

The International Information Center for Multiphase Flow

NEWSLETTER

No.14

April 2000

The Japan Society of Multiphase Flow

**Report on The 3rd Baltic Heat Transfer Conference
Gdańsk, September 22-24, 1999**

by Brunon J. Grochal

The 3rd Baltic Heat Transfer Conference (3BHTC) was held on September 22-25, 1999 in Gdańsk and Sopot, Poland. The Conference was organized by the Institute of Fluid-Flow Machinery of the Polish Academy of Sciences, with support of sponsors: Gdańsk Refinery, ABB Zamech Ltd., The State Committee for Scientific Research Poland, The Wybrzeże Thermal-Electric Power Station Complex, and Thermodynamics and Combustion Committee of the Polish Academy of Sciences.

The conference was attended by about 100 persons from 16 countries, mostly from countries bordering the Baltic Sea. There were 5 invited lectures and 92 papers presented in 14 oral sessions and 1 poster session within the following subject groups: combustion and radiation (15), conduction (9), convection (36), heat exchangers (12); multiphase heat transfer (14), and miscellanea (11).

All papers delivered at the conference had been reviewed before acceptance for presentation and appeared in print in a hardcover book "Progress in engineering heat transfer" (editors - B.J. Grochal, J. Mikielewicz, B. Sundén).

To the understanding of the Local Organizing and Scientific Committee the 3BHTC created a good opportunity for promoting personal con-

tacts, professional co-operation, exchange of experience and integration of researchers in the field of heat transfer.

The scientific meeting was accompanied by some interesting social events. The participants especially appreciated tours to the Old Town Gdańsk and to the Malbork Castle.

The organization of the next 4th Baltic Heat Transfer Conference in 2003 has fallen by decision of the International Organizing and Scientific Committee of the BHTC Series to Lithuania.

The book "Progress in engineering heat transfer" may be ordered in IFFM Publishers, 14 Fiszera, 80-952 Gdańsk for Poland, and in Begell House, Inc., 79 Madison Avenue, New York, NY 10016, U.S.A. for outside Poland.

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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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**Report on International Symposium on Gas-Liquid Flows
Sun Francisco, USA, June 22-26, 1999**

by U. Rohatgi

This 1999 summer symposium has been sponsored by the Multiphase Flow Committee of the ASME Fluids Engineering Division and the Japan Society of Mechanical Engineers. The objective of the symposium is to bring together researchers and practicing engineers in the area of gas-liquid flows, share their knowledge, and discuss the state-of-the-art. This symposium is held every two years in the summer meeting of ASME Fluids Engineering Division.

Gas-liquid flows appear in a multitude of settings, some natural and some designed to achieve desired functions. Examples of the latter type of two-phase flows are; spray, drying, atomization, boiling which occurs in scrubbers, fountains, boilers, etc. However, two-phase flow can also appear in systems that are in accident conditions, such as inadvertent depressurization or heat up in nuclear reactors. The gas-liquid flows offer a challenge to our understanding due to the complex and stochastic nature of the interface. The flow regime determination is crucial for estimating the interfacial transfer processes. The modeling of two-phase flow requires many empirical correlations such as interfacial area density or coefficients of transfer processes at the interface or at the wall. The scaling of two-phase flow provides another challenge, as there are many length and time scales in every flow regime.

We are fortunate to have three invited talks. The first one is by Dr. Bhim Singh of NASA, and his

paper describes the current status of multiphase flow in the micro-gravity environment, and future opportunities. The second invited paper is by Dr. Koji Nishida of Hitachi, Ltd. And it describes the application of analytical and experimental methods for annular dispersed flow. The third invited paper is by Prof. Stephanie Zaleski of Universite Pierre et Marie Curie. This paper deals with radial and translational motion of viscous small bubbles. In addition, there are 27 contributed papers from many countries.

We hope that this volume will contribute to the advancement of two-phase flow knowledge and stimulate further research..

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MARK YOUR CALENDARS:

The 4th International Conference on Multiphase Flows (ICMF) will take place in New Orleans, Louisiana, USA. The dates of the Conference are May 27 to June 1, 2001.

DEADLINES: Abstracts are due by July 1, 2000. Authors will be notified on paper acceptance by October 15, 2000. Papers due January 15, 2001.

For more information on the conference may be found in the conference web site:
<http://mail.eng.lsu.edu/icmf2001/>

Stathis Michaelides
Conference chair

**Report on 15th European Conference on Thermophysical Properties
September 5-9, 1999, Würzburg, Germany**

by Jochen Fricke

The University of Würzburg and the Bavarian Center for Applied Energy Research hosted the 15th ECTP from 5th to 9th Sept 1999 in Würzburg, Germany. In the past this Conference has been held at 13 different European cities, some of them located at the edges of our continent.

Outstanding scientists, elected by the International Committee, made each of these meetings of the thermophysics community a special event and a demonstration of the innovation and the progress in the field. With about 530 abstracts received initially for ECTP 15 in Würzburg, the strength of the research activities within the thermophysics community is again underlined.

The Organising Committee in Würzburg had selected 10 topics of general interest and special importance for invited presentation by outstanding, well-known scientists. In addition 130 contributed oral papers and 200 poster papers have reported the recent progress in the various fields of thermophysics. Invited talks were given by: Prof. Egrý, Prof. Wittwer, Dr. Goodwin, Prof. Dr. Taylor, Prof. Dr. Cahill, Prof. Dr. Richter and Prof. Anisimov. Further highlights were the panel discussion "Science meets Industry" and three workshops on:

- Major Challenges for Fluids transport Property Research in the Next Century,
- Innovative Building Technology and
- Transient Methods for Measuring Thermophysical Parameters.

During ECTP15 two awards were announced:

- The ECTP15 Lifetime Award was given to Prof. Dr. Roy Taylor / UMIST
- while Dr. Steffen Rudtsch, Braunschweig received the ECTP15 Netzsch Award

The next Conference on Thermophysical Properties – according to the decision of the ECTP Scientific Committee – will be organised by Prof. W. A. Wakeham / Imperial College, London in September 2002.

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(Chairman of ECTP 15)
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To Members

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.

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.

Report on Eurotherm Seminar no. 63 - Single and Two-Phase Natural Circulation Genoa, Italy September 6-8, 1999

by F. Mayinger

The EUROTHERM Committee was created in 1986 by country members of the European Community. Its purpose is to organise and to co-ordinate scientific events such as seminars in the field of the thermal sciences. The primary aim is to stimulate discussion and connections between group of experts. The Eurotherm Committee has chosen Single and Two-Phase Natural Circulation as the subject of its 63rd Seminar held at the Energy and Environmental Conditioning Department of the University of Genoa, Italy, on 6-8 September 1999.

Natural circulation is an important phenomenon in many technological fields. Fluid-dynamic instabilities, both in one-phase and two-phase, and heat transfer, even at very low velocity and pressure, constitute typical critical issues, object of research.

The main objective of the Seminar was to promote scientific exchanges among specialists in the field, including energy conversion, cooling of electronic components, nuclear reactor applications, heat pipes, space applications, meteorology. Special emphasis was given to the following topics:

One-phase and two-phase natural circulation in integral test facilities, industrial and power plants;
Heat transfer in natural circulation;

Flow instabilities;

Numerical simulation;

Measurement techniques.

Methodologies related to models development, codes application, instrumentation development and use, design of experimental facilities and relevant experimental results, as well as data from technological system and state of the art reviews, were presented and discussed during the technical sessions.

The Seminar was attended by 60 people from 12 countries. Forty papers and two invited lectures were scheduled to be presented. Each paper was reviewed by two members of Scientific Committee both on the basis of the extended abstract and full paper. The papers presentation was organised into four different sessions.

The first one convection in cavities" concerned experimental and theoretical analysis. In particular some papers were focused on the cavities containing different types of heat sources under stable and unstable conditions, whereas other papers regarded the partially open cavities.

During the second session natural circulation in loops" were presented papers devoted both to

applications (cooling of electronic components, nuclear power plants) and the study of the phenomenology in closed loop.

