

Scientific Committee

- **Prof. J. Blinov**, El. University of St. Petersburg
- **Prof. A. Cebers**, University of Latvia
- **Prof. A. Jakovics**, University of Latvia
- **Prof. H. Kalis**, University of Latvia
- **Prof. S. Lundstroem**, University of Tech., Lulea
- **Prof. S. Lupi**, University of Padua
- **Prof. A. Muehlbauer**, University of Hannover
- **Prof. A. Muiznieks**, University of Latvia
- **Prof. B. Nacke**, University of Hannover

Local Organising Committee

- **Dr. J. Virbulis**, Chairman
- **Prof. A. Jakovics**
- **Dr. U. Bethers**
- **Ms. I. Podjavo**, Secretary
University of Latvia

Place and Time

- Reiterna nams 2nd floor, Str. Marstalu 2, Riga, Latvia
- June 8-9, 2006

The Organising committee gratefully acknowledge the sponsorship and support received from the

LZP Latvian Council of Science

 **COST** Action P17



Center of Processes' Analysis and Research, Ltd. (Latvia)



**Vereinigung zur Förderung des Instituts für Elektrowärme e.V.
(Germany)**



Reiterna nams, Str. Marstalu 2, Riga, Latvia

International Colloquium Agenda

Wednesday, June 7	Thursday, June 8	Friday, June 9
	08:30-09:00 Late registration	
	9:00 – 10:30 Opening Session Chairman: Prof. B. Nacke Welcome address and 3 oral presentations	09:00 – 10:20 “Semiconductor technology II” (COST action) Chairman: Prof. A. Muiznieks 4 oral presentations
	10:30 – 11:00 Coffee break	10:20 – 10:50 Coffee break
	11:00 – 12:20 “Liquid Metals I” (COST action) Chairman: Prof. Y. Fautrelle 4 oral presentations	10:50 – 12:10 “Liquid Metals II” (COST action) Chairman: Prof. A. Jakovics 4 oral presentations
	12:20 – 13:30 Common Photo & Lunch	12:10 – 13:40 Lunch
	13:30 – 14:50 Poster Session Chairman: Prof E. Baake 12 posters	13:40 – 15:00 “Oxides & Melting” Chairman: Prof. D. Schulze 4 oral presentations
	14:50 – 15:20 Coffee break	15:00 – 15:30 Coffee break
	15:20 – 16:20 “Semiconductor technology I” (COST action) Chairman: Prof. A. Muehlbauer 3 oral presentations	15:30 – 16:50 “Induction & Heating” Chairman: Prof. S. Lupi 4 oral presentations
	16:20 – 16:40 Coffee break	18:00 Guided sightseeing in Old Riga
18:00 – 19:30 Registration	16:40 – 18:00 “Porous materials” Chairman: Prof. S.T. Lundstroem 4 oral presentations	
20:00 – 22:00 Welcome cocktail	20:00 Colloquium dinner	

Programme

June 7

18:00 – 19:30 Registration
Str. Marstalu 2, Reiterna nams, in hall

20:00 –22:00 Welcome cocktail
Motor ship “Jurmala”

11. Novembra krastmala (between Akmens bridge and railway bridge)

June 8

Str. Marstalu 2, Reiterna nams, 2nd floor

Opening Session

Chairman: **Prof. B. Nacke**

9:00 – 10:30

- Welcome address (**Prof. M. Auzins and Prof. B. Nacke**)
- **A. Muehlbauer**
Innovative Induction Melting Technologies: A Historical Review
- **A. Ciobanas, A. Noepfel, XD Wang, K. Zaidat, Y. Fautrelle, A. Weiss, G. Zimmermann**
Influence of Forced/Natural Convection on Segregation During the Directional Solidification of Binary Alloys
- **V. Bojarevics, K. Pericleous**
Droplet Formation with Electromagnetic Pulse Force

10:30 – 11:00 Coffee break

“Liquid Metals I” (COST Action)

Chairman: **Prof. Y. Fautrelle**

11:00 – 12:20

- **A. Bojarevics, J. Gelfgats**
A Sensor for Continuous Measurements of Absolute Thermoelectric Power of Liquid Metal During Turbulent Nonisothermal Mixing or Segregation of Multicomponent Melts

- **M. Kirpo, A. Jakovics, E. Baake, B. Nacke**
Analysis of Experimental and Simulation Data for Liquid Metal Flow in a Cylindrical Container
- **A. Kapusta, B. Mikhailovich, Sh. Lesin, M. Khavkin**
Modelling of Melt Flow in Continuous Casting Facilities
- **A. Mikelsons, J. Klavins, J. Valdmanis**
Physical Modelling for Solidification Processes of Bi and its Alloys Using Peltier Effect

