in 1970. EURO THERM Seminars have been organized in Bologna in 1988 (Modelling of Nuclear and Advanced Heat Transfer Components), in Rome in 1989 (Thermal Non-Equilibrium in Two-Phase Flow) and in Pisa in 1990 (Natural Circulation in Industrial Applications). The International Symposium on Two-Phase Annular and Dispersed Flow was held at the University of Pisa in 1984. The Specialists' Meeting/Workshop on SB-LOCA

Analyses was held at the University of Pisa in 1985. The Second Specialists' Workshop on High Heat Flux Components Thermal Hydraulics was organized by ENEA in Rome in 1992. University of Rome organized in 1994 the International Symposium on Heat and Mass Transfer in Chemical Process Industry Accidents. University of Pisa organized in 1994 the International Conference on New Trends in Nuclear System Thermal Hydraulics.

ENEA is organizing two major events in 1995 and 1996: the International Symposium in Two-Phase Flow Modelling and Experimentation, Rome 9-11 October 1995; and the Second European Thermal-Sciences Conference (joint

with the 14th UIT National Heat Transfer Conference), Rome 29-31 May 1996. Interested people may directly get in touch with the author of this article for any further detailed information.

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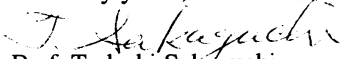
A Letter from Professor T. Sakaguchi experienced the big earthquake in the Kobe area, Japan

Dear friends,

On January 17 1995, a hard and terrible earthquake directly above the focus attacked Kobe and Osaka districts early in the morning. More than 5000 citizens were killed and about 300 thousands lost their homes due to the earthquake. In addition to buildings and housings, all the functions of the modern cities such as water, gas and electric supplies, public transportations and expressways were badly damaged as well. Hundreds of aftershocks still threaten partially damaged structures. Specialists of earthquake suggest that there may be a possibility of the occurrence of an aftershock with magnitude 6. Fortunately, in spite of these hard conditions, all

the multi-phase flow researchers in the districts could escape unhurt from the earthquake. Although some experimental facilities and office rooms are in bad conditions, we are now gradually heading to the complete recovery. We would like to express our sincere thanks to a number of sympathetic and encouraging messages from our friends in all over the world.

Sincerely yours,


Prof. Tadashi Sakaguchi
and my colleagues in Kobe

**Report on the First International Conference on Flow Interaction
cum Exhibition/Lectures on Interaction of Science & Art
September 5-9, 1994, Hong Kong**

Over 120 scientists and engineers of diverse experiences from 22 countries met in Hong Kong for the one-week Conference held at the campus of The University of Hong Kong. The focus of the Conference is on flow interaction which embraces topics involving interplay between two or more fluid phenomena in hydrodynamics, aerodynamics, wind engineering, water waves, and multiphase flow. The scope of flow interaction also includes topics involving interaction of fluid flow with solid structures or other physical disturbances such as sound, heat and magnetic field.

The Conference was jointly organised by the Department of Mechanical Engineering, The University of Hong Kong, the Institute for Aerospace Research, National Research Council of Canada, and Technische Universitat, Berlin, Germany. The technical programme included three parallel sessions of paper presentations and eight invited lectures covering diverse topics from fluid dynamics in micromachinery, convective heat transfer, acoustics in miniature transducers, computation of flow interaction, chaos in fluid-flow interaction, turbulent boundary layer to aircraft design and swimming of micro-organisms.

The Chairman of the Organising Committee was Professor Norman W.M. Ko, a fluid dynamicist and a sculptor and painter. Being an

advocate of interaction, he also organised, with the help of a committee, the Exhibition/Lectures on Interaction of Science and Art, to be held concurrently with the Conference. A full day of nine lectures by artists and scientists was organised and some fifty paintings, sculptures and artwork were exhibited in Fung Ping Shan Museum at the University of Hong Kong. Some artwork were indeed submitted by participants of the Conference.

The one-week Conference served its aim to bring researchers of diverse interests together by which ideas of flow interaction were discussed and experiences exchanged. Furthermore, interaction between science and art was aroused and promoted through the Exhibition/Lectures. With enthusiastic support from the participants, the next Conference/Exhibition will be held in Berlin, 1997 under the chairmanship of Professor H.E. Fielder.

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All Correspondence Concerning

News items of general interest to ICeM members, notice of future meetings and conferences, personal news items, new books, etc. should be addressed to the editor or to regional corresponding members. It will be very helpful if any manuscripts proposed for publication are sent by E-mail or if diskettes are also attached to the manuscripts.

**Report on 3rd International Symposium on
Multiphase Flow and Heat Transfer
September 19-21, 1994, Xi'an, P.R. China**

This symposium was organized by the State Key Laboratory of Multiphase Flow in Power Engineering, Xi'an Jiaotong University of China, and Sponsored by the State Education Commission of China, the National Natural Science Foundation of China, the Chinese Society of Engineering Thermophysics and the Shaanxi Province Association of Science and Technology. The Symposium also got the financial support of the K. C. Wong Education Foundation of Hongkong. More than 160 participants come from 10 countries, including Japan, USA, Canada, France, Germany, Italy, Russia, Israel, Korea, and China attended this symposium. The proceedings including 2 volumes, 1506 pages, 195 papers has been published jointly by the Xi'an Jiaotong University Press of China and Begell House Inc. of USA.

Multiphase flow and Heat transfer applications are found in a wide range of engineering systems. Such as mechanical engineering, nuclear engineering, petroleum and chemical engineering, cryogenic engineering, resources engineering, aeronautics and space engineering, environmental engineering and so on. In order to promote the development of this important discipline, the international symposium was decided to be held regularly in xi'an once for every

five years so as to provide a valuable forum for the international exchange of information, new ideas and new achievements in the expanding field of multiphase flow and heat transfer. The 1st and the 2nd International Symposium on Multiphase Flow and Heat Transfer were held successfully in 1984 and 1989 respectively, and the papers presented were published by the Hemisphere Publishing corporation of New York in 1985 and 1991.

The scope of the symposium included Multiphase flow fundamentals, Two-phase flow instabilities, Boiling and Condensation heat transfer, Wet steam two-phase flow, Gas- solid tow-phase flow, Cryogenic two-phase flow, Fluidized bed combustion and reactors, Nuclear reactor safety, Heat pipes, Heat exchanger, Heat transfer enhancement, Multiphase flow measuring and applied technology and so on.

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To Corresponding Members

Please address information on multiphase flow researches and researchers to the Editor.
Also, please invite colleagues working on multiphase flow in your country to join ICeM.

Report on 4th International Conference on Multiphase Flow Engineering October 6-7, 1994, Ancona, Italy

The 4th International Conference on Multiphase Flow Engineering held in Ancona (Italy), October 6-7, 1994, has been organized by ANIMP (Italian Association for Multiphase Fluid Mechanics) in cooperation with AIDIC (Italian Association of Chemical Engineering) and the Engineering Faculty of Ancona University.

The Conference provided 39 papers of good scientific interest; 10 papers were prepared by non Italian authors. The number of attendants increased by 40% with respect to last Conference event, dated 1992.

The international character of the Conference has been confirmed by the participation of highly qualified experts as:

·Prof. Azzopardi and Mills from Nottingham University (UK)

·Prof. Giot from Louvain University (Belgium)

·Prof. Bohnet from Braunschweig University (Germany)

·Prof. Weber and Dedegil from Karlsruhe University (Germany)

The objectives of the Conference were to bring together the multiphase fluids science community. The researchers, designer, experimentalists, modellers and numerical analysts in this area had the opportunity to meet for high level scientific and technical interchange of ideas, to stimulate discussion and liaisons between specialist groups, to exchange their expertise and experiences to further incite their research activities.