The third session Boiling: fundamentals and applications" concerned the results of different pool boiling experiments on enhanced surfaces such as grooved tubes, finned surfaces, and coated surfaces, whereas some papers were focused on different aspects such as the boiling in presence of non condensing gas, piping pressure drops or the two-phase applications in the fields of nuclear power plants and thermosyphons.

The fourth session natural circulation in industrial and power plants" presented a lot of papers focused on the thermohydraulic aspects both nuclear power plants and reactors simulators. Different aspects were illustrated during the papers presentation: numerical simulation using system codes, sensitivity analysis, experimental results, applications in commercial nuclear reactors.

As regards the two invited lectures, the first one illustrated some experimental observations on the general trends of the steady-state and stability behaviour of single-phase natural circulation loops, whereas the second one was focused on the numerical simulation in single-phase natural circulation loops. The former was presented by Dr. P.K. Vijayan, and the latter by Dr. J.C. Ferreri.

We would like to acknowledge the contribution of the Scientific Committee for helping us to ensure the quality of the papers presented during the Seminar, and we would like to thank the authors, invited speakers, the session chairmen, and the Local Organise Committee.

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Report on 13th International Conference on Pipeline Protection Edinburgh, Scotland, September 29-October 1, 1999

by Tracey Wheeler

The above Conference took place in Edinburgh, Scotland on 29 September -1 October 1999. The Conference was well-attended with over 150 delegates, mainly from Europe but also some world-wide representation.

The Conference followed the format of the previous twelve Conferences (held every two years) and covered all disciplines associated with the protection of buried and subsea pipelines in both the oil and gas and also the water industry. As always, a selection of coatings for new pipelines was an important feature, in particular developments in three-layer systems (FBE, copolymer and either polypropylene or polyethylene) being prominent. The importance of field joint coatings being compatible and as good as the present pipe coating was featured in some papers. The use of thermally insulating coatings particularly subsea in the oil and gas industry was also featured to prevent waxing or hydrating on the internal surfaces. Thermally insulating coatings suitable for depths of 2000 metres subsea were covered in one paper.

The rehabilitation of pipelines where the existing coating has failed extensively was reviewed and procedures for carrying out this work were put forward. In addition the use of internal coatings for pipelines were considered and this included both epoxy and cement mortar systems.

Apart from coatings, development of cathodic protection for pipelines was reviewed in certain papers and progress in intelligent pigging was considered as well as leakage control, impact resistance and overall protection of the environment.

But perhaps one of the important features of the conference was the lively discussion between delegates which followed most papers.

The 14th International Conference on Pipeline Protection will be held in October 2001. For further details, please contact Mrs Tracey Wheeler, Conference Organiser, BHR Group Limited, The Fluid Engineering Centre, Cranfield, Bedfordshire MK43 0AJ, United Kingdom, tel: +44 1234 750422, fax: +44 1234 750074
email: twheeler@bhrgroup.com

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) (¥1,500 for members of the Japan Society of Multiphase Flow (JSMF)); the fee for 3 years (2000-2002) is ¥10,000 (¥4,500 for members of JSMF).
- 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 2000.
- Space may be bought in the Newsletter for advertisements. Please contact the Editor for details.

**Report on ICMH/ICFP'99
Shanghai, China, October 19-23, 1999**

by Wang Ruigang

The On 19~23 October 1999, the 3rd International Conference on Material Handling & International Conference on Freight Pipeline (ICMH/ICFP'99) was held in Shanghai, China. About 120 participants and paper authors coming from China, America, Japan, Korea, Australia and etc. attended this conference and 50 authors spoken their paper to the audience.

The topics of this conference include: State of the arts and development trends of the material handling; Logistics; Material handling facilities and systems; Freight pipeline (pneumatic, hydraulic and capsule conveying); Distribution center and automated warehouse; Systematic planning and layout; Lifting appliances; Conveying, loading & unloading equipment and systems; Industrial vehicles, AGVS; Automation (control, identification, order & picking), AS/RS; Computer application; Diagnosis and quality control; Economics and management of material handling systems; Material flow technique and environmental protection and so on. In the plenary session, these are seven person read their papers, they are: Professor Henry LIU (USA)—Past, Present, and Future of Capsule Pipelines for Freight Transportation; Professor Teruo TAKAHASHI (Japan)—A Study Concerning the Development of Logistics in Japan—Japanese Logistics Practice in 1999; Professor Kap Hwan KIM (Korea)— Container Logistics in Korea; President BAO Qifan (China)— Urging the Development of Waterway Transport of Standard Containers for the Domestic Trade; Professor ZHANG Jianwu (China)— Investigation to the Development of Elevators Technology; Dr. JING Ming (China)— The Recent Progress in AS/RS Technique; Professor Kap Hwan KIM (Korea)— A Distributed Control Strategy for Automated Guided Vehicle System in Port Container Terminals.

In recent years, GREEN and ENVIRONMENT PROTECTION have been some popular words said by general public, government offices, engineers and Entrepreneurs. The need of humans for clear sky, clean waters and air is stronger than any times ever. Therefore, everyone hope there are some new kinds of technologies could have less pollution and more efficient. They could be used for transportation, distribution, and city traffic... The aim of researching for material handling technology is so and freight pipeline technology is paid great attention to its clean, efficient, sparing soil and other advantage. As we know, there are many types of pipeline have been used for transportation for a long time, such as grain, mineral, gas and so on. Now freight pipeline is investigated to used for more and more general cargo intercity transportation. We should believe this technology would be ready for more commercial using in the future.

ICMH is a successive event of the International Conference on Advanced Technology and Equipment of Material Handling. It is held by Chinese Mechanical Engineering Society (CMES) every three or two years. From last conference, there is a special theme with every conference. Eg. Automation in warehousing or freight pipeline. In order to promoting the progress of the technology and equipment on material handling and their application, CMES wish this regular conference would continually act as a forum for all participants to share their ideas and achievements, as well as a place to meet new and old friends.

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Japan Society of Multiphase Flow (JSMF)

<http://flow.human.nagoya-u.ac.jp/JSMF/>

Robert I. Nigmatulin
(to his 60th birthday)

by Amir Gubaidullin



On the 17th of June, 2000, Professor Robert I. Nigmatulin, the outstanding scientist in the area of mechanics and mathematics, Full Member of the Russian Academy of Sciences, meets his 60th birthday.

Robert Nigmatulin was born in Moscow. In 1963 he graduated the Department of Power and Mechanical Engineering at the Bauman Technical University of Moscow, and in 1965 he received his second diploma at the Department of Mechanics and Mathematics of the Lomonosov State University of Moscow. The young scientist got his Ph.D. degree in 1967 and Dr. Sc. in 1971. In 1963 to 1986 he was employed in the Institute of Mechanics under the Lomonosov State University of Moscow where he worked his way from junior researcher to head of laboratory and professor. In 1986, in connection with the establishment of the Tyumen Research Centre in the Siberian Branch of the USSR Academy of Sciences Professor Nigmatulin was invited to the city of Tyumen where with a team of his former students he organized the Chair for Mechanics of Multiphase Systems at the Tyumen State University and the Institute of Multiphase Media Mechanics at the Siberian Branch of the Russian Academy of Sciences (RAS), as well as two councils for Dr. Sc. theses. He was elected the Associate Member of the USSR Academy of Sciences in 1987 and the RAS Full Member in 1991. In 1993 he was sent to the city of Ufa to head both the RAS Ufa Branch and the National Academy of Sciences of Bashkortostan Republic. In 1995 Professor

Nigmatulin entered the President's Council of Bashkortostan Republic. In 1996 he was elected the Deputy of the State Council and the Member of Government of Bashkortostan Republic, and in 1999 the Member of the Russian Parliament (Duma). He won the following awards: USSR State Prize (1983), USSR Lenin Komsomol Prize (1973), First Prize of the Siberian Branch of the USSR Academy of Sciences (1990), Gold Medal of the USSR Economical Achievements Exhibition (1989), Makeev Gold Medal of the Russian Federation of Astronautics (1996).

