II International Seminar with elements of scientific school for young scientists (ISHM-II)

“Topical issues of heat and mass transfer at phase transitions and multiphase flows in modern chemical technology and energy equipment”

May 20-21, 2015

Novosibirsk, Russia

PROGRAM

Kutateladze Institute of Thermophysics SB RAS (IT SB RAS)
Tianjin University (TJU)
Russian Scientific Foundation (RSF)

Novosibirsk – 2015

BRIEF DESCRIPTION:

International Seminar **ISHM-II** will be held in Novosibirsk at the Kutateladze Institute of Thermophysics SB RAS **20-21 May 2015**. At the seminar the invited topical reports and oral presentations on the key issues of heat and mass transfer at phase transitions and multiphase flows with application to the development and design of modern chemical technology apparatuses and energy equipment will be presented.

The International Seminar with elements of scientific school for young scientists will be held two times in one year at support of the **Russian Science Foundation** of the Project No. 14-49-00010 "*Comprehensive investigation of relationship between self-organization of the flows and non-equilibrium interfacial heat and mass transfer under the conditions of multiscale interaction relating to development of high technologies in distillation and energy equipment*". The first seminar (ISHM-I) held on December 1-2, 2014 in the Kutateladze Institute of Thermophysics.

Organizations:

- Kutateladze Institute of Thermophysics SB RAS (Novosibirsk, Russia)
- Tianjin University (TJU, г. Tianjin, China)

Seminar dates: 20-21 May 2015
Location: Kutateladze Institute of Thermophysics, 630090, Russia, Novosibirsk, Acad. Lavrentiev ave. 1.

TOPICS

The scope of the Seminar covers the following areas:

- Multiscale transfer processes at multiphase flows
- Wave processes and heat and mass transfer at the liquid film flows
- Heat and mass transfer at distillation, including that of the structured packing
- Interface instability in multiphase flows
- Boiling and evaporation of single-component liquids and their mixtures. Heat and mass transfer enhancement methods
- Low-temperature thermophysics
- Contemporary techniques and methods of thermophysical and hydro-gas-dynamic experiment
- Ecological problems in power engineering and chemical technology

LANGUAGES

Working languages of the Seminar: English and Russian. Presentation of the reports should be prepared in English in format of PowerPoint.

PROCEEDINGS

Abstracts of the ISHM-II will be published to the Third International Seminar ISHM-III, which will be held on **8-9 October 2015**.

REGISTRATION DESK

Registration fee for participants is not provided.

20 MAY (WEDNESDAY)	9:00-15:00	Kutateladze Institute of Thermophysics, 3rd floor
21 MAY (THURSDAY)	9:00-12:00	Kutateladze Institute of Thermophysics, 3rd floor

COMMITTEES

Chair

Corr. Member of RAS A.N. Pavlenko (IT SB RAS, Novosibirsk, Russia)

Co-Chairs

Prof. V.V. Kuznetsov (IT SB RAS, Novosibirsk, Russia)
Prof. X. Li (Tianjin University, Tianjin, China)

Scientific Secretary

Ph.D A.S. Surtaev (IT SB RAS, Novosibirsk, Russia)

CONTACTS

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web http://www.itp.nsc.ru/conferences/ishm2/index.html

LIST OF PARTICIPANTS

In total 32 Russian scientists, 10 foreign scientists and 54 young scientists, post-graduates, full-time students of Novosibirsk State University (NSU) and Novosibirsk State Technical University (NSTU) will take part in the Seminar.