The session has been opened by Fabrizio D'Adda, Vice-President of Snamprogetti, who overviewed the main aspects of multiphase technology, emphasizing the research topics and the industrial plants built by Italian companies, spe-

cially ENI Group.

These are topics covered during Conference technical sessions:

- multiphase systems generation
- multiphase pipe flow: gas-liquid, gas-solid and liquid-solid fluids
- industrial reactors and combustion in multiphase systems
- separation and filtering techniques
- pumping systems
- measurement and monitoring techniques

This Conference gave special focus to issues related to analytical and numerical modelling of multiphase phenomena, by presenting advances in Computational Fluid Dynamics and Mathematics of complex systems.

In particular, applications of chaos theory (Souten et al., Delft University of Technology, NL), non-linear analysis (Brandani et al., L'Aquila University, Italy) and shock waves propagation (Astarita, Naples University, Italy and Terenzi et al. Snamprogetti S.p.A., Italy) can be mentioned.

In the field of pipe transportation, new areas have been investigated, as gas-liquid flow in T-junction (Ottens et al., Amsterdam University, NL), transient flow of non-newtonian thixotropic solid-liquid suspensions (Terenzi, Ercolani, Snamprogetti S.p.A., Italy), settling of particles in fluids with yield stress (Rosso et al., Florence University, Italy).

Referring to pipe design, the introduction of new methods supplying simple criteria for prediction of gas-liquid flow parameters has been appreciated (Andreussi et al., Udine University, Italy).

Devices based on modern techniques like hot-wire anemometry, laser, electronic and magnetic metering for monitoring of multiphase

flow without component separation have been illustrated (Azzopardi, Nottingham University, U.K.).

Several studies were concerned with fluid mechanics and mixing in catalytic reactors for multiphase fluids.

The scientific work of various attendants produced satisfactory results, giving rise for new development on the field of multiphase systems.

Conference Proceedings are available at ANIMP, Via Spalato 11/2, 20124 Milano (Italy). Ph: +39-2-6070242, FAX: +39-2-6070245.

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A Note from the Editor

Members, who have paid the membership fee but did not send their Biographical Questionnaire, please send the Questionnaire to the Editor as soon as possible.

Members, who have sent the Biographical Questionnaire but did not pay the membership fee, should pay the fee to ICeM.

The annual membership fee is ¥3,500 (Japanese yen) (¥1,000 for members of the Japan Society of Multiphase Flow (JSMF)).

Please send your remittance to the Editor in one of the following ways.

1) *International Postal Remittance Service*

2) *Postal Giro Account*

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Ohtemachi Branch, Tokyo, Japan

MultiMoney Account Number: 92095054

Name of the Account: ICeM, G. Matsui

4) *Checks drawn by Hanil Bank in Korea are also acceptable.*

*Personal checks are not acceptable.

- ICeM will send the membership card and the receipt of membership fee for those who pay the fee.
- The ICeM Newsletter is published twice a year and the next issue will be published in October 1995.
- Space may be bought in the Newsletter for advertisements. Please contact the Editor for details and rates.
- Any questions/comments are also welcome.

**Report on the Second International Conference on
Fluid Dynamic Measurement and Its Applications
October 19-22, 1994, Beijing, P.R.China**

The Second International Conference on Fluid Dynamic Measurement and Its Applications (2nd-ICFDMA) was held from Oct. 19-22, 1994 in Beijing, China. This conference was co-organized by the Department of Engineering Mechanics and the Department of Thermal Engineering of Tsinghua University and was supported by the State Educational Commission and the Natural Science Foundation of China. 28 well known scientists were invited to act as the members of International Committee.

During the conference 113 papers were presented in the proceedings which were contributed by the authors come from 11 countries. 58 papers come from overseas and the rest of the papers come from China involved the main universities and institutes over the different provinces.

The proceedings consist of four sections: Laser Doppler Velocimetry and Phase Doppler Particle Analysis, Whole Field Measurement

and Flow Visualization, Hot-wire and Hot-film Anemometry, New Sensor Techniques and System Simulation. Seven invited papers were presented for covering the various areas.

The modern techniques and instruments for fluid measurement have experienced great development and have been widely used since the 1st-ICFDMA held from October 25-28, 1989 in Beijing. It was suggested by the most participants that the 3rd-ICFDMA will also be held in 1997 in Beijing.

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**Professor Wang Wen-qi
who was one of the ICeM Corresponding Members in P.R.China
died on October 18, 1994.**

Professor of Department of Power Engineering, Southeast University, China

Date of birth: October 20, 1935

Graduated from Nanjing Institute of Technology, China in 1956

Professor Wang Wen-qi taught and engaged in research gas-solid two-phase flow at Southeast University throughout his life. He has made contribution in the field pneumatic transport of powder. His book "Two-Phase Flow" was well received in China. He was awarded the Excellent Prize in 1994 and won the title of "National Distinguished Teacher" in 1993 by State Education Commission of China for his outstanding contribution in the field of gas-solid two-phase flow.



Report on Fifth International Conference of Fluid Mechanics (ICFM5)

January 2-5, 1995, Cairo, Egypt

The ICFM5 was successfully held in Cairo, Egypt. 300 participants from 20 different countries are gathering to share a comprehensive program offering a total of 28 technical sessions. 113 scientific papers were presented after being reviewed by the international scientific committee of the conference. The conference was hosted in Egypt by the three major Egyptian universities, Cairo, Mansoura, Alexandria Universities. The international organization mainly achieved through organizers from Nihon University (Japan), Paris (VI) University (France), Old Dominion University (USA). The conference was inaugurated by his excellency the minister of scientific research and his excellency the Minister of petroleum.

The presentation covers the following fluid mechanics topics:

Unsteady flows: Where presentations cover numerical solutions of unsteady turbulent incompressible Navier-Stokes equations, numerical and experimental investigations on oscillating flow in ducts pulsating flow in pipes and ducts.

Stability and transition: Presentations deal with stability and control of supersonic boundary layers, the effect of some parameters as cross flow in compressible boundary layers.

Aero hydro-acoustics: Few presentations dealing mainly with noise generated from internal flows.

Computational fluid dynamics (CFD): This is the topics which has the major interest, where several papers were presented dealing with CFD and grid generation in transonic 3-D steady flows, control volume solution for 2-D compressible Navier Stokes equations, etc..

Turbulence and internal flows: Presentations dealing with turbulence modeling. Applications, diffuser flow, the internal flows with confined jets.

Fluid machinery: There were a large numbers of presentation on turbine, compressors cascade, 3-D analysis, centrifugal pump performance, and erosion. There are also some investigations on radial diffusers, and Navier Stokes solution for 3-D flow field in hydraulic turbomachines.

Two phase flow: There were few presentations dealing with gas solid flow modeling, with heat transfer, gas-water flow.

Measurement technique: Flow visualization using digital image processing, how wire and piezoresistive technique for measuring velocity and concentration.

The total number of presentations were 113, published in the conference proceedings. The conference proceedings contains three volumes, with a total numbers of 1370 pages.

The six conference (ICFM6) will be held in a Mediterranean country by the end of December 1996 for all information contact conference a permanent secretariat.

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Fax: 2050347900
Tel: 2050344105

Future Meetings

Listings include Conference Name, Place, Date and Contact.

