Jubilee International Conference
X Minsk International Seminar
Heat Pipes, Heat Pumps, Refrigerators, Power Sources

September 10–13, 2018
Minsk, Belarus

PROGRAM

http://minskheatpipes.by

Dedicated to the 90th anniversary of the National Academy of Sciences of Belarus

National Academy of Sciences of Belarus

A.V. Luikov Heat & Mass Transfer Institute

CIS Scientific Association "Heat Pipes"

Belarusian National Technical University

International Centre for Heat and Mass Transfer

HUAWEI

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Luikov Heat & Mass Transfer Institute
CIS Scientific Association "Heat Pipes"
Belarusian National Technical University

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WORKING SCHEDULE

September 10, Monday	
From 8:00	Registration of participants
9:30 – 10:20	Opening Ceremony
10:20 – 13:00	Session 1
11:20 – 11:40	*Coffee-break*
11:40 – 13:00	Session 1 (continuation)
13:00 – 14:00	*Lunch-break*
14:00 – 18:00	Session 2
16:00 – 16:20	*Coffee-break*
16:20 – 18:00	Session 2 (continuation)
18:30	*Welcome Party*
September 11, Tuesday	
9:00 – 11:00	The Ceremony in Connection with the 50th anniversary of the International Center for Heat and Mass Transfer
11:00 – 13:00	Session 3
12:00 – 12:20	*Coffee-break*
12:20 – 13:00	Session 3 (continuation)
13:00 – 14:00	*Lunch-break*
14:00 – 17:40	Session 4
16:00 – 16:20	*Coffee-break*
16:20 – 18:20	Session 4 (continuation)
19:00	*Banquet**
September 12, Wednesday	
9:00 – 13:00	Session 5
11:00 – 11:20	*Coffee-break*
11:20 – 13:00	Session 5 (continuation)
13:00 – 14:00	*Lunch-break*
14:00 – 17:20	Session 6
15:40 – 16:00	*Coffee-break*
16:20 – 17:20	Session 4 (continuation)
19:00	*Cultural Program*
September 13, Thursday	
9:00 – 13:00	Session 7
11:00 – 11:20	*Coffee-break*
11:20 – 12:30	Session 7 (continuation)
12:30 – 13:30	*Lunch-break*
13:30 – 15:00	Posters Session
15:00 – 16:00	Closing Ceremony

Time: keynote lecture **40 min.**, paper presentation **20 min.**, including a discussion.

****The cost of the Conference banquet*** *will be announced at registration*

PROGRAM OF THE INTERNATIONAL CONFERENCE
"X Minsk International Seminar
Heat Pipes, Heat Pumps, Refrigerators, Power Sources"

September 10, Monday

Registration of participants:

A.V. Luikov Heat and Mass Transfer Institute, P. Brovka str., 15

From **8:00**

Opening Ceremony

9:30 – 10:20

Session 1

10:20–13:00

Chairmen: **Yu.I. Aristov** (Russia)
V.N. Buz (Ukraine)

A.G. Fedorov *Keynote Lecture*
USA (GA, Atlanta)
Crossing 5 kW/cm^2 barrier via convective phase change at extreme pressures, dimensions and mass fluxes.

S. Kakaç, U.Kayabasi, S.Aradag,
Turkey (Ankara)
Experimental investigation of thermal and hydraulic performance of a plate heat exchanger using nanofluids.

11:20–11:40 – COFFEE-BREAK

Session 1

(Continuation)

Chairmen: **O.A Kabov** (Russia)
D.A. Mishkinis (Latvia)

O. Dolna, **Ja. Mikielewicz**
(Poland, Gdańsk)
Droplet separation in the field of the boundary layer

M. Grabowski[1], **M.E. Poniewski**[1], S. Hożejowska[2], A. Pawińska[2]
Poland ([1]Płock, [2]Kielce)
Numerical modeling of temperature fields in single phase flow inside an asymmetrically heated mininchannel.

M.C.K. Cardoso, E.L. Fronza, D.M. Caldas, L.H.R. Cisterna, M.V.V. Mortean, **M.B.H. Mantelli**
Brazil (Florianópolis)
Porous media approach for hydrodynamic numerical simulation of compact heat exchanger.