Russian scientists

1. A.N. Pavlenko (Corr. Member of RAS, doctor of sciences, head of laboratory, IT SB RAS);
2. D.M. Markovich (Corr. Member of RAS, doctor of sciences, deputy Director, IT SB RAS, NSU);
3. V.V. Kuznetsov (Professor, doctor of sciences, head of department, IT SB RAS);
4. V.I. Terekhov (Professor, doctor of sciences, head of department, IT SB RAS);
5. O.A. Kabov (Professor, doctor of sciences, head of laboratory, IT SB RAS);
6. A.L. Kupershtokh (Professor, doctor of sciences, head of laboratory, Lavrentyev Institute of Hydrodynamics of SB RAS, Novosibirsk);
7. D.A. Medvedev (Candidate of sciences, senior researcher, Lavrentyev Institute of Hydrodynamics of SB RAS, Novosibirsk);
8. D.I. Karpov (Candidate of sciences, senior researcher, Lavrentyev Institute of Hydrodynamics of SB RAS, Novosibirsk);
9. I.I. Ryzhkov (Doctor of sciences, senior researcher, Institute of Computational Modelling SB RAS, Krasnoyarsk);
10. E.A. Chinnov (Doctor of sciences, chief researcher, IT SB RAS);
11. A.F. Serov (Doctor of sciences, chief researcher, IT SB RAS);
12. A.D. Nazarov (Doctor of sciences, leading researcher, IT SB RAS);
13. M.I. Nizovtsev (Doctor of sciences, head of laboratory, IT SB RAS);
14. A.A. Chernov (Doctor of sciences, leading researcher, IT SB RAS);
15. B.V. Perepelitsa (Candidate of sciences, leading researcher, IT SB RAS);
16. N.I. Pecherkin (Candidate of sciences, senior researcher, IT SB RAS);
17. V.E. Zhukov (Candidate of sciences, senior researcher, IT SB RAS);
18. S.P. Aktershev (Candidate of sciences, senior researcher, IT SB RAS);
19. V.V. Ovchinnikov (Candidate of sciences, senior researcher, IT SB RAS);
20. V.I. Zhukov (Candidate of sciences, associate professor, NSTU);
21. S.V. Dimov (Candidate of sciences, senior researcher, IT SB RAS);
22. A.N. Tsoi (Candidate of sciences, researcher, IT SB RAS);
23. A.S. Shamirzaev (Candidate of sciences, senior researcher, IT SB RAS);
24. O.A. Volodin (Candidate of sciences, research engineer, IT SB RAS);
25. V.N. Letushko (Leading engineer, IT SB RAS);
26. V.Yu. Borodulin (Leading engineer, IT SB RAS).
27. D.G. Mukhin (Engineer, IT SB RAS);
28. V.N. Mamonov (Candidate of sciences, researcher, IT SB RAS).
29. A.A. Orlov (Engineer, IT SB RAS);
30. M.P. Tokarev (Candidate of sciences, researcher, IT SB RAS);
31. M.V. Gorbachev (Candidate of sciences, associate professor, NSTU);
32. N.E. Shishkin (Candidate of sciences, senior researcher, IT SB RAS);

Foreign scientists

1. X. Li (Professor, Tianjin University, School of Chemical Engineering and Technology, NERCDT Director, “National PeiYang Distillation Tech. Eng. Limited Company” Director, China);
2. B. Jiang (Professor, Tianjin University, School of Chemical Engineering and Technology, NERCDT Deputy Director, China);
3. H. Sui (Ph.D. in Chemical Engineering, Associate Professor in School of Chemical Engineering and Technology, Tianjin University, China);
4. L. Zhang (PhD in Chemical Engineering, Professor, School of Environmental Science and Engineering, Tianjin-Basic Chemical Experiments Dept., Tianjin University, China);
5. H. Li (Ph.D. in Chemical Engineering, Associate Professor, School of Chemical Engineering and Technology, Tianjin University, China);
6. X. Gao (Ph.D. in Chemical Engineering, Associate Professor, School of Chemical Engineering and Technology, Tianjin University, China).

7. S. Sunder (PhD, research engineer, “Air Products and Chemicals, Inc.”, Allentown, USA);
8. G. Meski (PhD, research engineer, “Air Products and Chemicals, Inc.”, Allentown, USA);
9. H.K.A. Khafaji (University of Technology, Baghdad, Iraq);
10. Deniss Weiss (Citizen of the Germany, Novosibirsk State Technical University, Novosibirsk).