- * 2nd International Conference on Multiphase Flow '95 - Kyoto
Kyoto, JAPAN, April 3 - 7, 1995
Prof. A. Serizawa, Dept. of Nuclear Engineering, Kyoto University
Yoshida, Sakyo-ku, Kyoto 606, Japan, Tel/Fax +81-75-753-5829,
- * International Symposium on Measuring Techniques for Multiphase Flows
Nanjing, P.R.CHINA, April 11-14, 1995
Prof. Wang, Shimin, Thermoenergy Engineering Research Institute, Southeast University,
Nanjing 210018, China, Tel +86-25-7714519, Fax +86-25-7714489
- * Convective Flow Boiling, An International Conference
Banff, CANADA, April 30-May 5, 1995
Prof. J. C. Chen; Fax +1-610-758-5057, Prof. Y. Fujita; Fax +81-92-641-9744,
Prof. F. Mayinger; Fax +49-89-2105-3435, Engineering Foundation; Fax +1-212-705-7441
- * IX International Heat Pipe Conference
Albuquerque, NM, USA, May 1-5, 1995
Dr. Jean C. Stark, P.O.Box 1663, Portocol Office, MS P366, Los Alamos, NM 87545N,
USA, Tel +1-505-667-6574, Fax +1-505-667-7530, Prof. M.A.Merrigan, Fax +1-505-665-
2137, E-mail merrigan@lanl.gov
- * International Symposium on Cavitation
Deauville, FRANCE, May 2-5, 1995
Dr. B. Gindroz, CAV'95,DCN Bassin d'Essais des Carènes, Chaussée du Vexin F-27100,
Val de Reuil, France
- * The 3rd International Seminar on Subchannel Analysis
Stockholm, SWEDEN, May 18-19, 1995
Dr. Bertil Schölin, ABB Atom, Tel +46-21 34 70 00, Fax +46-21 14 78 62, +46- 21 18 27
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- * ICHMT, International Seminar on Heat and Mass Transfer in Severe Reactor Accidents
Cesme, TURKEY, May 21-26, 1995
Prof. J. T. Rogers, Tel +1-613-788-5692, Fax +1-618-788-5715
- * 7th International Conference on Multiphase 95
Cannes, FRANCE, June 7-9, 1995
Mrs. C. Cox, Fax: +44 234 750074
- * A Workshop on Modern Developments in Boiling Heat Transfer and Two-Phase Flow
Troy, NY, USA, June 12-16, 1995
Dr. Richard T. Lahey, Jr., School of Engineering, Rensselaer Polytechnic Institute, Troy,
NY 12180-3590, USA, Fax +1-518-276-8788, E-mail laheyr@rpi.edu
- * 26th AIAA Fluid Dynamics Conference
San Diego, CA, USA, June 19-22, 1995
AIAA, Meetings Department, 370 L'Enfant Promenade, SW Washington DC 20024, USA
Tel +1-202-646-7453
- * 13th UIT National Heat Transfer Conference
Bologna, ITALY, June 22-23, 1995
Dr. P. Tartarini, Tel.: +39 51 644 3281 Fax: +39 51 644 3296;
E-mail: FISTEC4@INGBO1.CINECA.IT
- * COMADEM 95, 8th International Congress on Condition Monitoring and Diagnostic
Engineering Management
Kingston, CANADA, June 26-28, 1995
Secrétariat, COMADEM 95, Dept. of Mec. Eng., Queen's Univ., Kingston, Ontario, Canada
K7L 3N6, Tel +1-613-545-2582, Fax +1-613-545-6489,
E-mail MOORETN@QUCDN.QueensU.CA

- * IUTAM Symposium on Asymptotic Method for Turbulent Shear Flows at High Reynolds Numbers
BoChum, GERMANY, June 26-30, 1995
Prof. K. Gersten, Institut für Thermo-und Fluidodynamik, Ruhr-Universität Bochum, Universitätstrasse 150 D-44780 Bochum, Germany, Fax +49-234-7094-162
- * COMADEM 95, 8th International Congress on Condition Monitoring and Diagnostic Engineering Management
Kingston, CANADA, June 26-28, 1995
Secretariat, COMADEM 95, Dept. of Mec. Eng., Queen's Univ., Kingston, Ontario, Canada K7L 3N6, Tel +1-613-545-2582, Fax +1-613-545-6489, E-mail MOORETN@QUCDN.QueensU.CA
- * Moving Boundaries '95, Third International Conference on Computational Modeling of Free and Moving Boundary Problems
Bled, SLOVENIA, June 27-29, 1995
Prof. L. C. Wrobel, Wessex Inst. of Technology, Univ. of Portsmouth, Ashurst Lodge, Ashurst, Suthampton, SO4 2AA, UK, Tel +44-703-293-223, Tax +44-703-292-853, E-mail CMI@uk.ac.rl.ib, Intel E-mail CMI@ib.rl.ac.uk; or Dr. B. Sarler, LFDT, Fac. of Mechanical Eng., Univ. of Ljubljana, Askerceva 6, 61000 Ljubljana, Slovenia, Tel +386-61-1254-217
- * Design and Operation of Heat Exchangers 2 - EUROTHERM Seminar 34
Leeds, UK, End June 1995
Prof. P.J. Heggs, Fax: +44 61 228 7040; E-mail: P.J.HEGGS@umist.ac.uk
- * Third International Conference on Combusion Technologies for a Clean Environment
Lisbon, PORTUGAL, July 3-6, 1995
Prof. Maria da Graça Carvalho, Mechanical Engineering Department, Instituto Superior Técnico, Av. Rovisco Pais, 1096 Lisbon Codex, Portugal, Tel +351-1-8417372/8417378, Fax +351-1-8475545/7262633, Telex 63423 ISTUTL P
- * IUTAM-Symposium on Advances in Nonlinear Stochastic Mechanics
Trondheim, NORWAY, July 3-7, 1995
Prof. S. Krenk, Dept. Building Technology and Structural Engineering, Sohngaardsholmsvej 57, DK-9000 Aalborg, Denmark, Fax +45-9-8148243,
Prof. A. Naess, Dept. of Civil Engineering, Norwegian Institute of Technology, Rich. Birkelands vei la N-7034 Trondheim, Norway
- * 5th International Conference on Bulk Materials Storage, Handling and Transportation
Newcastle, AUSTRALIA, July 10-12, 1995
The Conference Manager, Newcastle Division, The Institution of Engineers, Australia, PO Box 238C, Newcastle NSW 2300, Australia, Tel +61-49-26-4440, Fax +61-49-297-121
- * 9th International Conference on Numerical Methods in Laminar and Turbulent Flow
Atlanta, USA, July 10-14, 1995
Prof. C. Taylor, Fax: +44 792 295705; E-mail: R.W. LEWIS@SWANSEA.AC.UK
- * 14th Multiphase Flow Symposium '95
Matsuyama, Ehime, JAPAN, July 13-14, 1995
Dr. O. Tanaka(chairman), Prof. K. Ayukawa, Dept. of Eng., Fac. of Eng., Ehime University, Bunkyo, Matsuyama 790, Japan, Tel +81-899-7111 ext.3635, Fax +81-899-23-0672
- * IUTAM-Symposium on Nonlinear Instability and Transition in Three-Dimensional Boundary Layers
Manchester, UK, July 17-20, 1995
Prof. Hall, Dept. of Mathematics, Univ. of Manchester, Manchester M13 9PL, UK,
Prof. DIA. Poll, Dept. of Aeronautical Engineering, Simon Building, University of Manchester, Manchester M13 9PL, UK
- * IUTAM-Symposium on Hydrodynamic Diffusion of Suspended Particles
Boulder, USA, July 23-25, 1995
Prof. H. Davis, University of Colorado, Boulder, CO 80309-0424, USA, Fax +1-303-492-4341