O.G. Burdo, **Yu.O. Levtrinskaya**, I.V. Sirotyuk
Ukraine (Odessa)
Phenomenon of mehanodiffusion in nano-dimensional structures under conditions of addressed power supply.

13:00–14:00 – LUNCH-BREAK

Session 2

14:00–18:00

Chairmen: **V.V. Yagov** (Russia)
L.L. Vassiliev Jr. (Belarus)

O.A. Kabov *Keynote Lecture*
Russia (Novosibirsk)
Mini- and micro-systems with ultra-high heat dissipation

S.P. Fisenko, Yu.A. Khodyko, V.I. Saverchenko
Belarus (Minsk)
Spray cooling of substrate by femtoliter droplets.

V.V. Cheverda, O.A. Kabov
Russia (Novosibirsk)
A shear-driven liquid rivulet flow during parabolic flights.

N.M. Savchenkova, D.A. Kravtsov
Russia (Moscow)
Features of ventilation of the open water surfaces areas

Qiang Xu, Liejin Guo
China (Xi'an)
Interfacial characteristics of steam jet condensation in water flow in a vertical pipe.

16:00–16:20 – COFFEE-BREAK

Session 2
(Continuation)

Chairmen: **K.A. Goncharov** (Russia)
C. Ömür (Turkey)

V.V. Yagov, N.O. Zubov, O.N. Kaban'kov, L.A. Sukomel *Keynote Lecture*
Russia (Moscow)
Calculation of low pressure two-phase natural circulation loop accounting for flow regime

A.P.C Sarmiento[1], L.H.R. Cisterna[1], F.H. Milanese[1.2], **M.B.H. Mantelli[1]**
Brazil ([1] Florianópolis, [2] Araranguá)
A Numerical method for shell and thermosyphon heat exchanger analysis.

V.V. Sorokin
Belarus (Minsk)
Intensive evaporation peak steam velocity.

A.V. Seryakov, A.V. Konkin
Russia (Veliky Novgorod)
Numerical simulation of pulsation flow in the vapour channel of short low temperature heat pipes at high heat loads.

18:30 – WELCOME PARTY

September 11, Tuesday

The Ceremony in Connection with the 50th anniversary of the International Center for Heat and Mass Transfer

9:00–11:00

O.G. Penyazkov (*Belarus*), S. Kakaç (*Turkey*), R. Cotta (*Brazil*),
F. Arinç (*Turkey*), J. Padet (*France*)

S. Kakaç *Keynote Lecture*
Turkey (Ankara)
Luikov's Scientific History and the Evolution of the International Center of Heat and Mass Transfer (ICHMT)

Session 3

11:00– 13:00

Chairmen: **J. Bonjour** (France)
V.V. Kuznetsov (Russia)

O.G. Penyazkov *Keynote Lecture*
Belarus (Minsk)
Hot spots formation mechanisms in reacting flows

D. Zaitsev, D. Kochkin, **O. Kabov**
Russia (Novosibirsk)
The effect of viscocity on rupture dynamics in a non-uniformly heated horizontal liquid film.

12:00–12:20 – COFFEE-BREAK

Session 3

(Continuation)

Chairmen: **M.M Ohadi** (USA)
L.L. Vasiliev (Belarus)

Yu.F. Maydanik *Keynote Lecture*
Russia (Ekaterinburg)
Loop heat pipes in cooling systems of electronics and computers.

K.A. Goncharov[1], Yu.V. Panin[1], K.N. Korzhov[1], A.R. Gutkin[1]
Russia ([1,2]Moscow region, [1]Khimki, [2]Istra)
Variable conductance heat pipes for small spacecraft.

V.N. Buz, K.A. Goncharov
Russia (Moscow)

Mathematical model of loop heat pipe dynamics.

13:00–14:00 – LUNCH-BREAK

Session 4

14:00 – 17:40

Chairmen: **R.M. Cotta** (Brazil)
Yu.F. Maydanik (Russia)

M.M. Ohadi *Keynote Lecture*
USA (MD, Maryland)
Cooling of Next Gen Electric Motors.