Young scientists, post-graduates, students

1. I.A. Kozulin (Candidate of sciences, research associate, IT SB RAS);
2. A.S. Surtaev (Candidate of sciences, research associate, IT SB RAS);
3. M.V. Bartashevich (Candidate of sciences, research associate, IT SB RAS);
4. M.S. Makarov (Candidate of sciences, research associate, IT SB RAS);
5. M.V. Shestakov (Engineer, IT SB RAS);
6. A.N. Chernyavskiy (Research engineer, IT SB RAS);
7. V.S. Serdyukov (Master’s student, NSU, laboratory assistant, IT SB RAS);
8. A.V. Meleshkin (Post-graduate, IT SB RAS, research engineer, IT SB RAS);
9. D.V. Kuznetsov (Master’s student, NSU, laboratory assistant, IT SB RAS);
10. A.V. Shatrova (Post-graduate, IT SB RAS, research engineer, IT SB RAS);
11. A.S. Nebuchinov (Post-graduate, IT SB RAS);
12. M.I. Moiseev (Post-graduate, IT SB RAS, research engineer, IT SB RAS);
13. E.N. Shatskiy (Post-graduate, IT SB RAS);
14. A.A. Borisov (Post-graduate, IT SB RAS);
15. V.V. Guzanov (Engineer, IT SB RAS);
16. A.A. Pil’nik (Post-graduate, IT SB RAS);
17. K.I. Stepanov (Research associate, IT SB RAS);
18. A.S. Agazhanov (Post-graduate, IT SB RAS);
19. O.A. Gobizov (Post-graduate, IT SB RAS);
20. I.K. Kabardin (Candidate of sciences, research associate, IT SB RAS);
21. V.S. Naumkin (Post-graduate, IT SB RAS);
22. S.V. Starinsky (Post-graduate, IT SB RAS);
23. M.A. Serebryakova (Post-graduate, IT SB RAS);
24. A.O. Zamchiy (Post-graduate, IT SB RAS);
25. S.S. Abdurkaripov (Post-graduate, IT SB RAS);
26. E.M. Bochkareva (Post-graduate, IT SB RAS);
27. E.B. Butakov (Post-graduate, IT SB RAS);
28. P.N. Karpov (Post-graduate, IT SB RAS);
29. E.Yu. Slesareva (Post-graduate, IT SB RAS);
30. M.V. Cherdantsev (Post-graduate, IT SB RAS);
31. A.A. Yagodnicina (Post-graduate, IT SB RAS);
32. M.V. Timoshevsky (Post-graduate, IT SB RAS);
33. V.S. Morozov (Post-graduate, IT SB RAS, research engineer, IT SB RAS);
34. A.S. Mordovskikh (Bachelor, NSU, laboratory assistant, IT SB RAS);
35. G.V. Bartkus (Bachelor, NSU, laboratory assistant, IT SB RAS);
36. Yu. Nagaitseva (student, NSTU);
37. Devid Weiss (Student, NSTU (citizen of the Germany));
38. Daniel Weiss (Student, NSTU (citizen of the Germany));
39. A.A. Shibaev (Student, NSTU);
40. N.A. Demin (Bachelor, NSU, laboratory assistant, IT SB RAS);
41. A.V. Kovalev (Bachelor, NSU, laboratory assistant, IT SB RAS);
42. Z.D. Kravtsov (Bachelor, NSU, laboratory assistant, IT SB RAS);
43. A.S. Kreta (Bachelor, NSU, laboratory assistant, IT SB RAS);
44. S.A. Lizunov (Bachelor, NSU, laboratory assistant, IT SB RAS);
45. A.S. Mitryakov (Bachelor, NSU, laboratory assistant, IT SB RAS);
46. A.V. Mikhaelis (Bachelor, NSU, laboratory assistant, IT SB RAS);
47. I.E. Naidenov (Bachelor, NSU, laboratory assistant, IT SB RAS);
48. S.E. Spesivtsev (Bachelor, NSU, laboratory assistant, IT SB RAS);
49. R.R. Yusupov (Bachelor, NSU, laboratory assistant, IT SB RAS);
50. D.P. Kirichenko (Master’s student, NSU, laboratory assistant, IT SB RAS);
51. P.V. Kungurtsev (Master’s student, NSU, laboratory assistant, IT SB RAS);
52. F.V. Ronshin (Master’s student, NSU, laboratory assistant, IT SB RAS);
53. I.I. Zapryagaev (Master’s student, NSU, laboratory assistant, IT SB RAS)
54. A.P. Vinokurov (Post-graduate, IT SB RAS);