- * 30th ASME/AIChM/ANS/AIAA, National Heat Transfer Conference
Portland, OR, USA, August 5-9, 1995
Dr. J. Welty, Tel +1-503-737-4902, Fax +1-503-737-2600
 - . Session on Experimental Techniques in Two-Phase Flow (Two-Phase Flow and Instrumentation)
Prof. G. Kojasoy, College of Eng. & Applied Science, Dept. of Mechanical Eng., Univ. of Wisconsin, Milwaukee, P.O.Box 784, Milwaukee, WI 53201, Tel +1-414-299-5639, Fax +1-414-229-6958, Dr. T. K. Larson, Idaho National Eng. Lab., P.O.Box 1625, M/S 2090, Idaho Falls, ID 83415, Tel +1-208-525-5334, Fax +1-208-525-5996, E-mail tk1@inel.gov
 - . Session on Dynamic Phenomena and Instabilities in Two-Phase Flow
Prof. M.Z.Podowski, Dept. of Nuclear Eng. & Eng. Phys., Rensselaer Polytechnic Institute, NES Bldg., Tibbitts Av., Troy, NY 12180-3590, USA, Tel +1-518-276-6110, Fax +1-518-276-4832, E-mail Podowm@rpi.edu, Dr. M. R.Fakory, S3 Technologies, 8930 Stanford Blvd., Columbia, MD 21045, USA, Tel +1-410-312-3594, Fax +1-410-312-3611
 - . Session on Fundamental of Subcooled Flow Boiling
Portland, OR, USA, 5-9 August 1995
Prof. R.D. Boyd, Fax: +1 409 845 9997 or 857 2222
- * Fluids Engineering Conference
Hilton Head, USA, August 13-16, 1995
Dr. E. P. Rood, Science Directorate/ONR, 800N. Quincy Street, Arlington, VA 22217, USA
- * Symposium on Flow Visualization and Image Processing of Multiphase Systems
Hilton Head, SC, USA, August 13-18, 1995
Dr. B. Khalighi, Fax: +1 313 986 0918, E-mail: BKHALIGH@CMSA.gmr.com
- * Tenth Symposium on Turbulent Shear Flows
Pennsylvania, USA, August 14-16, 1995
Prof. F. W. Schmidt, Secretary, Turbulent Shear Flows, Dept. of Mech. Eng., The Pennsylvania State Univ., University Park, PA 16802, USA, Tel +1-814-865-2072, Fax +1-814-863-4848
- * 19th International Congress of Refrigeration
L'Aia, THE NETHERLANDS, Agosto 20-25, 1995
VN&W Congress Organization Services, Fax: +31 80 601159
- * 2nd Baltic Heat Transfer Conference
Riga, Jurmal, LATVIA, August 21-23, 1995
Prof. B. Sunden, Tel +46-46-108605, Fax 46-46-108612
- * Seventh International Topical Meeting on Nuclear Reactor Thermal-Hydraulics (NURETH-7)
Saratoga Springs, N.Y., U.S.A., September 10-15, 1995
Dr. R. T. Lahey, Jr. (General Chairman), Center for Multiphase Research, Rensselaer Polytechnic Institute, Troy, NY 12180-3590 U.S.A., Tel +1-518-276-3040, Fax +1-518-276-3055, E-mail userfnwa@rpitsmts, Dr. M. Z. Podowski (Technical Program Chairman), Nuclear Engineering & Engineering Physics Dept., Rensselaer Polytechnic Institute, Troy, NY 12180-3590, U.S.A., Tel +1-518-276-6110, Fax +1-518-276-3055, E-mail root@mikeresc.ne.rpi.edu
- * 8th International Symposium on Freight Pipelines
Pittsburgh, Pennsylvania USA, September 14-16, 1995
Dr. George Klinzing (Symposium Chairman), University of Pittsburgh, PA 15261, USA, Dr. Henry Liu, President, IFPS, Capsule Pipeline Research Center, College of Engineering, University of Missouri Columbia, MO 65211, Fax +1-314-884-4888
- * 3rd International Symposium on Coal Combustion (3rd ISCC)
Beijing, P.R.CHINA, September 18-22, 1995
Prof. Dr. Changhe Chen, Department of Thermal Engineering, Tsinghua University Beijing 100084, P.R.China, Tel +86-861-2595701, Fax +86-861-2551224

- * Bulk Handling Asia '95 Conference
Singapore, SINGAPORE, September 19-21, 1995
Mr. Allan J. Davies, Conference Organizer, Turret House, 171 High Street, Rickmansworth,
Herts, WD3 1SN, UK, Tel +44-0-1923-777000, Fax +44-0-1923-770337
- * International Topical Meeting on Safety of Nuclear Power Plants (TOPSAFE '95)
Budapest, HUNGARY, September 24-27, 1995
Dr. P. Feuz, Fax: +41 31 382 4466
- * 4th UK National Conference on Heat Transfer
Manchester, UK, Settembre 26-27, 1995
IMEchE Conference Services Dept., Tel.: +44 171 973 1317, Fax: +44 171 222 9881
- * IUTAM-Symposium on Combustion in Supersonic Flows
Poitiers, FRANCE, October 2-6, 1995
Prof. M. Champion, Laboratoire d'Energétique et de Détonique, ENSMA, 20, Rue Guillaume
VII, F-86034 Poitiers, France, Fax +33-49-605-044
- * Heat Transfer in Condensation - EUROTHERM Seminar 47
Grenoble, FRANCE, October 4-5, 1995
Dr. Ch. Marvillet, Fax: +33 1 7688 5172
- * International Symposium on Two-Phase Flow Modelling and Experimentation
Rome, ITALY, October 9 - 11, 1995
Dr. G.P. Celata, ENEA Casaccia, Energy Department, Via Anguillarese, 301, I-00060 Rome,
Italy, Fax +39-6-3048-3026, E-mail celata@risc990.casaccia.enea.it
- * 7th International Conference on Stirling Cycle Machines (ICSC'95)
Tokyo, Japan, November 5-8, 1995
Mr. Shigeji Tsukahara, 7th ICSC Japan '95 Secretariat, Director, Power and Energy Institute,
Ministry of Transport, 6-38-1 Shinkawa, Mitaka, Tokyo 181, Japan, Tel +81-422-41-3086,
Fax +81-422-41-3101
- * 1995 ASME Winter Annual Meeting
San Francisco, CA, USA, November 12-17, 1995
- . International Symposium on Turbomachinery Performance Deterioration
Dr. W. Tabakoff, Dr. A. Hamed, Dept. of Aerospace Engineering & Engineering Mechanics,
Univ. of Cincinnati, Cincinnati, OH 45221-0070, USA, Tel +1-513-556-3226,
Fax +1-513-556-5038, Mr. D. B. Cale, Aviation Applied Technology, Directorate,
Fort Eustis, VA 23604, USA, Tel +1-804-878-2771
- . 1995 Symposium-Fluid Mechanics and Heat Transfer in Sprays/International Mechanical
Engineering Congress
Dr. J.W.Hoyt, San Diego State Univ., Tel +1-619-594-6067, Fax +1-619-594-6005,
Dr. T.J.O'Hern, Sandia National Laboratories, Tel +1-505-844-9061, Fax +1-505-844-4523,
E-mail, tiohern@sandia.gov., Dr. C. Presser, National Inst. of Standards and Technology,
Tel +1-617-255-4920, Fax +1-617-762-9375, Prof. A.K.Gupta, University of Maryland,
Tel +1-301-405-5276, Fax +1-301-314-9477
- . Symposium on Erosion Processes
Dr. J.R.Kadambi, Chair, Organizing Committee, Dept. of Mechanical and Aerospace
Eng., Case Western Reserve Univ., Cleveland, Ohio 44106, USA, Tel +1-216-368-6456,
Fax +1-216-368-6445, Dr. G.Ahmedi, Dept. of Mechanical and Aeronautical Eng., Box
5725, Clarkson Univ., Postdam, NY 13699, USA, Tel +1-315-268-2322, Fax +1-315-268-
6438, Dr. U.S.Rohatgi, 457B, Dept. of Nuclear Energy, Brookhaven National, National
Laboratory, Upton, NY 11973, USA, Tel +1-516-282-2475, Fax +1-516-282-2613
- . Symposium on Electrorheological Flows III
Prof. D.A.Siginer, Dept. of Mech. Eng., 201 Ross Hall, Auburn Univ., Auburn, AL, USA,
Tel +1-205-844-3331, Fax +1-205-844-3307, Dr. J.H.Kim, Elec., Power Res. Inst., 3412
Hillview Ave. P.O.Box 10412, Palo Alto, CA 94303, USA, Tel +1-415-855-2671, Fax +1-
415-855-1026, Prof. G.S.Dulikravich, Dept. of Aero. Eng., Pennsylvania State Univ., 233
Hammond Bldg., University Park PA 16802, USA, Tel +1-814-863-0134, Fax +1-814-865-
7092

