General Information

Research workshops on Nucleation Theory and Applications have been organised at the Joint Institute for Nuclear Research in Dubna, Russia, since 1997 every year in close cooperation between the Department of Physics of the University of Rostock, Germany (Dr. Jürgen W. P. Schmelzer, Prof. Gerd Röpke) and the Bogoliubov Laboratory of Theoretical Physics of the Joint Institute for Nuclear Research (JINR), Dubna, Russia (Prof. Vyatcheslav B. Priezzhev, Dr. Vyatcheslav I. Zhuravlev, Mrs. Galina G. Sandukovskaya). The organisation of the workshops was and is supported by colleagues from the International Department of the JINR (Mrs. Elena N. Rusakovich) and sponsored by the Heisenberg-Landau program of the German Ministry for Science and Technology (BMBF), the Deutsche Forschungsgemeinschaft (DFG), the German Academic Exchange Council (DAAD), Q(uarz)S(chmelze)IL(menau) Germany, Guardian Industries Corporation USA, the Russian Foundation for Basic Research and the UNESCO-Regional Office for Science and Technology in Europe.

The tentative (but more or less final) program of the workshop part is enclosed. The lectures included here as reserve lectures will be incorporated for sure in the final version of the program.

Program of the Workshop Part

Saturday, April 10: Arrival of the participants

19.00: Get together at the Bogoliubov Laboratory of Theoretical Physics
We meet at the lobby of the hotel Dubna at 18.30.

Sunday, April 11: 9.30

1. Christoph Schick, E. Zhuravlev, A. Wurm (Rostock, Germany): Fast Scanning Nano-Calorimetry (10⁶ K/s) - Applications to Polymers and Metals
2. Evgeny Zhuravlev, C. Schick (Rostock, Germany): Crystal Nuclei Formation and Growth in Poly (e-caprolactone) studied by Fast Scanning Calorimetry
3. Hans-Jürgen Hoffmann (Berlin, Germany): Melting, Glass Transition and Relaxation of Inorganic Glasses
5. Galina G. Boiko (St. Petersburg, Russia): Some Theoretical Approaches to Glass Transition Process Description
6. Vladimir G. Baidakov (Ekaterinburg, Russia): Experimental Investigations of Nucleation in Superheated and Super-Cooled Water

Monday, April 12: 9.00

8. Vladimir M. Fokin (St. Petersburg, Russia), Alexander S. Abyzov (Kharkov, Ukraine), J. W. P. Schmelzer (Dubna & Rostock), E. D. Zanotto (Sao Carlos, Brazil): Stress Induced Pore Formation and Phase Selection in a Crystallizing Stretched Glass
9. Nikolay S. Yuritsyn, V. M. Fokin (St. Petersburg, Russia): Crystal Nucleation and Growth in Na_{2}O-CaO-SiO_{2} Glasses.
10. Irina G. Polyakova (St. Petersburg, Russia): Oxidation Behavior of MoSi_{2} in the Temperature Region of Molybdenum Pesting
11. Galina A. Sycheva (St. Petersburg, Russia): Heterogeneous Nucleation of Lithium Meta- and Disilicate Crystals in Photostructurable Glasses
12. Boris Z. Pevzner, V. P. Klyuev, I. G. Polyakova (St. Petersburg, Russia): Thermal Expansion over the Glass Transition Region: Influence of Composition and Structure of Glasses
13. Andriy M. Gusak, A. O. Kovalchuk (Cherkassy, Ukraine), K. N. Tu (Los Angeles, USA): Diffusion and Nucleation Problems in Growth and Reactions of Nanowires

Special lectures: 18. 30

15. Naoum M. Kortsenshteyn (Moscow, Russia): Some other Spectacular Adventures of Naoum M., his Wife and their camera this time in Prague and Kamchatka
16. Alexander L. Tseskis (Leverkusen, Germany): NRW/Germany-some colourful pictures and even more colourful comments

Tuesday, April 13: 9.00

18. Sergey A. Kukushkin and E. V. Koenenkov (St. Petersburg, Russia): The Electron Metal-Insulator Transition in Graphite: Thermodynamic Analysis
20. Werner Ebeling (Berlin, Germany): Rate Processes in Clusters with Non-Maxwellian Velocity Distributions
21. Alexander P. Chetverikov (Saratov, Russia), W. Ebeling (Berlin, Germany), M. G. Velarde (Madrid, Spain): Dynamics of Localized Excitations in Heated Nonlinear Two-Dimensional Lattices
22. Dmitri I. Zhukhovitskii (Moscow, Russia): Surface Oscillations of a Charged Cluster
24. R. S. Berry, Boris M. Smirnov (Chicago, USA, Moscow, Russia): Cluster Catalysis as a Result of Subsequent Transitions between Configuration States of Clusters and Reagents