20 MAY (WEDNESDAY)
Conference Hall of IT SB RAS

9:00-15:00	**REGISTRATION (Location: Kutateladze Institute of Thermophysics, 3rd floor)**
9:00-9:15	Welcome speech of the Chairman of Seminar Aleksandr N. Pavlenko
INVITED PRESENTATIONS	
9:15-9:35	*V.V. Kuznetsov (Kutateladze Institute of Thermophysics SB RAS, Novosibirsk)* EVOLUTIONARY DYNAMICS OF MULTI-SCALE PROCESSES IN GAS-LIQUID FLOW IN THE STRUCTURED PACKING
9:35-9:55	*X. Li (Tianjin University, Tianjin, China)* KINETICS OF METHANE CLATHRATE HYDRATE FORMATION IN WATER-IN-OIL EMULSION
9:55-10:15	*B. Jiang (Tianjin University, Tianjin, China)* CROSS-FLOW VIBRATION IN TUBULAR EQUIPMENTS
10:15-10:35	*I.I. Ryzhkov (Institute of Computational Modelling SB RAS, Krasnoyarsk)* CONVECTIVE INSTABLITY OF MULTICOMPONENT MIXTURES IN THE THERMOGRAVITATIONAL COLUMN
10:35-10:55	**COFFEE**
10:55-11:15	*A.N. Pavlenko, O.A. Volodin, A.S. Surtaev, V.S. Serduykov (Kutateladze Institute of Thermophysics SB RAS, Novosibirsk), X. Li, X. Gao (Tianjin University, Tianjin, China), S. Sunder, G. Meski (Air Products and Chemicals, Inc., Allentown, USA)* THE LIQUID FILM FLOW AND SPREADING OVER THE SURFACES OF STRUCTURED PACKINGS
11:15-11:35	*B.V. Perepelitsa (Kutateladze Institute of Thermophysics SB RAS, Novosibirsk)* LIQUID FLOW IN THE STRUCTURED PACKING
11:35-11:55	*X. Gao (Tianjin University, Tianjin, China)* A METHOD FOR MODELLING CATALYTIC DISTILLATION PROCESS BASED ON SEEPAGE CATALYTIC PACKING INTERNAL
11:55-12:15	*A.N. Pavlenko, V.E. Zhukov, N.I. Pecherkin, O.A. Volodin, M.I. Moiseev (Kutateladze Institute of Thermophysics SB RAS, Novosibirsk), X. Li, X. Gao, L. Zhang, H. Sui, H. Li (Tianjin University, Tianjin, China)* CONTROLED LIQUID IRRIGATION AS A NEW APPROACH TO IMPROVEMENT OF EFFICIENCY OF DISTILLATION COLUMN WITH STRUCTURED PACKING
12:15-14:00	**LUNCH**
14:00-14:20	*A.L. Kupershtokh, D.A. Medvedev, D.I. Karpov (Lavrentyev Institute of Hydrodynamics of SB RAS, Novosibirsk)* LATTICE BOLTZMANN METHOD FOR SIMULATION OF FLOWS WITH LIQUID-VAPOR PHASE TRANSITIONS (REVIEW)
14:20-14:40	*H. Li (Tianjin University, Tianjin, China)* LIQUID FLOW BEHAVIOR STUDY IN SIC FOAM CORRUGATED SHEET USING A NOVEL ULTRAVIOLET FLUORESCENCE TECHNIQUE COUPLED WITH CFD SIMULATION
14:40-15:00	*L. Zhang (Tianjin University, Tianjin, China)* THE RAPID CALCULATION MODEL FOR HELICAL BAFFLED HEAT EXCHANGERS
15:00-15:20	**COFFEE**
ORAL PRESENTATIONS	
15:20-15:35	*M.I. Nizovtsev, V.Yu. Borodulin, V.N. Letushko (Kutateladze Institute of Thermophysics SB RAS, Novosibirsk)* NUMERICAL-EXPERIMENTAL STUDIES OF THE AIR-TO-AIR PACKING