- Forum on Measurement Techniques in Multiphase Flows
 Dr. T.J.O'Hern, Tel +1-505-844-9061, Fax +1-505-844-8251, E-mail
 tjohern@sandia.gov, Dr. A. Naqwi, Tel +1-612-490-2811, Fax +1-612-490-3824,
 Dr. R.D. Skocypec, Tel +1-505-845-8838, Fax +1-505-844-8251, E-mail
 rds kocy@sandia.gov, Dr. C.Presser, Tel +1-301-975-2612, Fax +1-301-869-5924
- Forum on University-Industry Collaborative Research in Multiphase Flow
 November 13-14 (Abstracts due April 15, 1995)
 Prof. M.C.Roco, National Science Foundation, 4201 Wilson Blvd., Suite 525, Arlington, VA
 22230, USA, Tel +1-703-306-1371, Fax +1-703-306-0319
- * Fluidization and Fluid Particle Systems
 Miami, FL, USA, November 12-17, 1995
 Dr. W.C.Yang, Westinghouse Electric, Sci. and Techn. Center, 1310 Beulah Rd., Pittsburgh,
 PA 15235, USA, Tel +1-412-256-2207, Fax +1-412-256-1222
- * Solids Flow, Handling and Processing
 Miami, FL, USA, November 12-17, 1995
 Dr. J. Sinclair, Carnegie-Mellon Univ., Chemical Engineering Department, Pittsburgh, PA
 15213, USA, Tel +1-412-268-3020, Fax +1-412-268-7139
- * Powder Technology
 Miami, FL, USA, November 12-17, 1995
 Dr. S. Pratsinis, Univ. of Cincinnati, Chemical Engineering Department, Cincinnati, OH 45221,
 USA, Tel +1-513-556-2761, Fax +1-513-556-3473
- * Twelfth Australasian Fluid Mechanics Conference (12 AFMC)
 Sydney, AUSTRALIA, December 10-15, 1995 (Abstracts due: April 25, 1995)
 12 AFMC Secretariat, Dept. of Mechanical and Mechatronic Eng., Univ. of Sydney, NSW
 2006, Australia, Tel +61-2-692-2341, Fax +61-2-693-3760, Telex AA73460MICNAV, E-mail
 12afmc@tiny.me.su.oz.au
- * 2nd ISHMT-ASME Heat and Mass Transfer Conference, and 13th National Heat and Mass
 Transfer Conference
 Surathakal, INDIA, December 28-30, 1995
 Dr. B.T.Nijaguna, Tel +91-824-407322, Fax +91-824-476090, Prof. F.Mayinger,
 Fax +49 89 2105 3451, E-mail may@thermo-a.mw.tu-muenchen.de
- * Fifth Symposium on Multiphase Transport in Porous Media/ASME Winter Annual Meeting
 Cicago, IL, USA, December, 1995
 Dr. R.R.Eaton, Sandia National Labs, Tel +1-505-844-4063, Fax +1-505-844-8251, Prof.
 K.S.Udell, Univ. of California, Tel +1-510-642-2928, Prof. M.Kaviany, Univ. of Michigan,
 Tel +1-313-936-0402, Prof. M.P.Sharma, Univ. of Wyoming, Tel +1-307-766-6317,
 Prof. K.Vafai, Ohio State Univ., Tel +1-614-292-6560
- * Heat Pump Conference
 Melbourne, AUSTRALIA, February 11-14, 1996
 TTI, Fax: +33 1 4266 0447
- * 3rd International Symposium on Engineering Turbulence Modeling and Measurements
 Crete, GREECE, May 27-29, 1996 (Abstracts due: May 1, 1995)
 Prof. W.Rodi, Institut für Hydromechanik, Universität Karlsruhe, Kaiserstrasse 12, 76128
 Karlsruhe, Germany, Tel +49-721-608-3535, Fax +49-721-608-2202, E-mail Rodi@bau-
 verm.uni-karlsruhe.de, Prof. G.Bergeles, Department Mechanical Engineering, National
 Technical University of Athens, 9 Heroon Polytechniou Ave., 15710 Zografou, Greece, Tel
 +30-1-7717881/7706545, Fax +30-1-7706545, E-mail bergeles@artemis.naval.ntua.gr
- * 2nd European Thermal - Science and 14th UIT National Heat Transfer Conference
 Rome, ITALY, May 27 - 31, 1996
 Dr. G.P. Celata, ENEA Casaccia, Energy Department, Via Anguillarese, 301
 I-00060 Rome, Italy, Fax +39-6-3048-3026