Professor Nigmatulin is an eminent expert in the area of mechanics who created a world-wide recognized scientific school (16 Doctors and 38 Candidates of Science – Ph.D.) on multiphase flow mechanics. He is a member of the National Committee on Theoretical and Applied Mechanics and that on Heat and Mass Exchange, the International Committee on Multiphase Flow, and editorial boards of many Russian and foreign journals such as International J. of Multiphase Flow, Transport in Porous Media, International J. of Heat and Mass Transfer, International J. of Experimental Thermal and Fluid Sciences, Multiphase Science and Technology, Heat Transfer, Thermodynamics and Fluid Mechanics, Russian J. of Engineering Thermal Physics, Applied Mechanics and Technical Physics, J. of Engineering Physics, Thermal Physics & Aeromechanics. He was a member of Organising and Scientific Programme Committees and invited lecturer of many international conferences, and employed as an invited professor to some universities in the USA and Europe.

Professor Nigmatulin is the author of more than 200 scientific articles and inventions including eight books. His books are the guides for those specialists who work in the field of mechanics and thermal physics of multiphase media. His two-volume book on "Dynamics of Multiphase Media" was translated into English and published in the USA.

His works made the greatest contribution into the solution of such basic problems as mathematical modelling of multiphase flow dynamics; hydraulic and gas dynamics of vapour and gas/liquid systems; combustion, detonation and explosion in dispersed media; filtration of multiphase liquids; and dynamics of elastoplastic media with physicochemical transformations.

Under the direction of Professor Nigmatulin topical studies and developments were carried out on the problems of safety of power and technological systems, novel oil and gas production techniques, enhancement of oil recovery, improvement of the

efficiency and intensification of technological processes in power engineering, oil refining, chemical engineering and explosion practice.

A specific nature of the mathematical description of multiphase media is in the fact that such characteristics and processes as compressibility, viscosity, strength, heat conductivity, chemical reactions etc. in individual phases appear much more difficult to be described. Besides, and this is the most principal point, there are the effects of phase structure and its variation, and those of phase interaction (phase transitions, pulse and energy exchange, capillary effects, chaotic motion, rotation and particle collision, fragmentation, coagulation and others). Thus, the number of processes that should be taken into account in equations increases greatly. Professor Nigmatulin proposed a nontrivial general formulation of the problem on the motion of multiphase media and techniques for describing of intraphase and interphase processes based both on the methods of averaging microequations and phenomenological ones, as well as a method brought to perfection to construct closed sets of equations for dynamics and thermodynamics of various types of multiphase media. He succeeded to recognize an extremely important class of motion of those mixtures that contain a gas phase when the latter has a homogeneous time variant pressure. This class was called homobaric, and in this case it is possible to simplify the set of equations for dynamics of the mixture and to derive the solutions of corresponding boundary problems by means of analytical or simple numerical methods.

The effects of non-heterogeneity become most evident under wave propagation. Professor Nigmatulin and his collaborators have established the laws for propagating different kinds of waves (those of compression, rarefaction combustion and detonation) in two-phase systems of different structure and found a number of new effects. The existence of shock waves has been shown that have continuous monotonous and oscillating structure when the effects of wave nonstationary state are of great importance. The decisive role of phase heat and mass exchange at shock waves propagating in bubble media has been determined. These studies are for dozens of years ahead of foreign investigations. The mechanism of abnormal increase or accumulation of shock waves in boiling liquids has been clarified. The existence of various types of detonation waves in combustible gaseous suspensions has been theoretically forecast, with conditions given for their realization. Some of problems on the flow of vapour/liquid mixtures and boiling liquids out of spaces under high pressure have been set, and efficient methods have been developed to solve those problems. The conditions for critical outflow of a vapour/liquid mixture have been determined. The results of Professor Nigmatulin's investigations on wave dynamics, explosion theory and critical outflow present a scientific basis for the

analysis of large-scale accidents at nuclear power plants, mines and other places where two-phase combustible and noncombustible mixtures occur.

The investigations carried out under the direction of Professor Nigmatulin allowed to find a mechanism of coking tube furnaces applied for heating up hydrocarbon raw material, which relates not only with kinetics of chemical reactions, but also with hydrodynamics of the gas/liquid flow. As a result some arrangements were suggested to ensure against this occurrence. The realization of even some of these arrangements at large-capacity furnaces of oil refining plants made it possible to improve the quality of production and extended considerably their overhaul life.

Professor Nigmatulin has contributed much to the theory of high-speed deformation of solids with polymorphic transformations in them, formation and motion of dislocations, strengthening of metals under explosive loads. He was the first to formulate and solve the problem on high-velocity collision of elastoplastic bodies undergoing phase transitions when a multiphase motion pattern evolves. In doing so he had forecast a number of effects that later on found their brilliant experimental verification. Thorough investigations resulted in proving the decisive role of phase transitions under abnormal strengthening of low-carbon steel through explosion, deriving equations that describe superplasticity, developing a theoretical-and-experimental procedure to determine the kinetics of dislocation processes on the basis of inverse problems solved.

During the recent years Professor Nigmatulin have been working, with the enthusiasm characteristic of him, over the problem of controlling the collapse of gas bubbles in liquid with the purpose to obtain superhigh temperatures in gas. Such a problem may have wide applications. The phenomenon of gas bubble luminescence in the acoustic field was called sonoluminescence. By virtue of high temperatures produced in the bubbles, the acoustic field can initiate some chemical reactions impossible under any other conditions (sonochemistry). But the most impressive is the fact that a thermonuclear reaction may be start within the bubbles under superhigh temperatures. The deuterium bubbles in heavy water under superhigh compressions can liberate thermonuclear power ("bubble fusion"). Yet ordinary ultrasound is not enough in this case. The main idea of the novel approach put forward by Professor Nigmatulin is in coordination of the process of pressure variation in the liquid with forced bubble oscillations and employment of nonlinear resonance under the nonperiodical action of the external pressure field of moderate amplitude that he called "dribbling regime". To realize this idea a problem was formulate and solved on spherically symmetric oscillations of a gas bubble in compressible liquid. Based on the obtained analytical solution an efficient computer code was developed for mathematical modelling of bubble collapse with the account

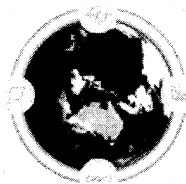
for various dissipative mechanisms, such as viscosity, heat conductivity, radiation, ionization, wave processes around and inside the bubble, and heat and mass exchange between the bubble and surrounding liquid at superhigh bubble compressions.

In his bright and many-sided nature Professor Nigmatulin is lucky to combine the talent of scientist and lecturer, gifted organizer of science, and rare personal qualities. As a man possessing great capacity for work, always enthusiastic and able to captivate his associates with new scientific problems ahead Professor Nigmatulin presents an ex-

ample of true scholar for his students, colleagues and younger scientists.

It is with cordial feelings his former students, friends and colleagues congratulate Professor Robert Nigmatulin with this remarkable jubilee and wish him health, long life and new prominent advances.

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6th World Congress of Chemical Engineering

23 – 27 September 2001

Melbourne Exhibition and Convention Centre

Australia

KEY DATES FOR PAPER SUBMISSION

	Peer Review	Fast Track Review
Receipt of Abstract Deadline	Sept 30, 2000	Nov 30, 2000
Notification of Abstract Acceptance	Oct 31, 2000	Jan 31, 2001
Receipt of Manuscript	Mar 31, 2001	Apr 30, 2001
Authors advised of any changes	May 31, 2001	May 31, 2001
Receipt of Final Manuscripts	Jun 15, 2001	Jun 15, 2001

Full Peer Review is peer review of the highest international academic standard used for academic purposes. Any paper submitted after the deadline for Full Peer Review will be automatically included in the Fast Track Review.

Fast Track Review is review for editorial content suitable for industry papers and others who are not concerned with having their papers fully peer reviewed.

The Meeting Planners, 108 Church Street Hawthorn, Victoria Australia 3122
Tel: 61-3-9819-3700, Fax: 61-3-9819-5978
E-mail: chemeng@meetingplanners.com.au <http://www.chemengcongress.com>

Future Meetings

Listings include Conference Name, Place, Date and Contact.