	HEAT EXCHANGER WITH LIQUID IRRIGATION
15:35-15:50	*I.A. Kozulin, G.V. Bartkus (Kutateladze Institute of Thermophysics SB RAS, Novosibirsk)* EXPERIMENTAL STUDY STRUCTURE OF GAS-LIQUID FLOW IN COMPACT HEAT EXCHANGERS CHANNEL BY OPTICAL METHODS
15:50-16:05	*A.S. Shamirzaev, V.V. Kuznetsov (Kutateladze Institute of Thermophysics SB RAS, Novosibirsk)* UPFLOW BOILING HEAT TRANSFER IN COMPACT HEAT EXCHANGER WITH PLAIN FINS
16:05-16:20	*K.I. Stepanov, D.G. Mukhin (Kutateladze Institute of Thermophysics SB RAS, Novosibirsk)* SPECIAL TYPE OF ABSORPTION CHILLERS
CONFERENCE RECEPTION	

21 MAY (THURSDAY)
Conference Hall of IT SB RAS

9:00-12:00	**REGISTRATION (Location: Kutateladze Institute of Thermophysics, 3rd floor)**
ORAL PRESENTATIONS	
9:00-9:15	*N.I. Pecherkin, A.N. Pavlenko, O.A. Volodin (Kutateladze Institute of Thermophysics SB RAS, Novosibirsk)* INFLUENCE OF THE MESH COATING CHARACTERISTICS ON HEAT TRANSFER IN FALLING LIQUID FILMS
9:15-9:30	*D.G. Mukhin, K.I. Stepanov, A.A. Orlov (Kutateladze Institute of Thermophysics SB RAS, Novosibirsk)* FALLING FILM EVAPORATORS FOR THERMAL DISTILLATION OF WASTE WATER AND DDGS
9:30-9:45	*S.P. Aktershev, M.V. Bartashevich* (*Kutateladze Institute of Thermophysics SB RAS; Novosibirsk State University, Novosibirsk*) HEAT TRANSFER IN A HEATED LIQUID FILM ON A REGION OF THERMAL STABILIZATION
9:45-10:00	*E.N. Shatskiy, E.A. Chinnov, D.M. Markovich, V.V. Guzanov, O.A. Kabov (Kutateladze Institute of Thermophysics SB RAS, Novosibirsk)* WAVE AND TEMPERATURE CHARACTERISTICS OF THE HEATED FALLING LIQUID FILMS
10:00-10:15	*A.N. Pavlenko, D.V. Kuznetsov, V.S. Serdyukov, A.S. Surtaev, A.N. Tsoi (Kutateladze Institute of Thermophysics SB RAS, Novosibirsk)* REWETTING DYNAMICS OF A PLATE WITH LOW CONDUCTIVE COVER BY LIQUID NITROGEN FILM FLOW
10:15-10:35	**COFFEE**
10:35-10:50	*A.A. Chernov, A.A. Pil'nik (Kutateladze Institute of Thermophysics SB RAS, Novosibirsk)* SPONTANEOUS CRYSTALLIZATION OF MELTS RAPIDLY BROUGHT TO METASTABLE STATE
10:50-11:05	*A.D. Nazarov, V.I. Terekhov, N.E. Shishkin, and A.F. Serov (Kutateladze Institute of Thermophysics SB RAS, Novosibirsk)* COMPONENT CONCENTRATION IN A DROPLET OF BINARY MIXTURE EVAPORATING IN THE AIR FLOW. MEASUREMENT METHOD AND RESULTS
11:05-11:20	*B.V. Perepelitsa, V.V. Ovchinnikov (Kutateladze Institute of Thermophysics SB RAS, Novosibirsk)* A FORM THE DROPLET OF LIQUID IN INTERSPACE BETWEEN