12:20 – 13:30 Lunch

Poster Session

Chairman: **Prof. E. Baake**

13:30 – 14:50

- **M. Abricka, Yu. Gelfgat, J. Krumins**
Heat and Mass Transfer in a Cylindrical Vessel with the Melt Exposed to the Influence of Combined Electromagnetic Fields
- **Yu. Gelfgat, A. Mikelsons, J. Krumins, A. Pedchenko**
On the Transversal end Effect in the Linear Induction Pump with Large Non-magnetic Gaps
- **M. Mach, P. Karban, I. Doležel, D. Trutwin**
Stirring of Liquid Steel in Crucible Induction Furnace
- **B. Nacke, M. Kudryash, T. Behrens, B. Niemann, D. Lopukh, A. Martynov, S. Chepluk**
Induction Skull Melting of Oxides and Glasses in Cold Crucible
- **P. Karban, M. Mach, I. Doležel, J. Barglik**
Continual Surface Induction Hardening of Profile Prismatic Steel Bodies
- **H. Kalis, Sh. Guseinov**
Calculations of the Thermal-conductivity Coefficients for 1-D Heat Transfer Inverse Problems
- **A. Timuhins, S. Gendelis, A. Jakovics**
Experimental Estimation of Thermophysical Properties of Materials
- **A. Pechenkov, I. Pozniak, A. Shatunov, Yu. Petrov**
Measurement of High Frequency Voltage, Current and Power Factor of Inductor

- **B. Utegulov, A. Utegulov, Z. Tursynbaeva, N. Meged, B. Begentayev**
1000 volts Asymmetrical Network with Insulated Neutral Isolation Parameters
Automatic Estimation Method

- **B. Utegulov, V. Markovskiy, E. Shakhman, G. Demessinova, G. Gassanova**
Calculation Technique of Operating Currents and the Offset of Magnetically
Controlled Contacts Protection from Interference Effect

- **S. Lacis, D. Goshko**
Static Yield Stress Analysis in MR Suspensions by 2D and 3D FEM

- **I. Javaitis**
Physics of Elastic Magnetic Filaments

14:50 – 15:20 Coffee break

“Semiconductor technology I” (COST Action)

Chairman: **Prof. A. Muehlbauer**

15:20 – 16:20

- **W. Miller, Ch. Frank-Rotsch, M. Nuebert, D. Vizman, D. Davis, E. Baensch, U. Rehse**
Temperature Oscillations in InP Melt During Czochralski Growth: 3D Direct
Numerical Simulation Study

- **U. Bethers, J. Sennikovs, A. Timuhins, J. Virbulis, D. Zablockis**
Modelling of Surface Diffusion in Structured Silicon

- **A. Muiznieks, A. Krauze**
3D Transient LES Modeling of Turbulent Melt Flow in a Laboratory Model for Large
CZ Industrial Silicon Crystal Growth Systems

16:20 – 16:40 Coffee break

“Porous materials”

Chairman: **Prof. T.S. Lundstroem**

16:40 – 18:00

- **M. Nordlund, T.S. Lundstroem**
Investigation of Transient Flow Behaviour in Dual-scale Porous Media with Micro Particle Image Velocimetry
- **U. Bethers, J. Sennikovs, H. Szillat, A. Timuhins, J. Virbulis**
Mathematical Modelling of Sintering of SiO₂ Crucibles
- **J.G.I. Hellstroem, T.S. Lundstroem**
Flow through Porous Media at Moderate Reynolds Number
- **H. Kalis, I. Kangro**
About the Numerical Simulation of Heat and Moisture Diffusion in Porous Media

20:00 Colloquium dinner
Str. Marstalu 2, Reiterna nams, basement

June 9

Str. Marstalu 2, Reiterna nams, 2nd floor

“Semiconductor technology II” (COST Action)

Chairman: **Prof. A. Muiznieks**

09:00 – 10:20

- **A. Muiznieks, A. Rudevics, K. Lacis, H. Riemann, A. Luedge, F.W. Schulze, B. Nacke**
Square-like Silicon Crystal Rod Growth by FZ Method with Especially 3D Shaped HF Inductors
- **H. Kasjanow, A. Nikanorov, B. Nacke, H. Behnken, D. Franke, A. Seidl**
Three Dimensional Coupled Simulation of Induction Heated EFG Crystallisation Process
- **M. Forzan, G. Maccalli, G. Valente, D. Crippa**
Design of an Innovative Heating Process System for the Epitaxial Growth of Silicon Carbide Layers Wafer