3rd International Symposium on Turbulence, Heat and Mass Transfer

Nagoya, JAPAN, April 3-6, 2000
Prof. Y. Nagano, Department of Environmental
Technology Graduate School of Engineering
Nagoya Institute of Technology
Gokiso-cho, Showa-ku, Nagoya 466-8555, Japan
Fax: +81-52-735-5359; E-mail:
nagano@heat.mech.nitech.ac.jp
<http://heat.mech.nitech.ac.jp/thmt3>

INFUB-5, 5th European Conference on Industrial Furnaces and Boiler

Espinho-Porto, PORTUGAL, April 11-14, 2000
Prof. A. Reis, Fax: +351 2 973 0746
E-mail: conference@infub.pt

8th International Conference on PRESSURE SURGES Safe Design and Operation of Industrial Pipe Systems

The Hague, THE NETHERLANDS, April 12-14, 2000
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<http://www.bhrgroup.co.uk/confsite/index.html>

Symposium BB: The Granular State Materials Research Society Spring Meeting

San Francisco, CA, USA, April 24-28, 2000
Dr. Surajit Sen, SUNY-Buffalo, Dept. of Physics,
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4th International Boiling Conference

Anchorage, ALASKA, USA, April 30 - May 5, 2000
Prof. A. Bar-Cohen, Fax: +1 612 624 1398
E-mail: abc@cdtl.umn.edu
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First International Conference on Environmental Impacts of Energy Utilization (EIEU-1)

Cairo, EGYPT, May 1-4, 2000
Prof. Saad A. Ragab, Engineering Science and
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Oceanic Imaging Conference 2000

Goat Island, Newport, RI, USA, May 2-5, 2000
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E-mail: Sullivanvej@tech.npt.nuwc.navy.mil
<http://www.nuwc.navy.mil/hq/events/events.html>

ESCAPE-10, European Symposium on Computer Aided Process Engineering

Florence, ITALY, May 7-10, 2000
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E-mail: escape10@aidic.it
<http://www.aidic.it/escape-10/escape10.html>

Conference: Effects of Coal Quality on Power Plant Performance: Ash Problems, Management, and Solutions

Park City, Utah, USA, May 8-11, 2000
United Engineering Foundation
Three Park Avenue, New York, NY 10016-5092
Tel: +1-212-509-7836, Fax: +1-212-509-7441
E-mail: engfnd@aol.com
<http://www.engfnd.org>

8th Canadian Microgravity Conference, Spacebound 2000

Vancouver, British Columbia, CANADA
May 14-17, 2000
Prof. Donald Brooks
University of British Columbia Department of
Pathology
Ms. Kim Vincelette, Microgravity Sciences
Program Canadian Space Agency
E-mail: Kim.Vincelette@space.gc.ca,
spacebound@sp-agency.ca
<http://www.science.sp-agency.ca/spacebound.htm>

14th ASCE Engineering Mechanics Division EMD 2000 Conference

University of Austin, USA, May 21-24, 2000
Dr. Jin Y. Ooi
School of Civil & Environmental Engineering
University of Edinburgh, Edinburgh, Edinburgh
EH9 3JN, UK
Tel: +44-131-650-6781, Fax: +44-131-650-6781
E-mail: jin@civ.ed.ac.uk

4th Minsk International Heat and Mass Transfer Conference

Minsk, BELARUS, May 22-26, 2000
Dr. I. Gurevich, Fax: +375 17 232 2513
E-mail: igur@hmti.ac.by

**The Third Israeli Conference for Conveying and Handling of Particulate Solids
Joined with the Tenth International Freight Pipeline Society Symposium**

The Dead Sea, ISRAEL, May 29- June, 2000
Dr. Haim Kalman, Department of Mechanical Engineering, Ben-Gurion University of the Negev, P.O.Box 653, Beer-Sheva, 84105, Israel
Tel:+972-7-6477099, Fax:+972-7-6472813
E-mail:kalman@menix.bgu.ac.il

5th International Conference on Cyclone Technologies

Warwick, UK, May 31 - June 2, 2000
BHR Group Limited
The Fluid Engineering Center
Cranfield, Bedfordshire MK43 0AJ, UK
F.A.O. Marian Rolfe
Tel: +44 (0) 1234-750422, Fax: +44 (0) 1234-750074
E-mail: mrolfe@bhrgroup.com
<http://www.bhrgroup.com/confsite/index.html>

Renewable Technologies for Sustainable Development

Madeira, PORTUGAL, June 2000
Prof. M.G. Carvalho, Fax: +351 1 847 5545/726 2633
E-mail: maria@navier.ist.utl.pt

Integral Methods in Science and Engineering 2000

Alberta, CANADA, June 12-15, 2000
Dr. P. Schiavone, Department of Mechanical Engineering, University of Alberta, 4-9 Mechanical Engineering Building, Edmonton, ALBERTA, T6G 2G8, CANADA
Tel: (403)492-3638, Fax: (403)492-2200
E-mail: Peter.Schiavone@ualberta.ca

ASME – ZSITS International Thermal Science Seminar

Bled, SLOVENIA, June 18-21, 2000
Prof. Iztok Golobič, University of Ljubljana, Faculty of Mechanical Engineering
Aškerčeva 6, 1000 Ljubljana, SLOVENIA
Tel: +386 61 1771 420
Fax: +386 61 218 567
E-mail: iztok.golobic@uni-lj.si
<http://www.ltt.uni-lj.si/itss2000/>

Fourteenth Symposium on Thermophysical Properties

Boulder, Colorado, USA, June 25-30, 2000
Prof. B. Stevenson, Fax: +1 303 497 5044
E-mail: becky.stevenson@nist.gov

Heat Transfer 2000, 6th International Conference on Advanced Computational Methods in Heat Transfer

Madrid, SPAIN, June 26-28, 2000
Mrs. Susan Hanley, E-mail:
shanley@wessex.ac.uk

New and Renewable Technologies for Sustainable Development

Madeira, PORTUGAL, June 26-29, 2000
Ms. M.F. Alonso, Fax: +351 21 8475545/726 26 33
Email: renewables2000@esoterica.pt

8th European Turbulence Conference

Barcelona, SPAIN, June 27-30, 2000
ETC8 Secretariat-Barcelona, International Center for Numerical Methods in Engineering,(CIMNE)
C1 Campus Nord Univ. Politècnica de Catalunya, Barcelona E-08034, Spain
Tel: +34+932057016, Fax: +34-934016517
E-mail: leia@cimne.upc.es

18th UIT National Heat Transfer Conference

Como, ITALY, June 28-30, 2000
Prof. A. Niro, Fax: +39 02 23993940
E-mail: alfonso.niro@polimi.it

International Conference on Fluid and Thermal Energy Conversion 2000 (FTEC 2000)

bandung, INDONESIA, July 2-6, 2000
<http://www.pauir.itb.ac.id/FTEC2000>

10th European Conference on MIXING

THE NETHERLANDS, July 2-5, 2000
Prof. H.E.A. Van den Akker, Dept. University of Technology, NL
Tel: +32 3 216 09 96, Fax: +32 3 216 06 89
E-mail: mixing@conferences.ti.kviv.be
<http://www.ti.kviv.be/conf/mixing.htm>

7th Australasian Heat and Mass Transfer Conference

Townsville, Queensland, AUSTRALIA, July 3-6, 2000
John Patterson-Chair, Gary Brassington-Secretary, James Cook University
Tel: +61 7 4781 4346, Fax: +61 7 4775 11847
E-mail: 7ahmtc@jcu.edu.au
<http://www.eng.jcu.edu.au/AHMT/>

ECOS 2000, International Conference on Efficiency, Cost, Optimisation, Simulation and Environmental Aspects of Energy and Process Systems

Enschede, THE NETHERLANDS, July 5-7, 2000
Prof. G.G. Hirs, E-mail: ecos2000@wb.utwente.nl

5th Biennial Conference on Engineering Systems Design & Analysis (ESDA 2000)

Montreux, SWITZERLAND, July 10-13, 2000
ASME International Petroleum Division
Tel:281-493-3491 Fax:281-493-3493
E-mail:petroleum@asme.org
<http://www.asme.org/petroleum-division>

10th International Symposium on Applications of Laser Techniques to Fluid Mechanics