	SPHERES.
11:20-11:35	*S.V. Dimov, V.V. Kuznetsov (Kutateladze Institute of Thermophysics SB RAS, Novosibirsk)* CHARACTERIZATION OF THE NANOPARTICLES ENTRAINMENT DURING NANOFLUID FILTRATION THROUGH MICROSPHERE PACKING
11:35-11:50	*A.A. Borisov, A.D. Nazarov, V.I. Terekhov (Kutateladze Institute of Thermophysics SB RAS, Novosibirsk)* EVAPORATION OF DROPLETS OF NANOFLUIDS: RESEARCH APPROACH, RESULTS AND OBJECTIVES
11:50-12:10	**COFFEE**
12:10-14:00	**LUNCH**
14:00-14:15	*M.V. Shestakov, M.P. Tokarev, A.S. Nebuchinov, (Kutateladze Institute of Thermophysics SB RAS, Novosibirsk), D.M. Markovich* (*Kutateladze Institute of Thermophysics SB RAS; Novosibirsk State University, Novosibirsk*) APPLICATION OF PIV TECHNIQUE FOR THE STUDY OF VORTEX FLOW STRUCTURE IN WIRE-WRAPPED ROD BUNDLES
14:15-14:30	*R.R. Yusupov (Kutateladze Institute of Thermophysics SB RAS; Novosibirsk State University, Novosibirsk), A.P. Vinokurov (Kutateladze Institute of Thermophysics SB RAS, Novosibirsk)* STUDY OF UNSTEADY SWIRLING TWO-PHASE FLOWS IN VORTICAL HYDRODYNAMIC CHAMBERS
14:30-14:45	*A.S. Surtaev, V.S. Serdyukov, M.I. Moiseev (Kutateladze Institute of Thermophysics SB RAS, Novosibirsk)* STUDY OF HEAT TRANSFER AT POOL BOILING THROUGH INFRARED-BASED EXPERIMENTAL TECHNIQUE
14:45-15:00	*M.V. Gorbachev (Novosibirsk State Technical University, Novosibirsk), H.K.A. Khafaji (University of Technology, Baghdad, Iraq), V.I. Terekhov (Kutateladze Institute of Thermophysics SB RAS, Novosibirsk)* HEAT AND MASS TRANSFER IN TWO PARALLEL CHANNELS WITH INDIRECT EVAPORATION COOLING
15:00-15:15	**COFFEE**
15:15-15:30	*A.N. Tsoi, A.N. Pavlenko (Kutateladze Institute of Thermophysics SB RAS, Novosibirsk)* TRANSIENT BOILING HEAT TRANSFER IN LIQUID NITROGEN OF SURFACES WITH A LOW THERMOCONDUCTIVE COVERS
15:30-15:45	*V.I. Zhukov (Novosibirsk State Technical University, Novosibirsk), A.N. Pavlenko (Kutateladze Institute of Thermophysics SB RAS, Novosibirsk)* CRITICAL PHENOMENA AT EVAPORATION OF A THIN LIQUID LAYER UNDER THE REDUCED PRESSURES
15:45-16:00	*D. Weiss, V.I. Zhukov (Novosibirsk State Technical University, Novosibirsk), A.N. Pavlenko (Kutateladze Institute of Thermophysics SB RAS, Novosibirsk)* STUDY OF THE EVAPORATION MECHANISM OF A THIN LIQUID LAYER UNDER REDUCED PRESSURE
16:00-16:15	*J.V. Nagaitseva, V.I. Zhukov (Novosibirsk State Technical University, Novosibirsk) , A.N. Pavlenko (Kutateladze Institute of Thermophysics SB RAS, Novosibirsk)* STUDY OF HEAT TRANSFER AND CRITICAL HEAT FLUX AT INTENSIVE EVAPORATION IN A HORIZONTAL LAYER OF LIQUID UNDER CONDITIONS OF REDUCED PRESSURE
16:15-16:35	Closing of the Seminar ISHM-II. Results and discussion.