- * 2nd European Thermal-Sciences and 14th UIT National Heat Transfer Conference
Roma, ITALY, May 29-31, 1996 (Abstracts due: April 5, 1995)
Dr. G.P. Celata, Tel.: +39 6 3048 3905, Fax: +39 6 3048 3026; E-mail:
celata@risc990.casaccia.enea.it
- * 9th Int. Sympo. on Transport Phenomena (ISTP-9) in Thermal-Fluids Engineering
Singapore, June 25-28, 1996
ISTP-9 Secretariat, Fax: +65 3363613
- * Second International Symposium on Numerical Methods for Multiphas Flows, 1996 ASME
Fluids Engineering Division, Summer Meeting
San Diego, CA, USA, July 7-11, 1996 (Abstracts due: September 1, 1995)
C.T. Crowe, Tel +1-509-335-3214, Fax +1-509-335-4662, E-mail crowe@mme.wsu.edu,
Y. Tsuji, Tel +81-6-877-5111, E-mail tsuji@mupf.meim.osaka-u.ac.jp, A. Prosperetti,
Tel +1-410-516-8534, Fax +1-410-516-7254, E-mail prosper@polaris.me.jhu.edu,
M. Sommerfeld, Tel +49-9131-859501, Fax +49-9131-859503,
E-mail martin.sommerfeld@cnve.univierlangen.de, R. Johnson, Tel +1-208-526-0955,
Fax +1-208-526-6970, E-mail rwj@inel.gov
- * 8th International Symposium on Applications of Laser Techniques to Fluid Mechanics
Lisbon, PORTUGAL, July 8-11, 1996
LADOAN, 7-c/o Prof. M.V.Heitor, Dept. of Mechanical Eng., Inst. Superior Tecnico Av.
Rovisco Pais, P-1096 Lisbon Codex, Portugal, Tel +351-1-847-7379, Fax +351-1-849-6156
- * Fifth World Congress of Chemical Engineering
San Diego, CA, USA, July 14-17, 1996
AIChE, Programming Dept. 12th Floor, 345 East 47th Street, New York, NY 10017, USA,
Tel +1-212-705-7373, Fax +1-212-752-3297
- International Particle Technology Forum
San Diego, USA, July 14-18, 1996 (Abstracts due: June 1, 1996)
Prof. R.Pfeffer, Tel +1-201-596-3429, Fax +1-201-596-6479, Dr. R.Davies,
Tel +1-302-695-2839, Fax +1-302-695-2504, Prof. M.C.Roco, Tel +1-703-306-1371,
Fax +1-703-306-0319)
- * The 19th International Congress on Theoretical and Applied Mechanics
Kyoto, JAPAN, August 25-31, 1996
Chairman: Prof. T. Tatsumi, Kyoto Inst. of Technology, Matsugasaki, Sakyo-ku, Kyoto 606,
Japan, Tel +81-75-724-7001, Fax +81-75-724-7000, Secretary: Prof. E. Watanabe,
Dept. of Civil Eng., Kyoto Univ., Sakyo-ku, Kyoto 606-01, Japan, Tel +81-75-753-5079,
Fax +81-75-752-5296
- * Natural Working Fluids in Refrigeration and Air Conditioning
Aarhus, DENMARK, September 2-8, 1996
Mr. M. Arnvig, Tel.: +45 42 884622, Tlx: 6420249
- * Pool Boiling Heat Transfer 2 - EUROTHERM Seminar 48
Paderborn, GERMANY, September 1996
Prof. D. Gorenflo, Fax: +49 5251 603 522
- * 4th World Conference on Experimental Heat Transfer, Fluid Mechanics and Thermodynamics
Brussels, BELGIUM, June 2-6, 1997
Prof. M.Gito, Tel +32-10-472200, Fax +32-10-452692, E-mail gito@term.ucl.ac.be
Dr. R.K.Shah, Tel +1-716-439-3020. Fax +1-716-439-3648, E-mail rkshah@acsu.buffalo.edu
- * 11th International Heat Transfer Conference
Seoul, KOREA, August 23-28, 1998
Prof. S.T.Ro, Tel +82-2-880-7111, Fax +82-2-883-0179

Microscopic Simulation of Multi-Phase Flow and International Collaboration

In April 1994, we started a project to simulate elementary processes of nonlinear complex phenomena in light water reactors microscopically by using discrete methods instead of usual conventional continuous macroscopic ones in an assistance of advanced computing techniques on parallel processings, computer graphics and neural networks. This project is sponsored by the Japanese government and lasts for four years. Under the collaboration of Japanese universities and an overseas organization, we are now developing discrete simulation models such as Monte Carlo methods for neutronics, lattice gas automata and lattice Boltzmann methods for thermal-hydraulics, and cellular automata and molecular dynamics for material fracture mechanics.

Neutron transport calculations will be performed directly coupling the two effects of fuel rod-by-rod heterogeneity over a whole reactor core and void reactivity feed-back.

Our focus on thermal-hydraulics is placed on modellings of multi-phase flows and phase interfacial phenomena: flow pattern of boiling two-phase flow with formation mechanisms and behaviors of bubbles, liquid films and liquid droplets, wavy flow at liquid-liquid two-phase interface, and chemico-physical behaviors of molten fuel interface. Thermal fatigue at cold and hot coolant interface will be evaluated by coupling simulation of the wavy flow and mechanical property change due to interfacial temperature fluctuation.

Formation of topological structure and micro-defect behavior will be simulated in solid materials and will be followed by estimations of mechanical property change and crack growth together with stress values, resulting in evaluations of residual life by damage mechanics such as those at welded parts.

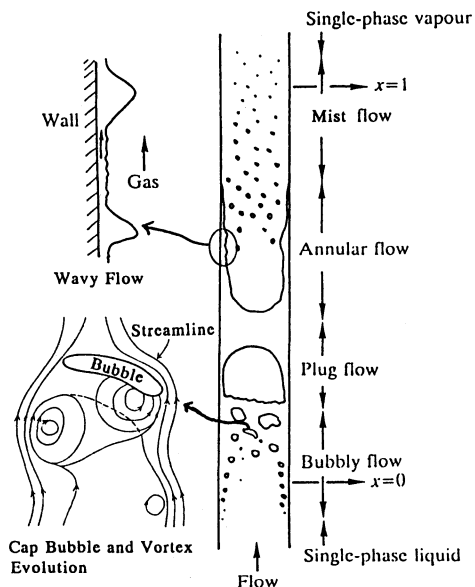


Fig. 1 Flow Pattern in an Evaporating Tube

In order to bring us a breakthrough in the microscopic simulations described above, we are preparing for an international benchmark study of modellings by LGA or LB methods and the confirmation experiments of their validities. The topic for the first year of the study is conceptually shown in Fig. 1: water-vapor boiling two-phase flow with heat transfer, phase change, high Reynolds number ranging to 100,000 and three dimensional geometry as the final modelling goal. If interested in the international collaboration, contact us to the followings:

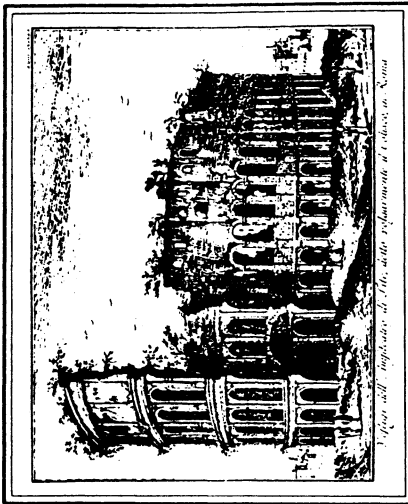
Yasuyoshi Kato
The Institute of Applied Energy
Shinbashi SY Bldg.,
14-2 Nishishinbashi 1-chome
Minato-ku, Tokyo, 105, Japan
Fax: +81-3-3501-1735,
e-mail: PDG02307@niftyserve.or.jp



FIRST ANNOUNCEMENT
AND
CALL FOR PAPERS

2nd EUROPEAN THERMAL-SCIENCES
AND
14th UIT NATIONAL HEAT TRANSFER
CONFERENCE

Organized by
EUROTHERM
UIT



ERGIFE Palace Hotel, Rome, Italy
May 29-31, 1996

BACKGROUND

The First European Thermal-Sciences Conference was held in Birmingham, UK, jointly with the Third UK National Heat Transfer Conference, under the auspices of EUROTHERM. The program of the Conference included about 160 contributed papers and 4 invited lectures, and the Conference was attended by delegates from European and overseas countries. The Conference brought together scientists/engineers in thermal sciences and heat transfer, providing an open forum for the discussion of current and future research areas. EUROTHERM is organizing the Second European Thermal-Sciences Conference, jointly with the UIT (Italian Union of Thermofluid dynamics) National Heat Transfer Conference.

OBJECTIVES OF THE CONFERENCE

The objectives of the Conference are to bring together the international thermal science community. The researchers, designers, experimentalists, modellers, and numerical analysis in the area of thermal science and heat transfer have the opportunity to meet in a forum for high-level scientific and technical interchange of ideas, to stimulate discussion and liaison between specialists' groups, to exchange their expertise and experiences to further incite their research activities.

All participants will have an opportunity to become informed on latest developments in experimental, computational and theoretical work in the field of thermal sciences and heat transfer, as well as to take away from the Conference fresh ideas and new perspectives, a knowledge of new opportunities, and new contacts.