Lisbon, PORTUGAL, July 10-13, 2000
LADOAN-10
c/o Prof. M V Heitor
Dept. of Mechanical Engineering Instituto
Superior Tecnico
Av. Rovisco Pais, 1049-001 Lisboa, Portugal
Tel: +351-1-841-73-79/77-32 Fax: +351-1-849-61-56
E-mail: llaser@in3.dem.ist.utl.pt
<http://in3.dem.ist.utl.pt/lisboa-laser>

2000 World Conference on Mathematics and Computers in Mechanical Engineering
Vouliagmeni (Athens), GREECE, July 10-15, 2000
<http://www.softlab.ntua.gr/~mastor/mcme2000.htm>

ISTP-12, 12th International Symposium on Transport Phenomena
Istanbul, TURKEY, July 16-20, 2000
Dr. I. Dincer, Fax: +966 3 860 2949
E-mail: idincer@kfupm.edu.sa

DROP-Surface Interactions, Advanced School and Workshop
Udine, ITALY, July 17-21, 2000
CISM, Palazzo del Torso, Piazza Garibaldi 18,
33100 Udine, Italy
Tel: +39-0432248511, Fax: +39-0432248550
E-mail: cism@cism.it, <http://www.cism.it>

5th International Symposium on Heat Transfer
Beijing, CHINA, August 12-16, 2000
Professor B.X. Wang, Director, Institute for Thermal Science and Engineering, Tsinghua University
Beijing 100084, China, E-mail:
bxwang@tsinghua.edu.cn

Turbine-2000, International Symposium on Heat Transfer in Gas Turbine Systems
Cesme, Izmir, TURKEY, August 13-18, 2000
Prof. R. J. Goldstein
University of Minnesota, Department of Mechanical Engineering
111 Church Street S. E. Minneapolis, MN 55455
Tel: +1-612-625-5552, Fax: +1-612-625-3434
E-mail: rjg@me.umn.edu
Prof. Faruk Arinc, ICHMT Secretary-General
Mechanical Engineering Department Middle East Technical University, 06531 Ankara, Turkey
Tel: +90 312-210-5214, Fax: +90 312-210-1331
E-mail: arinc@metu.edu.tr
<http://ichmt.me.metu.edu.tr/upcoming-meetings/Turbine-2000/announce.html>

34th National Heat Transfer Conference
Pittsburgh, PA, USA, August 20-22, 2000
Prof. S.C. Yao; E-mail: scyao@cmu.edu
Session on Fundamental Aspects of Critical Heat Flux in Pool and Flow Boiling
Prof. S.G. Kandlikar; E-mail: sgkeme@rit.edu

Prof. M. Kawaji; E-mail: kawaji@ecf.utoronto.ca

5th International Conference on Measurement and Control of Granular Materials (MCGM 2000)
Xi'an, CHINA, August 21-23, 2000
Dr. Jingbo Xia, MCGM 2000 Secretariat, P.O Box 321 Northeastern University Shenyang 110006 P.R.China
Fax: 86-24-23891977
E-mail: mcbgm@mail.neu.edu.cn
<http://202.118.21.8>

9th International Symposium on Flow Visualization
Edinburgh, Scotland, UK, August 22-25, 2000
Prof. I. Grant, Heriot-Watt University, Edinburgh, Scotland, EH105PJ, UK
Tel: +44-131-447-8800, Fax: +44-131-447-8660
E-mail: 9misfv@ode-web.demon.co.uk
<http://www.ode-web.demon.co.uk/9misfv/>
<http://www.ode-web.demon.co.uk/post-conf-web/flyer.html>

CHISA 2000 14th International Congress of Chemical and Process Engineering
Praha, CZECHOSLOVAKIA, August 27-31, 2000
Tel: +420-2-2108-2333, Fax: +420-2-2108-2336
E-mail: chisa@icpf.cas.cz, <http://www.chisa.cz>

20th- International Congress of Theoretical and Applied Mechanics
Chicago, IL, USA, August 27-September 2, 2000
Prof. James W. Phillips, Secretary-General, ICTAM 2000, Department of Theoretical and Applied Mechanics, University of Illinois at Urbana-Champaign, 216 Talbot Laboratory, 104 South Wright Street, Urbana, IL 61801-2983, USA
Tel: +1-217-333-4388, Fax: +1-217-244-5707
E-mail: ictam2000@tam.uiuc.edu, <http://www.tam.uiuc.edu/ICTAM2000>

BEM (Boundary element method) 22
Cambridge University, UK, September 4-6, 2000
Susan Hanley
E-mail: REMOVE@WESSEX.AC.UK
<http://www.wessex.ac.uk/conferences/2000/BEM22>

The Fourth International Conference on Supercomputing in Nuclear Applications (SNA2000)
Tokyo, JAPAN, September 4-7, 2000
Dr. Hideo Kaburaki
Center for Promotion of Computational Science and Engineering, Japan Atomic Energy Research Institute
Tel: +81-3-5723-2513
Fax: +81-3-5723-2537
E-mail: sna2000@koma.jaeri.go.jp
<http://cispcer.tokai.jaeri.go.jp/sna2k/>

4th Minsk International Seminar: Heat Pipes, Heat Pumps, Refrigerators

Minsk, BELARUS, September 4-7, 2000
Prof. L.L. Vasilev, E-mail: lvasil@ns1.hmti.ac.by

5th Workshop on Transport Phenomena in Two-Phase Flow

Pamporovo, BULGARIA, September 6-11, September 2000
Prof. C. Boyadjiev, Fax: +359 2 707 523; E-mail: chboyadj@bas.bg

33rd Solid Mechanics Conference

Zakopane, POLAND, September 5-9, 2000
Organizing Committee SolMech 2000
Institute of Fundamental Technological Research,
Swietokrzyska 21, 00-049 Warsaw POLAND
Tel:+48-22-826-8802, Fax: +48-22-826-9815
E-mail: solmech@ippt.gov.pl
<http://bimbo.ippt.gov.pl/solmech>

3rd European Thermal Sciences Conference

Heidelberg, GERMANY, September 10-13, 2000
Prof. E. Hahne, Fax: +49 711 685 3503,
E-mail: pm@itw.uni-stuttgart.de
<http://www.werg.casaccia.enea.it/eurotherm/frame.html>

1st International Symposium on Microgravity Research & Applications in Physical Sciences & Biotechnology

Sorrento, ITALY, September 10-15, 2000
ESTEC, Fax: +31 71 565 5658
E-mail: confburo@esyec.esa.nl

16th Annual Conference on Liquid Atomization and Spray System

Darmstadt, GERMANY, September 11-13, 2000
Prof. C. Tropea, Fax: +49 6151 164 754
E-mail: ctropea@sla.tu-darmstadt.de

7th International Conference on Multiphase Flow in Industrial Plants, ANIMP

Bologna, ITALY, September 14-16, 2000
A. Valenti, Tel: +39 02 607 0242
Fax: +39 02 607 0245; E-mail: animp.anna@iol.it

8th International Conference on Heat Transfer and Renewable Sources of Energy

Leba, POLAND, September 18-20, 2000
Dr. Z. Zapalowicz, Fax: +48 91 4330 263
E-mail: zapal@safona.tuniv.szczecin.pl

Mining 2000 International Convention and Trade Exhibition

Melbourne, AUSTRALIA, September 19-22, 2000
<http://www.mining2000.com.au/>

Global Conference on Flow Metering Control for New Millennium

Palakkad, Kerala, INDIA, September 20-22, 2000
Dr. V. Jayaraman
Fluid Contrl Research Institute
Kanjikode West, Palakkad-678 623, Kerala, INDIA
Tel: +91(0)491-566120, 566206, 566119
Fax: +91(0)491-566326
E-mail:fluidcon@md2.vsnl.net.in

2nd Japanese-European Two-phase Flow Group Meeting

Tsukuba, JAPAN, September 25-28, 2000
(Abstract due: July 1, 2000)
Prof. G. Matsui, Fax: +81-298-53-5207
E-mail:matsui@kz.tsukuba.ac.jp
Prof. I. Zun, Fax: +386-61-1254-217
E-mail:iztok.zun@fs.uni.lj.si

2nd International Symposium on Underground Freight Transportation by Capsule Pipelines and Other Tube/Tunnel Systems (ISUFT 2000)