- **A. Rudevics, A. Muiznieks, B. Nacke, V. Mihnevics**

Development of Specialized Modelling Tools for Crystal Growth Processes

10:20 – 10:50 Coffee break

“Liquid Metals II” (COST Action)

Chairman: **Prof. A. Jakovics**

10:50 – 12:10

- **D. Schulze, Ch. Karcher, V. Kocourek, J. U. Mohring**

Electrically Induced Instabilities of Liquid Metal Free Surfaces

- **A. Umbrashko, E. Baake, B. Nacke, A. Jakovics**

Numerical Modelling of Recirculated Liquid Metals Flows in Practical Applications

- **M. Langejuergen, B. Nacke**

Electromagnetic Induced Segregation of Cast Parts (EIS)

- **M. Bullo, F. Dughiero, M. Forzan, S. Lupi**

Laboratory Prototype of Double Frequency Longitudinal Electromagnetic Levitator for Levitation Melting

12:10 – 13:40 Lunch

“Oxides & Melting”

Chairman: **Prof. D. Schulze**

13:40 – 15:00

- **M. Schnick, U. Fuessel, J. Zschetzsche**

Simulation of Plasma and Shielding Gas Flows in Welding and Cutting Arcs with Ansys CFX

- **V. Frishfelds, A. Jakovics, A. Muehlbauer, B. Nacke**

Dynamics of Incongruent Melting of ZrO₂-SiO₂ in Inductor Crucible

- **I. Pozniak, A. Pechenkov, A. Shatunov**

Electrical Conductivity Measurement of Oxides Melts

- **D. Cepite, A. Jakovics, K. Repsons, B. Halbedel**

2D Modelling of EM Glass Convection by Temperature Dependent Material Properties

15:00 – 15:30 Coffee break

“Induction & Heating”

Chairman: **Prof. S. Lupi**

15:30 – 16:50

- **A. Buikis, Sh. Guseinov, M. Buike**

Modelling of Intensive Steel Quenching Process by Time Inverse Hyperbolic Heat Conduction

- **B.B. Utegulov, I.V. Zakharov, A.D. Izhikova**

Resonant Mode of Inductors with Reactive Power Self-compensation

- **S. Galunin, M. Zlobina, Yu. Blinov, A. Nikanorov, T. Zedler, B. Nacke**

Electrothermal Modelling and Numerical Optimization of Induction System for Disk Heating

- **B. Utegulov, A. Utegulov, A. Jumadirova, S. Jangaziev, E. Shahman, M. Dubovik, G. Demessinova**

Analysis of Petri Net of Isolation State and Single-phase Ground Short Circuit Control Device in 6-10 kV Electric Networks

18:00 Guided sightseeing in Old Riga

Gathering in the ground floor of Reiterņa nams, Str. Maršala 2

Useful information

Reference address and telephone numbers

Laboratory for Mathematical Modelling of Environmental and Technological Processes (LMMETP)
University of Latvia
Zellu st. No. 8, LV-1002 Riga, Latvia
Tel./Fax.: +371-7 033 780/81, E-Mail: inese@modlab.lv
<http://www.modlab.lv/mmp2006>

Colloquium language

English will be the official language of the Colloquium.

Proceedings

The full text of all the papers (oral and poster) will be published in the Colloquium Proceedings and issued to delegates when they register at the Registration Desk. Extra copies can be bought at the Registration Desk or ordered by the LMMETP at the price of 15,00 EUR (10,00 LVL).

Selected papers after colloquium will be published in the scientific journal „Magnetohydrodynamics”.

Registration

Registration of participants will take place on Wednesday June 7 at Str. Marstalu 2, Reiterna nams between 18:00 and 19:30, at the hall. Late registration can be done at Str. Marstalu 2, Reiterna nams on Thursday, 8 June between 8:30 and 9:00, in the 2nd floor.

Welcome reception

All participants and accompanying persons are invited to a welcoming cocktail party on Wednesday, 7th June between 20:00 and 22:00. The party will take place on the Motor ship “Jurmala”, 11. Novembra krastmala (between Akmens bridge and railway bridge).

Lunch

It will be possible to order lunch during registration for the conference or during the coffee breaks (additional costs 10,00 EUR (7,00 LVL)). Lunch will be served in the restaurant “Radi un draugi”, Str. Marstalu 1/3, in basement.