It is expected that this Conference will attract participants not only from Europe, but also from USA, Japan, Russian Federation and Eastern Countries, and other countries/regions of the world, and will include scientists/engineers from industry, government labs, academia, research organizations and consulting firms. Highly qualified experts in the field will present the keynote lectures.

Academic and industrial contributors are solicited to submit papers dealing with experimental work, new experimental techniques, theory, analysis, design, numerical studies, modelling on fundamentals, applications and technology of thermal sciences and heat transfer.

TECHNICAL PROGRAMME

All Conference papers, except for the keynote papers, will be presented in poster sessions.

A keynote lecture on the state of the art of the leading topics of thermal sciences and heat transfer will be presented in a plenary session each morning and afternoon.

DEADLINES

April 5, 1995 Four copies of abstract due to the Chairman of the Scientific Secretariat

June 15, 1995 Authors to be notified of abstract acceptance

October 20, 1995 Full-length paper due

January 15, 1996 Authors to be notified of paper acceptance

March 1, 1996 Author-prepared mats due

SUBMISSION, SELECTION, PUBLICATION AND PRESENTATION OF CONTRIBUTED PAPERS

Authors should submit four copies of abstracts of up to 2000 words (but not less than 1500), with supporting figures and tables as appropriate, to the Chairman of the Scientific Secretariat: Dr. Gian Piero Celata, ENEA Casaccia, Energy Department, Via Anguillarese, 301, I-00060 S.M. Galeria, Rome, Italy. Tel.: ++39 6 3048 3905; Fax: ++39 6 3048 3026.

The work must be original and unpublished. The cover letter should contain:

- (1) five keywords to describe and categorize the work easily;
- (2) name, address, phone number and fax number of the author to whom correspondence should be directed.

The abstract should clearly state the objectives, results, and conclusions. The abstracts will be used for preliminary screening by the Scientific Committee and Secretariat. The final acceptance of the paper will be based on the peer review of the complete manuscript. The accepted papers will be required on author-prepared mats in English only and printed in the Conference Proceedings, that will be distributed to participants at the Conference.

Authors will be required to present their papers personally at the Conference.

ANNOUNCEMENT AND CALL FOR PAPERS

Twelfth Australasian Fluid Mechanics Conference,
Sydney, Australia.
10—15 December, 1995

12 AFMC Secretariat, Department of Mechanical
and Mechatronic Engineering,
University of Sydney, NSW 2006, Australia.
Tel: (02) 351 2341, Fax: (02) 692 9169,
Telex AA73460MICNAV,
E-mail: 12afmc@tiny.me.su.oz.au

This series began at the University of Western Australia in 1962 and has been held every three years since: 1965 Auckland, 1968 New South Wales, 1971 Monash, 1974 Canterbury, 1977 Adelaide, 1980 Queensland, 1983 Newcastle, 1986 Auckland, 1989 Melbourne and 1992 Tasmania. It now enjoys a prestigious reputation amongst the world-wide Fluid Mechanics research community and attracts many overseas contributors and participants.

VENUE

The Twelfth Australasian Fluid Mechanics Conference will be held on the campus of the University of Sydney from Sunday 10 December until Friday 15 December 1995. The campus is located a short distance from the centre of Sydney and attractions, such as Darling Harbour, the Powerhouse Museum, the Historic Rocks area and the Opera House. It is also close to the world famous harbour providing participants with the opportunity to visit many areas using the extensive ferry network.

CONFERENCE SCOPE

The conference will provide a broad forum for the presentation of a wide range of papers on all aspects of fundamental and applied fluid mechanics, including industrial flows and aerodynamics, hydrodynamics, combustion and oceanography. Experimental, analytical and computational aspects of fluid mechanics will be covered. This broad theme is reflected in the composition of the invited keynote presentations which will cover a wide range of topics.

CONTRIBUTED PAPERS — ABSTRACTS DUE 25 APRIL 1995

Contributed papers are now invited from intending participants in the broad area of fundamental and applied fluid mechanics. Authors should submit an abstract which clearly explains the content and contribution of the proposed paper, including major results and conclusions. This abstract should be approximately 1000 words long plus supporting figures. No special format is required for the abstract but authors should bear in mind that only 240 papers will be accepted. Therefore the abstract should be clear and informative. All abstracts received by the due date will be reviewed by members of the Scientific Advisory Panel and ranked in order of merit.

The complete timetable for intending authors is as follows:

Due date for extended abstract
(3 copies, 1000 words plus figures):
25 April 1995

Notification of acceptance and issue
of instructions for paper production:
14 July 1995

Deadline for receipt of camera-ready papers:
31 August 1995

12 AFMC ORGANIZING COMMITTEE

Prof. R.W. Bilger, Dr. D.F. Fletcher, A/Prof. K. Kwok, Dr. T.A.G. Langrish, Dr. A.R. Masri and Dr. K. Srinivas,
Faculty of Engineering,
University of Sydney, NSW 2006, Australia.

We look forward to welcoming you to Sydney and hope that the conference will be as fruitful and enjoyable as previous meetings. Enquiries on all aspects of the conference should be addressed to the Conference Secretariat.

Second Announcement and Call for Papers

3rd International Symposium on Engineering Turbulence Modelling and Measurements

May 27 - 29, 1996, Crete, Greece

under the auspices of the Assembly of World Conferences on Experimental Heat Transfer,
Fluid Mechanics and Thermodynamics

Organizing Committee

Chairman:

Professor W. Rodi
Institut für Hydromechanik
Universität Karlsruhe
Kaiserstrasse 12
76128 Karlsruhe, Germany
Phone: +49 (721) 608-3535
Telefax: +49 (721) 608-2202
E-mail: Rodi@bau-verm.uni-
karlsruhe.de

Co-Chairman:

Professor G. Bergeles
Department Mechanical Engineering
National Technical University of Athens
9 Heron Polytechniou Ave.
157 10 Zografou, Greece
Phone: +30 (1)-77 17 881 / 77 06 545
Telefax: +30 (1)-77 06 545
E-mail: bergeles@artemis.naval.ntua.gr

Members:

T. Cebeci, USA
M.K. Chung, Korea
C.T. Crowe, USA
J.H. Ferziger, USA
W.K. George, USA
K. Hanjalic, Netherlands
M. Hashiguchi, Japan
E.H. Hirschel, Germany
W.P. Jones, U.K.
N. Kasagi, Japan
B.E. Launder, U.K.
D. Laurence, France
F. Martelli, Italy
Y. Nagano, Japan
O.P. Sharma, USA
O. Simonin, France
M. Sommerfeld, Germany
J.H. Whitelaw, U.K.

Paper submission and selection

Authors should submit three (3) copies of abstracts of about 500 words, with supporting figures as appropriate, to the Symposium Chairman (W. Rodi). The covering letter should contain: 1) five keywords to describe and categorize the work easily; 2) name, address, phone number, telefax number and if possible E-mail address of author to whom correspondence should be directed. The abstracts will be used for preliminary screening. The final acceptance of the papers will be based upon reviews of the complete manuscript according to the standards of the International Journal of Experimental Thermal and Fluid Science (ETFS). All accepted papers will be published by Elsevier Science Publishers in a Symposium volume available at the time of the conference. After the Symposium, authors are encouraged to submit their papers to the ETFS Journal. The official language of the conference is English.

Deadlines

May 1, 1995 : 3 copies of abstract due
June 15, 1995 : Notification of abstract acceptance

September 15, 1995 : Full-length papers due on mats
November 15, 1995 : Notification of final paper acceptance



CALL FOR PAPERS

SECOND INTERNATIONAL SYMPOSIUM

NUMERICAL METHODS FOR MULTIPHASE FLOWS

1996 ASME FLUIDS ENGINEERING DIVISION
SUMMER MEETING
SAN DIEGO, CA
USA
JULY 7-11, 1996

The Multiphase Flow Committee and the Coordinating Group on Computational Fluid Dynamics are organizing a symposium on numerical methods for multiphase flows. The purpose of the symposium is to provide a forum for the representation of current activities and new ideas in the development of computational methods for multiphase flows and mathematical models.