Delft, THE NETHERLANDS, September 28-29, 2000
OTB Research Institute for Housing, Urban and Mobility Studies
Anne Marie Kraal, PO Box 5030, 2600 GA Delft, THE NETHERLANDS
Fax: +31-15-278-44-22, E-mail: kraal@otb.tudelft.nl

4th JSME-KSME Thermal Engineering Conference

Kobe, JAPAN, October 1-4, 2000
Tel: +81-724-51-2449
Fax: +81-724-51-2637
Prof. Mishima (Multiphase Flow)
E-mail: mishima@rri.kyoto-u.ac.jp
<http://www.mech.kobe-u.ac.jp/jktec/home.html>

ENCIT-2000, The Brazilian Congress on Thermal Engineering and Sciences

Porto Alegre, BRAZIL, October 3-6, 2000
ENCIT 2000, Fax: +55 51 316 3355
E-mail: encit@mecanica.ufrgs.br

International Workshop on Current Status and Future Directions in Boiling Heat Transfer and Two-Phase Flow

Osaka, JAPAN, October 5-6, 2000
Prof. M. Ozawa, Fax: +81 78 881 0036
E-mail: ozawa@kansai-u.ac.jp
Prof. S. Kandlikar, Fax: +1 716 475 7710
E-mail: sgkeme@rit.edu

Heat Transfer and Transport Phenomena in Microsystems

Banff, CANADA, October 15-20, 2000
Dr. G.P. Celata, Tel: +39 06 3048 3905
Fax: +39 06 3048 3026
E-mail: celata@casaccia.enea.it
Dr. G. Zummo, Tel: +39 06 3048 4567
Fax: +39 06 3048 3026
E-mail: zummo@casaccia.enea.it

Engineering Foundation
Fax: +1 212 591 7441
E-mail: engfnd@aol.com

The Second International Symposium on Fluid Machinery and Fluid Engineering (2nd-ISFMFE)

Beijing, CHINA, October 22-25, 2000
Prof. Yulin WU, Department of Hydraulic Engineering, Tsinghua University, Beijing, CHINA 100084
Tel: +86-10-62782187, Fax: +86-10-62785699
E-mail: wyl-dhh@mail.tsinghua.edu.cn

Australian Society for Bulk Solids Handling-BULKEX 2000 Conference

Melbourne, AUSTRALIA, Oct 31- Nov 2, 2000
Prof. Gary James
E-mail: Jramage@bigpond.com

AIChE Annual Meeting

Los Angeles, CA, USA, November 12-17, 2000
(Abstract due: May 1, 2000)

Area 3b Fluidization and Fluid-Particle Systems-14 Sessions

Dr. Manuk Colakyan, Mgr, Reaction Systems Solids Processing
Union Carbide Corporation
Process Engineering & Engineering Tech, P. O. Box 8361
So. Charleston, WV 25303
Tel: +304-747-4580, Fax: +304-747-5999
E-mail: colakymc@ucarb.com
Prof. Leon R. Glicksman, Massachusetts Institute of Technology
77 Massachusetts Ave-Room 5-418, Cambridge, MA 02139-4307
Tel: +617-253-2233, Fax: +617-253-6152
E-mail: glicks@mit.edu
3b6-"Heat and Mass Transfer in Fluidization and Fluid/Solid Systems"
(Abstract due: May 1, 2000)
Dr. Mike Dou
Exxon Mobil Research and Engineering Co.
600 Billingsport Road, Paulsboro, NJ 08066, USA
Tel: +856-224-2543, Fax: +856-224-3829
E-mail: mike_s_dou@email.mobil.com

Bulk Technology 2000-Conference & Exhibition

Dusseldorf, GERMANY, November 2-3, 2000
Millennium Conferences International "Chantry House" 156 Bath Road, Maidenhead, Berkshire SL6 4LB, United Kingdom
Tel: +44 (0) 1628-580-246, Fax: +44 (0) 1628-580-346
E-mail: Bulk2000@millenniumconferences.com
<http://www.millenniumconferences.com>

MFTP-2000, International Symposium on Multiphase Flow and Transport Phenomena

Antalya, TURKEY, November 5-10, 2000
Prof. Faruk Arinc, ICHMT Secretary-General,
Mechanical Engineering Department Middle East

Technical University, 06531 Ankara, Turkey
Tel: +90 312-210-1429 or 5214
Fax: +90 312-210-1331 or 1266
E-mail: arinc@metu.edu.tr
Prof. David Moalem Maron, Holon Academic Institute of Technology
POB 305, Holon 58102, Israel
Tel: +972-3-502-6501, Fax: +972-3-502-6510
E-mail: barad_r@barley.cteh.ac.il
<http://ichmt.me.metu.edu.tr/upcoming-meetings/MFTP-00/announce.html>

2000 ASME International Mechanical Engineering Congress and Exposition (IMECE 2000)

Orlando, Florida, USA, November 5-10, 2000
• Heat Transfer Enhancement in Multiphase Flow

Prof. C. Herman, Fax: +1 410 516-7254
E-mail: herman@titan.me.jhu.edu
Dr. J.R. Riznic, Fax: +1 613 943-8954
E-mail: riznic.j@atomcon.gc.ca
Fundamentals of Heat Transfer in Microdevices and Microsystems
Prof. C.C. Wong, Fax: +1 505 844 4523
E-mail: ccwong@engsci.sandia.gov
Emerging and New Technologies for Heat Pump and Refrigeration Cycles
Prof. A. Zaltash, Fax: +1 423 574 9338
Email: zaltasha@ornl.gov
• Dispersed Flows in Combustion, Incineration and Propulsion Systems
Prof. D. E. Nikitopoulos, Mechanical Eng. Dept.
Louisiana State Univ. Baton Rouge, LA 70803
Tel: +1-504-388-5903, Fax: +1-504-388-5924
E-mail: meniki@me.lsu.edu

4th EUROMECH Fluid Mechanics Conference
Eindhoven, THE NETHERLANDS, November 19-23, 2000

M.C.J. Tielemans, Fax: +31 40 246 4151
E-mail: info@efmc2000.tue.nl

First Asian Particle Technology Symposium(APT 2000)

Bangkok, THAILAND, December 13-15, 2000
Prof. Yoshinobu Fukumori
E-mail: fukumori@pharm.kobegakuin.ac.jp
Dr. Tawatchai Charinpanitkul
E-mail: ctawat@pioneer.chula.ac.th
Fax: +662-218-6480

4th International Symposium on Mixing in Industrial Processes

Toulouse, FRANCE, May14-16, 2001
(Abstract due: May15, 2000)
18 chemin de la Loge 31078 Toulouse Cedex 4-France
Tel: +33-(5)-62-25-23-80, Fax: +33-(5)-62-25-23-18
E-mail: progep-ismip4@ensigt.fr
<http://www.univ-inpt.fr/~ISMIP4>

The 10th International Conference on Fluidization

Bijing, CHINA, May 20-25, 2001
Prof. Mooson Kwauk, Tel: +86-10-6255-8318
Fax: +86-10-6255-8065
E-mail: moodon@lcc.icm.ac.cn.