Banquet

The banquet (in conference fee included) will take place in the Str. Marstalu 2, Reiterna nams basement on Thursday, 8 June, starting at 20:00. Price for accompanying persons – 35,00 EUR (25,00 LVL).

Transport from the Airport

The Riga Airport is situated about 20 minutes taxi drive from the city centre. The approximate cost for the taxi is 7,00 LVL (10,00 EUR).

More information about Riga

<http://www.inyourpocket.com/latvia/en/>

<http://www.riga.lv>

<http://www.riga.com>

Guidelines for presentation

Oral presentations

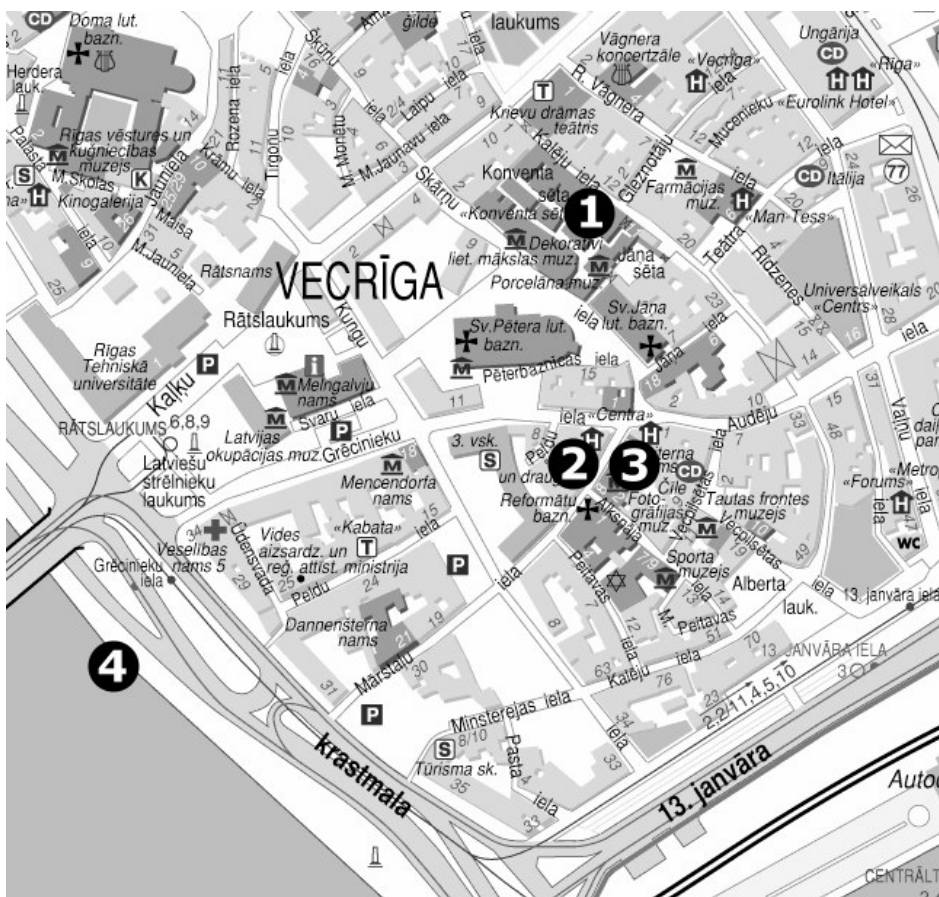
Each presentation will take 15 minutes; discussion 5 minutes.

The computer (video) and overhead projectors will be available for oral presentations.

Poster presentations

Posters will be exhibited on stands in a special room (room for coffee breaks). You are kindly asked to attach posters during the first coffee break on 8 June. The space of 1.0 m (horizontally) by 1.2 m (vertically) will be provided for each poster. Adhesive tapes and thumbtacks will be provided. On the top there must be a blank field (white height 21 cm) for the poster title, the author's names and affiliations, to be supplied by the Secretariat of the Colloquium. The poster should be readable at the distance of about two metres. Contact the Secretariat in advance if special equipment is required.

Poster session (authors in attendance time) is scheduled on June 8 from 13:30 till 14:50.



- ❶ Hotel "Konventa Sēta" (9/11 Kaleju Str.)
- ❷ Hotel "Radi un Draugi" (1/3 Marstalu Str.)
- ❸ Reiterņa nams (2 Marstalu Str.)
- ❹ Boat pier (November 11 Shore Street)