L.L. Vasiliev, L.P Grakovich, M.I. Rabetsky, A.S. Zhuravlyov
Belarus (Minsk)
Loop thermosyphons with porous coating

D. Mishkinis, I. Ushakov, D. Nasibulin
Latvia (Riga)
Experimental study of dual evaporator LHP with two compensation chambers.

E. Kotlyarov, **V. Finchenko**, V. Luzhenkov, D. Tulin
Russia (Moscow region, Khimki)
Multipurpose auxiliary thermal control system on the basis of pumped fluid loop for instrument compartment of interheliozond spacecraft.

D. Zaitsev, E. Bykovskaya, and O. Kabov
Russia (Novosibirsk)
Spreading of a sessile liquid drop under micro- and hypergravity

16:00–16:20 – COFFEE-BREAK

Session 4

(Continuation)

Chairmen: **D.C. Knupp** (Brazil)
D. Taler (Poland)

R.M. Cotta[1,2], K.M. Lisboa[1], M.F. Curi[1,3], S.Balabani[2], *Keynote Lecture*
J.N.N. Quaresma[2,4], J.S. Perez-Guerrero[1], E.N. Macedo[4]
[1,3,4]Brazil ([1]Rio de Janeiro, [3]Itaguaí, [4]Belém), [2]UK (London)
Computational-analytical integral transforms in transport phenomena with Navier-Stokes formulations.

E.A. Osadchuk, **A.S. Titlov**, V.Kh. Kirillov
Ukraine (Odessa)

Development of absorption water-ammonia refrigeration machine to work with systems getting the water from the air.

D.C. Knupp, R.M. Cotta, C.P. Naveira-Cotta
Brazil (Rio de Janeiro)
Conjugated heat transfer via integral tranforms: single domain formulation, total and partial transformation, and convective eigenvalue problems.

19:00 – BANQUET

September 12, Wednesday

Session 5

9:00– 13:00

Chairmen: **M.B.H. Mantelli** (Brazil)
Ja. Mikielewicz (Poland)

Kuznetsov V.V. *Keynote Lecture*
Russia (Novosibirsk)
Prospects for the use of flow boiling in microchannels for high heat flux removal.

C. Ömür, A.B. Uygur, H.G. Işık, İ. Horuz
Turkey (Ankara)
A novel ammonia filling set-up for heat pipes.

A.V. Petrov, V.A. Karachinov, **Y.V. Kiliba**, D.A. Petrov, A.S. Ionov, D.A. Ewstigneev
Russia (Veliky Novgorod)
TV quality control method heat pipes from the side of the "shadow" surface.

A.V. Seryakov, S.L. Shakshin, P. Alekseev
Russia (Veliky Novgorod)
The droplets condensate centering in the vapour channel of short low temperature heat pipes at high heat loads.

D.K. Zaitsev, A.A. Smirnovsky, A.A. Pozhilov, E.M. Smirnov
Russia (St. Petersburg)
Numerical modeling of 3D phenomena typical for axial heat pipes.

11:00–11:20 – COFFEE-BREAK

Session 5
(Continuation)

Chairmen: **M.E. Poniewski** (Poland)
Xiangyang Zhou (USA)

V.A. Alexeev, A.V. Shishanov, E.V. Bugrov, A.E. Karabin
Russia (Moscow)
Effectiveness of operating heat accumulators within spacehardware and optimization of their design parameters.

B. Agostini, D. Torresin, M. Bortolato
Switzerland (Baden-Daettwil)
Influence of manifold configuration on the performances of pulsating heat pipes.

A.V. Petrov, **Y.V. Kiliba**, A.S. Ionov, **I.V. Romanov**
Russia (Veliky Novgorod)
Profile capillary heat pipes with a modified wick.

D. Zaitsev, A. Semenov, and O. Kabov
Russia (Novosibirsk)
Drop evaporation on a heated substrate with single wall nanotubes coating

D. Taler, R. Pitry, J. Taler
Poland
Evaluation of one-year operation of hybrid heat source for heating the building and preparation of hot water.

13:00–14:00 – LUNCH-BREAK

Session 6

14:00 – 17:20

Chairmen: **Yu.F. Snezhkin** (Ukraine)
R. Matysko (Poland)

Bonjour J. *Keynote Lecture*
France (Lyon)
Compact evaporators for sorption chillers: from the fundamental phenomena to improved design opportunities.