2nd ICHMT Symposium on Advances in Computational Heat Transfer

Palm Cove, Queensland, AUSTRALIA, May 20-25, 2001
(Abstract due: August 1, 2000)
Prof. Graham de Vahl Davis, Computational Fluid Dynamics Research Laboratory, School of Mechanical and Manufacturing Engineering, University of New South Wales, Sydney, NSW, Australia 2052
Tel: +61-2-9385-4099, Fax: +61-2-9663-1222
Email: cht01.mech.unsw.edu.au

ICMF 2001-New Orleans

4th International Conference on Multiphase Flow
New Orleans, Louisiana, USA, May 27-June 1, 2001

(Abstract due: July 1, 2000)
Prof. E. Michaelides
School of Engineering, Tulane University
New Orleans LA 70118, USA
Tel: +1-504-865-5764, Fax: +1-504-862-8747
E-mail: emichael@mailhost.tcs.tulane.edu
<http://mail.eng.lsu.edu/icmf2001/>

Radiation-2001, Third International Symposium on Radiative Transfer

Antalya, TURKEY, June 10-15, 2001
(Abstract due: December 15, 2000)
Prof. Faruk Arinc
Secretary-General, ICHMT
Mechanical Engineering Department
Middle East Technical University, 06531 Ankara, Turkey
Tel: +90 312 210 5214, Fax: +90 312 210 1331
<http://ichmt.me.metu.edu.tr/upcoming-meetings/Rad-01/announce.html>

Chemical Reaction Engineering VIII, Chemical Reactor Engineering 2000: Novel Reactor Engineering for the New Millennium

Barga, ITALY, June 24-29, 2001
(Abstract due: May 1, 2000)
Prof. Franco Berruti (Department of Chemical Engineering, Dean of Engineering, College of Engineering, University of Saskatchewan
57 Campus Drive, Saskatoon, Saskatchewan S7N 5A9, Canada.
Tel: +1-306-966+5273, Fax: +1-306-966-5205
E-mail: F. Berruti@engr.usask.ca

After July 1, 2000: Dean of Engineering, Faculty of Engineering Science, The University of Western Ontario, London, Ontario, Canada.
Tel: +1-519-661-2144, Fax: +1-519-661-3498
E-mail: berruti@eng.uwo.ca
United Engineering Foundation
E-mail: engfnd@aol.com
<http://www.engfnd.org>

Second International Symposium on Turbulence and Shear Flow Phenomena

Stockholm, SWEDEN, June 27-29, 2001
(Abstract due: September 1, 2000)
Prof. M. A. Leschziner (QMW, U. London), Prof. N. Kasagi (Univ. Tokyo)
<http://www.mech.kth.se/tsfp2>

6th World Congress of Chemical Engineering

Melbourne AUSTRALIA, September 23-27, 2001
(Abstract due: September 30, 2000)
The Meeting Planners, 108 Church Street Hawthorn, Victoria Australia 3122
Tel: 61-3-9819-3700, Fax: 61-3-9819-5978
E-mail: chemeng@meetingplanners.com.au
<http://www.chemengcongress.com>

5th World Conference on Experimental Heat Transfer, Fluid Mechanics and Thermodynamics

Thessaloniki, GREECE, September 24-28, 2001
(Abstract due: July 28, 2000)
Dr. G.P. Celata, Tel.: +39 06 3048 3905
Fax: +39 06 3048 3026
E-mail: celata@casaccia.enea.it
Dr. P. Di Marco, Tel: +39 050 569 610
Fax: +39 050 569 666
E-mail: p.dimarco@ing.unipi.it

VIM-01, International Symposium on Visualization and Imaging in Transport Phenomena

Antalya, TURKEY, October 14-19, 2001
(Abstract due: May 1, 2001)
Prof. S. Sideman
Department of Biomedical Engineering
Technion, IIT, Haifa 32000, ISRAEL
Tel: +972-4-829-4139, Fax: +972 4 822 4131
E-mail: sam@biomed.technion.ac.il
<http://ichmt.me.metu.edu.tr/upcoming-meetings/Vim-01/announce.html>

2nd International Conference on Computational Heat and Mass Transfer

Rio de Janeiro, BRAZIL, October 22-26, 2001
(Abstract due: October 30, 2000)
22-26 Ottobre 2001 Prof. R. Cotta
Fax: +55 21 290 6626
E-mail: cotta@serv.com.ufrj.br
<http://www.ltcc.com.ufrj.br/ICHMT/>

Corresponding Members

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E-MAIL: kawaji@ecf.toronto.edu

Prof. S.B.Savage

McGill University
TEL: +1-514-398-6864, FAX: +1-514-398-7361

FRANCE

Prof. J.M.Delhaye

CEA/GRENOBLE
TEL: +33-2--76-88-42-75, FAX: +33-2-76-88-31-96
TLX: 320 323, E-MAIL: DELHAYE@DTP.CEA.FR

Prof. G.Gouesbet

INSA de Rouen
TEL: +33-2-35-52-83-91, FAX: +33-2-35-52-83-90

F.R.G.

Dr. J.Domnick

Fraunhofer-Institut fuer
TEL: +49-711-970-1762, FAX: +49-711-970-1004
E-MAIL: jhd@IPA.FhG.de

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Martin-Luther-Universitat
TEL: +49-3461-462879 (or 2806), FAX: +49-3461-462878
E-MAIL: martin.sommerfeld@vt.uni-halle.de

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Heat Transfer Unit Head
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E-MAIL: celata@casaccia.enea.it, TLX: 613296
ENEACAI

ISRAEL

Prof. G.Hetsroni

Israel Institute of Technology
FAX: +972-8-432-4538
E-MAIL: MERHGO1@TECHNION.BITNET

JAPAN

Prof. T.Fukano

Kyushu University, Fukuoka 812-8581, Japan
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E-MAIL: fukanot@mech.kyushu-u.ac.jp

Prof. M.Maeda

Keio University, Yokohama 223-0061, Japan
TEL: +81-45-563-1141 Ext.3120, FAX: +81-45-563-5943

E-MAIL: maeda@mech.keio.ac.jp

Prof. T.Masuyama

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**2nd International Conference on
Computational Heat and Mass Transfer**
22nd - 26th October, 2001

TOPICS TO BE COVERED

Papers submitted should cover a broad range of topics from fundamental studies to applied investigations including contributions relevant to Energy Systems and Resources, Environmental Engineering, Manufacturing Processes, Petroleum Engineering, Nuclear Technology, Drying Processes, Air Conditioning and Aerospace Systems. The key subjects are as follows:

1. *Conduction, Natural and Forced Convection and Radiation*
2. *Fluid Dynamics and Turbulence Modelling*
3. *Reactive Flows and Combustion*
4. *Transport Processes within Porous Media*
5. *Multiphase Flow and Heat Transfer*
6. *Symbolic Computation*
7. *Heat and Mass Transfer in Heterogeneous Media*
8. *Inverse Problems & Design*
9. *Applied Vector & Parallel Computation*
10. *Internal Air Quality Simulation*
11. *Aerothermodynamics*
12. *Phase Change Problems*
13. *Transport Phenomena in Geophysical Flows*



ONLINE ABSTRACT SUBMISSION

If you have any problems, use regular mail or E-mail, using the information below:

Prof. R. M. Cotta/CHMT
Laboratory of Transmission and Technology of Heat - LTTC
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Universidade Federal do Rio de Janeiro
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Phone: 55-21-5608832 Ext.412
Fax: 55-21-2906626
E-mail: chmt2001@lffc.coppe.ufrj.br
(for electronic submission)

CALL FOR PAPERS

- **October 30th, 2000** - *Due date of abstract*
- **December 30th, 2000** - *Notification of abstract acceptance*
- **March 30th, 2001** - *Due date of full paper*
- **May 30th, 2001** - *Notification of paper acceptance*

<http://www.lffc.com.ufrj.br/ICHMT/ICHMT.htm>

INTERNATIONAL CENTRE FOR HEAT AND MASS TRANSFER
and
VISUALIZATION SOCIETY OF JAPAN

VIM-01

INTERNATIONAL SYMPOSIUM
ON
VISUALIZATION AND IMAGING IN TRANSPORT PHENOMENA

October 14-9, 2001
Antalya, TURKEY

FIRST ANNOUNCEMENT
AND
CALL FOR PAPERS

TOPICS OF INTEREST

1. Enhanced Visualization
 - o object recognition and feature extraction
 - o shape analysis, 3D reconstruction and restoration
 - o pattern recognition
 - o digital imaging processing; Neural Networks
2. Imaging and Visualization of Dynamic Fields
 - o motion and flow (particle tracking, tracers, optics, etc.)
 - o heat transfer (thermography, liquid crystals, laser induced fluorescence-LIF)
 - o mass transfer
 - o transport at interfaces
 - o phase change (boiling/evaporation, melting, freezing, etc.); combustion
3. Imaging and Visualization in Physiological Systems
 - o molecular and cellular motion and transport
 - o tissue and organ characterization
 - o tomography (optical, thermal, CT, MRI, PET, ultrasound)
 - o surface potential and signal analysis (heart, brain, etc.)
4. New Approaches: techniques, analysis, devices, etc.