Scope: The submitted papers should address the new applications of conventional techniques or new, more efficient, numerical methods which provide more accurate solutions to gas-liquid, gas-particle and solid-liquid flows as well as three phase flows. Papers on the development of numerical models are also welcomed. Typical topics may include:

- δ direct numerical simulations
- δ finite element techniques
- δ improved finite difference methods
- δ vortex simulations
- δ large eddy simulations
- δ two-fluid models
- δ lagrangian models

Prospective authors should submit three copies of a 300 word abstract to an organizer by August 1, 1995. Notification of accepted abstracts will be completed by September 1, 1995. Full length draft papers will be due October 20. These papers will be reviewed and notification of acceptance will be made on January 12, 1996. The complete paper prepared according to ASME format will be due on March 8, 1996.

Abstracts may be sent to:

Clayton T. Crowe
Dept of Mech & Mats Engrg
Washington State University
Pullman, WA 99164-2920
Tel: 509-335-3214
Fax: 509-335-4662
e-mail; crowe@mme.wsu.edu

Yutaka Tsuji
Dept Mech Engrg
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EIGHTH INTERNATIONAL SYMPOSIUM

ON

APPLICATIONS OF LASER TECHNIQUES TO FLUID MECHANICS

The Symposium will present new research on laser techniques for flow measurements and results of significance to fluid mechanics. It will emphasize the application of laser techniques to scientific and engineering investigations of fluid flow. Contributions to the theory and practice of laser methods will be accepted where they facilitate new improved fluid mechanical investigations, and may include laser-Doppler anemometry, phaser-Doppler anemometry, particle image velocimetry, laser induced fluorescence and other methods for the measurement of velocity and scalars.

SESSIONS

Approximately 40 formal and Open Forum sessions are planned. Contributed papers are welcome in the following areas:

- Turbulent flows
- Unsteady flows
- Hydrodynamic and aerodynamic flows
- Reacting flows
- Two phase flows
- Particle sizing
- Developments of optical and electronic instrumentation for laser anemometry
- Whole field velocimetry
- Optical methods for temperature, density, concentration
- Imaging methods for scalar fields

The format will involve presentations and structured discussions. Workshops on specialist topics may be arranged to stimulate informal discussions. Possible topics will include:

- Accurate measurements in supersonic flows
- Interrogation strategies for particle image velocimetry
- Zoological and biological fluid flow studies

ORGANIZING COMMITTEE

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ABSTRACTS

Paper selection will be based upon an extended abstract of not less than 500 words, which should be typed double space and state the purpose, results and conclusions of the work with supporting figures as appropriate. Four copies of the abstract should be submitted to:

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DEADLINES

Final date for receipt of abstracts 16 December 1995

Authors informed concerning acceptance 6 March 1996

Final date for receipt camera-ready manuscripts 15 May 1996

SYMPOSIUM LOCATION

The Symposium will be held at the Congress Centre of the Calouste Gulbenkian Foundation, in the centre of Lisbon. Local hotels will be made available to the participants and their companions.

July 8-11, 1996

Lisbon
Portugal

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ICeM desk during 2nd ICMF'95-Kyoto

ICeM desk will be open at the Foyer in front of Room D, the Kyoto International Conference Hall during the 2nd International Conference on Multiphase Flow '95-Kyoto, Japan, from April 3 to April 7, 1995. Please contact the ICeM chairman or Japanese corresponding members for anything related to ICeM.

To Members

For forthcoming data bank on Multiphase Flow Research/Researchers, ICeM would like to have your personal data. Please write your name, address, research field and a list of papers etc. to the Editor.

ICeM would also be very grateful to receive recent reprints, along with up to five keywords per paper.

ICeM welcomes research articles on multiphase flow or articles on personalities in the field for inclusion in the future Newsletters. It would be very helpful if the manuscripts are sent by E-mail or diskettes are attached to the manuscript submitted.

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Second International Conference on Multiphase Flow

ICMF'95-KYOTO

April 3-7, Kyoto, Japan

The ICeM members are cordially invited to participate in the Second International Conference on Multiphase Flow to be held on April 3-7, 1995, in Kyoto, Japan. The number of papers presented has increased dramatically from 226 at the First Conference in Tsukuba, Japan in 1991 to over 350 at this conference. This second conference sponsors a forum on international technology sharing in the fields of energy, environment and health-related. This five-days conference will offer you a good opportunity to stimulate personal interactions or exchange of up-to-date research results and working experiences among people working in various multiphase flow areas.

The conference schedule has been slightly modified from the previous one announced in the ICeM NEWSLETTER No.3 (October, 1994) as given in the attached table.

The Conference will take place at the Kyoto International Conference Hall during a beautiful cherry blossom season. Kyoto is a most attractive venue, offering many opportunities for sightseeing, traditional foods and excellent shopping.

Participants are kindly advised to make preregistration as soon as possible. The registration fee will be

Regular participants: 60,000 Yen

Junior participants: 30,000 Yen

The fee includes conference attendance, Proceedings, receptions, banquet and refreshments during coffee breaks.

For more details and programs, please contact Prof. A. Serizawa, the Conference Chairman at the following address:

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The Organizing Committee and the Japanese members look forward to welcoming delegates to this Conference.

CONFERENCE SCHEDULE

Date	Hours	
April 3 (Mon)	9:00~	Registration
	10:30~11:10	Opening ceremony
	11:10~11:30	Coffee break
	11:30~12:30	Plenary lecture (Prof. R.I.Nigmatulin)
	12:30~14:00	Lunch
	14:00~16:00	Keynote lectures, Oral sessions
	16:00~16:20	Coffee break
	16:20~18:20 18:30~20:30	Keynote lectures, Oral sessions Welcome Reception
April 4 (Tue)	9:00~10:00	Plenary lecture (Prof. D.E.Stock)
	10:00~10:20	Coffee break
	10:20~10:50	Chairman's review for poster sessions
	10:55~12:35	Keynote lectures Oral & Poster sessions
	12:35~14:00	Lunch
	14:00~16:00	Keynote lectures, Oral sessions
	16:00~16:20	Coffee break
	16:20~18:20	Keynote lectures, Oral sessions Panel discussions (A, B)
April 5 (Wed)	9:00~10:00	Plenary lecture (Prof. K.Nishikawa)
	10:00~10:30	Coffee break
	10:30~12:30	Panel discussions (C, D, E)
	12:30~14:00	Lunch
	14:00~17:00	Forum "Creating a Brighter and Sustainable Future"
	18:30~20:30	Conference Banquet
	20:30~22:00	After Banquet Party
	April 6 (Thu)	9:00~10:00
10:00~10:20		Coffee break
10:20~10:50		Chairman's review for poster sessions
10:55~12:35		Keynote lectures Oral & Poster sessions
12:35~14:00		Lunch
14:00~16:00		Keynote lectures, Oral sessions
16:00~16:20		Coffee break
16:20~18:40		Keynote lectures, Oral sessions
April 7 (Fri)	9:00~10:00	Plenary lecture (Prof. G. Klinzing)
	10:00~10:15	Coffee break
	10:15~10:45	Chairman's review for poster sessions
	10:50~12:30	Oral & Poster sessions
	12:40~	Closing ceremony (Wine & cheese party)
	13:30~	Technical Tours

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