A. Tongkratoke[1], **A. Pramuanjaroenkij**[1], S. Phankhoksoong[1], **S. Kakaç**[2]
[1]Thailand (Sakon Nakhon), [2]Turkey (Ankara)
The numerical investigation of nanofluid turbulence flow by the single and discrete phase models.

Xiangyang Zhou, Hao Huang, Zedong Wang, N. Nurkenov
USA (Fl, Miami)
Experimental study and modeling of self-sustained electrochemical promotion catalysts for hydrocarbon reformimng and NO_x reduction.

D. Konovalov, H. Kobalava
Ukraine (Mykolayiv)
Intercooling of gas turbine plants by using the aerothermopressor.

15:40–16:00 – COFFEE-BREAK

Session 6
(Continuation)

Chairmen: **A. Kilicarslan** (Turkey)
S.P. Fisenko (Belarus)

Yu.I. Aristov *Keynote Lecture*
Russia (Novosibirsk)
Pressure- and temperature-driven cycles for adsorption transformation of low temperature heat

Yu.F. Snezhkin, B.D. Bileka
Ukraine (Kyiv)
Increase of energy efficiency of municipal heat power and heat technologies on the basis of combined cogeneration and heat pumps.

B.F. Balunov, V.I. Nikitin, A.I. Rybnikov, V.D. Lychakov, A.A. Shcheglov, K.S. Starukhina, **A.S. Matiash**, A.O. Borisov, N.S. Pugachev
Russia (St. Petersburg)
Twenty years of high-temperature service life tests of full-sized termosyphons.

A.Sh. Alimgazin, S.G. Alimgazina, K.S. Omarov, S.E. Bakhtiyarova
Republic of Kazakhstan (Astana)
The block-modular heat pump installation for utilization of low-potential reset heat of technical water supply systems of industrial enterprises.

19:00 –CULTURAL PROGRAM

September 13, Thursday

Session 7

9:00– 13:00

Chairmen: **Xia Guodong** (China)
L.E. Kanonchik (Belarus)

K. Uddin, A. Pal, K. Thu, B.B. Saha *Keynote Lecture*
Japan (Fukuoka)
Adsorption onto spherical activated carbon for heat pump application.

A. Tongkratoke[1], **A. Pramuanjaroenkij**[1], S. Phankhoksoong[1], S. Kakaç[2]
[1]Thailand (Sakon Nakhon), [2]Turkey (Ankara)
The Cu-water nanofluid simulation to investigate heat transfer enhancement of in rectangular pipe.

Y. Beliavsky
Israel (Tiberias)
Heat pump based on heat transfer by pressure gradient elastic waves.

I.S. Girnik, Yu.I. Aristov
Russia (Novosibirsk)
Comparison of temperature- and pressure-initiated dynamic in the novel HeCol cycle.

V. Karnaukh, V. Mazur, A. Biryukov
Ukraine
Trade-off working fluid selection for heat pumps.

11:00–11:20 – COFFEE-BREAK

Session 7
(Continuation)

Chairmen: **A. Pramuanjaroenkij** (Tailand)
D.Kh. Kharlampidi (Ukraine)

A. Kilicarslan[1], H.Töre[2]
Turkey ([1]Çorum, [2]Amasya)
Investigation of the entropy generation of the main components in an air source heat pump.

V.I. Saverchenko, S.P. Fisenko, A.I. Shnip
Belarus (Minsk)
Intensification of heat transfer from fins to air.

K. Delendik, N. Kolyago, O. Penyazkov, O. Voitik
Belarus (Minsk)
Development of heat pipes for cooling of thermally loaded electronic components.

12:30–13:30 – LUNCH-BREAK

Posters Session

13:30– 15:00

Chairmen: **B. Agostini** (Switzerland)
V.V. Sorokin (Belarus)
D.K. Zaitsev (Russia)

L.A. Sukomel, O.N. Kaban'kov
Russia (Moscow)
Numerical simulation of heat transfer and friction at viscous-gravitational flow in loop thermosyphon.