DEADLINES

- | | |
|------------------|----------------------------------------------------------------------------------------------------------|
| May 1, 2001 | Four copies of extended abstracts due (to Chairman, S. Sideman) |
| July 1, 2001 | Notification of contributed paper (oral or poster) acceptance |
| July 15, 2001 | Abstracts of poster presentations on recent work (with no paper) due (to Chairman, S. Sideman) |
| August 1, 2001 | Notification of poster acceptance |
| August 15, 2001 | Final copies of extended abstracts of all presentations (maximum three pages) due (to ICHMT Secretariat) |
| October 14, 2001 | Final copies of manuscript due (registration desk at the symposium) |

CORRESPONDANCE

To ensure that your name is on the mailing list for future announcements, please send the preliminary application form or send the information by e-mail to:

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First Announcement and Call-For-Papers
**MARK YOUR CALENDAR WITH THE DEADLINES
HEREUNDER**

**5th WORLD CONFERENCE ON
EXPERIMENTAL HEAT TRANSFER, FLUID
MECHANICS AND THERMODYNAMICS - EXHFT-5**
Thessaloniki, Greece, September 24-28, 2001

Organized by

**THE ASSEMBLY OF WORLD CONFERENCES
ON EXPERIMENTAL HEAT TRANSFER,
FLUID MECHANICS AND THERMODYNAMICS**

in cooperation with
**DEPARTMENT OF MECHANICAL ENGINEERING
ARISTOTLE UNIVERSITY OF THESSALONIKI**

and
**ENEA INSTITUTE OF THERMAL-FLUID DYNAMICS
Rome, Italy**

with participation of
INTERNATIONAL CENTRE FOR HEAT AND MASS TRANSFER (ICHMT)

OBJECTIVES

The former EXHFT-4 was held in Brussels, Belgium, in 1997 and was attended by about 370 delegates. It was the last of a series of successful meetings started on 1988 in Dubrovnik. The objectives of EXHFT-5 are to bring together again experimental researchers and those in industry who are active in the areas of thermal and fluid science and engineering, to exchange their expertise, experiences and insights in many research areas in a spirit of cooperation and friendship, and to further stimulate their research activities. All participants will have an opportunity to become informed on:

- advances in the understanding of basic phenomena of heat transfer and fluid flow through conventional and sophisticated experiments
- the state-of-the-art in experimental techniques and instrumentation
- innovative applications of research results in an interdisciplinary environment
- validity of experimental results in many fields
- definition and needs for further measurements
- experience gained and lessons learned from new measuring techniques and design of research facilities

DEADLINES

- Abstract due to Lead Scientists,
28 July 2000
- Abstract acceptance
22 September 2000
- Full-length manuscript to Lead Scientists
16 November 2000
- Full-length manuscript acceptance
16 February 2001
- Camera-ready manuscript to Lead Scientists
20 April 2001

SUBMISSION OF ABSTRACTS

Authors should submit their abstract to the geographically closest Lead Scientist, within the indicated deadline. Submission of abstracts by e-mail is encouraged.

Abstract length should be of 300-400 words maximum, with supporting figures and tables as appropriate. The work must be original and unpublished. The cover letter should contain: (1) five keywords to describe and categorise the work easily; (2) name, address, phone and fax numbers, and e-mail 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; 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. The Proceedings will be distributed to the participants at the Conference.

INFORMATION

For further information please contact

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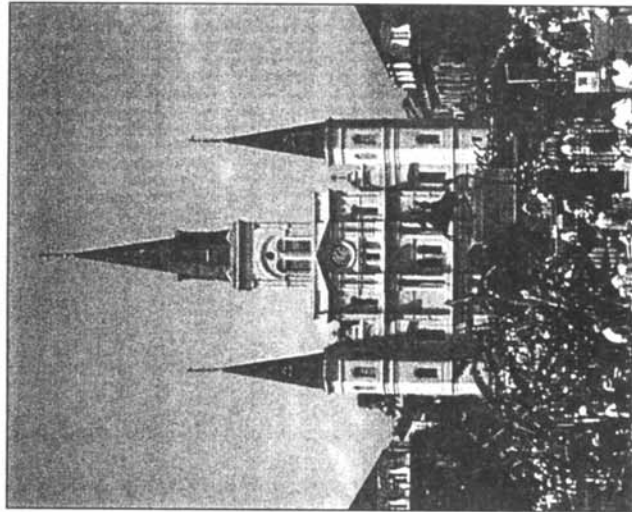
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<http://docenti.ing.unipi.it/EXHFT5/>

ICMF - 2001

FOURTH INTERNATIONAL CONFERENCE
ON MULTIPHASE FLOW

New Orleans, Louisiana, U.S.A.
May 27 - June 1, 2001



ANNOUNCEMENT AND CALL FOR PAPERS

WEBSITE <http://mail.eng.lsu.edu/icmf2001/>
<http://www.ijnet.or.jp/JSMF/icmf2001/>

E-MAIL icmf@mailhost.tcs.tulane.edu

PAPER SUBMISSION AND SELECTION

- A. Deadlines**
Deadlines for abstract and paper submissions are:
July 1, 2000 Abstracts due
October 15 2000 Notification of acceptance
January 15, 2001 Full papers due
(maximum length 8 pages)
- B. Submissions of abstracts**
Abstracts should be no longer than 2 pages including tables and figures. The preferred font is Times Roman (12 points). Arial, Courier and Helvetica are also acceptable. Authors may submit their abstracts through the website (<http://mail.eng.lsu.edu/icmf2001/>), by e-mail to icmf@mailhost.tcs.tulane.edu, by fax to (504) 862-8747 or by mail to Professor E. E. Michaelides, School of Engineering, Tulane University, New Orleans, LA, 70118, USA.

The members of the International Scientific Committee will review the abstracts and will recommend their acceptance for oral or poster presentation or rejection. All accepted papers will appear in the proceedings of the Conference, which will be published in a CD-ROM. A small number of the accepted papers will be selected for publication in a special issue of the International Journal of Multiphase Flow.

For further information about the Conference, Please contact one of the following:

Conference Chairman	Conference Secretary
Prof. Elsiathios E. Michaelides	Prof. Dimitris E. Nikitopoulos
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Tulane University	Louisiana State University
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Detailed and updated information about the conference is available on the web at:

<http://mail.eng.lsu.edu/icmf2001/>
<http://www.ijnet.or.jp/JSMF/icmf2001/>

SCOPE

ICMF-2001 will be held in New Orleans during the week of May 27 to June 1, 2001. It is the fourth in a series of International Conferences on Multiphase Flow. The first conference was held in Tsukuba, Japan, in September 1991; the second in Kyoto, Japan, in April 1995 and the third in Lyon, France in June 1998. In the future these Conferences will take place every three years and their venue will rotate between the continents. The goal of the conferences is to bring together researchers from all countries and from all disciplines and applications of multiphase flow, to promote the exchange of new ideas, results and techniques. We hope this conference will facilitate and encourage communication between those working in multiphase flow.

SCIENTIFIC CONTENT

This is a conference devoted to all aspects and applications of multiphase flows. For organizational purposes the scientific program will be divided in five main subject areas:

- A Dynamics and heat transfer of isolated bubbles, drops and particles. Hydrodynamic Forces and Interactions, Particulate Heat Transfer, Interfacial Effects, Wall-Particle Interactions, Interactions between Particles or Bubbles, Deformations of Bubbles and Drops, Molecular Simulations...**
- B Dispersed flows (including fluidized beds, sprays, bubbly and particulate flows). Inhomogeneous flows, Numerical Simulations, Modeling, Dispersion, Turbulence Modification, Deposition, Sedimentation and Resuspension, Flocculation, Colloidal Suspensions, Atomization and Sprays...**
- C Flow structure and instabilities (including solid-fluid and fluid-fluid). Transitions, Slug and Annular Flow, Churn, Waves and Transients, Clustering, Heat Transfer for Specific Flow Regimes...**
- D Heat transfer and Phase Change. Boiling, Condensation, Evaporation, Combustion, Fluidized Bed Reactions, Spray and Coal Combustion, Spray Cooling, Heat Transients, Reacting Multiphase Systems...**