L.E. Kanonchik, L.L.Vasiliev
Belarus (Minsk)
Analysis of charging modes of sorber-accumulator of natural gas of low pressure..

V.V. Maziuk, A.F. Ilyushchenko, P.S. Ancheuski, A.A. Antuh
Belarus (Minsk)
Thin vapor chamber with powder capillary structure thermal performance prediction tool-software development.

A.V. Shapovalov, A.V. Rodin, P.A. Adamenko
Belarus (Gomel)
Comparative analysis of the efficiency of the operation of vapour dynamic thermosiphone and thermosiphone without inner circulation inserts.

Xia Guodong D., S.G. Huang, Y.G. Jiao
China (Beijing)
Experimental study on novel integrated flat heat pipe for high power LEDs.

A.P. Lukisha
Ukraine (Dnipro)
Calculation of thermal-hydraulic effectiveness of porous steam generators in the transition region of flow and under boundary conditions of the third kind.

V.V. Cheverda, F.V. Ronshin, E.A. Chinnov, O.A. Kabov
Russia (Novosibirsk)
A two-phase flow in microchannel.

R. Matysko
Poland (Gdańsk)
NH_3–H_2O absorption refrigeration systems.

D.Kh. Kharlampidi, V.A. Tarasova, M.A. Kuznetsov
Ukraine (Kharkov)
Method for thermoeconomic modernization of refrigeration plants.

V.A. Lebedev
Russia (Novosibirsk)
Geometrical factors of radiation of spiral surfaces.

O. Khliyeva[1], T. Gordeychuk[1], Yu. Semenyuk[1], V. Zhelezny[1], N. Lukianov[1], A. Nikulin[2]
[1]*Ukraine (Odessa),* [2]*Portugal (Lisbon)*
The effect of nanoparticle additives to the refrigerant R141b on the heat transfer at the pool boiling on the different heating surfaces.

E. Trushliakov, M. Radchenko, S. Kantor
Ukraine (Mykolayiv)
Methodological approach to improve the efficiency of air conditioning system performance in changeable climatic conditions.

A. Radchenko, M. Radchenko, A. Konovalov
Ukraine (Mykolayiv)
Increasing the fuel efficiency of integrated energy system on the base of gas engines by absorption chiller scavenge air cooling.

M. Radchenko, S. Kantor, Bohdan Portnoi
Ukraine (Mykolayiv)
Using the reserve of absorption chiller refrigeration capacity for cooling air at the inlet of GTU.

R. Radchenko, M. Radchenko, O. Ostapenko, A. Zubarev
Ukraine (Mykolayiv)
Enhancing the transformation of gas engine module exhaust heat by two-stage absorption-adsorption chiller

A.I. Papchenkov, V.A. Munts, E.Yu. Pavlyuk, D.B. Choinzonov
Russia (Ekaterinburg)
Thermosyphon as a control unit depending on the stepwise perturbation by temperature variation of the cooled gases.

V.M. Kiseev, O. Sazhin
Russia (Ekaterinburg)
Loop heat pipes with a steam jet pump.

N.E. Ozolin, A.S. Titlov
Ukraine (Odessa)
Modeling and thermodynamic analysis of periodic operation ammonia-water absorption refrigeration units in atmospheric water generation systems.

A.O. Kholodkov, A.S. Titlov
Ukraine (Odessa)
Modeling of thermal modes of the reflux condenser of the absorption refrigeration unit.

A.P. Selivanov, A.S. Titlov
Ukraine (Odessa)
Problems of development of seasonal household refrigerator and research of facilities of creation of even temperature paul is in the chilled object of seasonal type absorbing refrigeration aggregate

O.V. Novykh[1], I.I. Sviridenko[2]
[1]Spain (Santa Cruz de Tenerife), [2]Sevastopol
Increase the thermal efficiency of a hybrid solar power plant.

M.A. Kuzmich, V.K. Kulikouski
Belarus (Minsk)
Study of a loop thermosyphon with an extended evaporator containing the inner channel for the liquid circulation inside.

Sh. Enkh-Amgalan, B. Munkhdemberel
Mongolia (Ulaanbaatar)
Use of natural cold to freeze meat dumplings with a freezing plate.

15:00–16:00 – **Closing Ceremony**