Wednesday, April 14: 9.00

25. Vladimir S. Balizkij (Chernogolovka, Russia): Generation and Phase States of Hydrocarbons at the Interaction of Bituminous and Carbonaceous Rocks with Water Solutions at Moderate and High Temperatures and Pressures
26. Arkady E. Glikin (St. Petersburg, Russia): Homogeneous and Heterogeneous Nucleation Causing Different Mechanisms of Oriented Crystal Overgrowth (Epitaxy)
27. Elena N. Kotelnikova (St. Petersburg, Russia): Phase Transitions of Pure and Mixed Molecular Crystals: Paraffins and Fatty Acids
28. Alexander R. Gokhman (Odessa, Ukraine), F. Berger, R. Küchler (Dresden, Germany): Rate Theory and SANS Study of Phase Separation in a Neutron Irradiated Fe-12.5at%Cr Model Alloy
30. Naoum M. Kortsensteyn and E. V. Samuilov (Moscow, Russia): Formation of the Submicron Condensed Phase in the Volume of Combustion Products of Coals

**Special lectures: 18. 30**

31. Vladimir S. Balizkij (Chernogolovka, Russia): A Geological Excursion to the North of Russia
32. Naoum M. Kortsensteyn: Some other Spectacular Adventures of N. M. K. and his wife this time in Bavaria and eventually Poland

**Thursday, April 15: 9.00**

33. Attila R. Imre (Budapest, Hungary): Bubble Nucleation in Geo-Fluids
34. Imre F. Barna (Budapest, Hungary): Two-Phase Flow Model for Energetic Proton Beam Induced Pressure Waves in Mercury Target Systems in the Planned European Spallation Source
35. Sergey P. Fisenko (Minsk, Belarusia): Towards to the Statistical Theory of Nucleation Kinetics in a Liquid Solution
36. L. A. Bulavin, K. V. Cherevko, V. M. Sysoev (Kyiv, Ukraine): The Tolman $\delta$-correction Calculation from the Equation of State and the Phase Nucleus Size Evaluation
37. Aram S. Shirinyan, Y. Bilogorodsky (Kiev & Cherkassy, Ukraine): Effect of a Size-Dependence of the Hetero-Diffusion Coefficient on the Nano-phase Growth in a Binary Diffusion Couple at Initial Stage of Phase Formation
38. Dmitry Yu. Ivanov (St. Petersburg, Russia): New Test of the Applicability of the Ising Model to the Description of Real Liquids
39. Pavel V. Kashtanov (Moscow, Russia): Critical Phenomena in Clusters
40. Vitaly B. Rogankov (Odessa, Ukraine): Concept of Non-Classical Spinodal and Near-Critical Heterophase Fluctuations

**Friday, April 16: 9.00**

41. Stanislav V. Burov, E. N. Brodskaya, A. K. Shchekin (St. Petersburg, Russia): Aggregation Work in Nonionic and Ionic Micellar Solutions: Theory and Molecular Dynamics Simulations
42. Anatoly E. Kuchma (St. Petersburg, Russia): Some New Analytical Results in the Theory of Supercritical Droplet Growth
43. Alexander K. Shchekin (St. Petersburg, Russia): Slow Relaxation and Aggregation in Ionic Micellar Solutions
44. Victor B. Kurasov (St. Petersburg, Russia): Distribution of Droplets in Multi-component Nucleation under Smooth External Conditions
45. Gennady Yu. Gor, A. E. Kuchma (St. Petersburg, Russia): Bubble Growth in Supersaturated Solutions: Dissociation of Solute Molecules
46. Valery V. Ledvansk, J. Smolik, V. Zdimal, P. Moravec (Minsk, Belarusia & Prague, Czech Republic): Molecule Trapping in Formation of Nanoscale Particles (Clusters) by Deposition from a Gas Phase

19. 00: Farewell party at the Bogoliubov Laboratory of Theoretical Physics

**Saturday, April 17: 9.00**

47. Olaf Hellmuth (Leipzig, Germany): On the Impact of Subgridscale Turbulence on New Particle Formation in the Convective Boundary Layer
48. Gentry E. Norman, A. V. Yanilkin (Moscow, Russia): Spontaneous Homogeneous Nucleation of Dislocations: Theory and Molecular Dynamics Modelling and Simulation
49. G. S. Smirnov, V. V. Stegailov (Moscow, Russia): Atomistic Simulation of Nucleation Events in Methane Hydrates
50. Gentry E. Norman, V. V. Pisarev (Moscow, Russia): Nucleation Phenomena at Crystallization: Molecular Dynamics Modelling and Simulation
51. Valery I. Leiman, P. Valov, M. Maksimov, O. Derkacheva (St. Petersburg, Russia): Formation and Dissolution of Subcritical Nuclei of CuCl in Glass
52. Alexander L. Tseskis (Leverkusen, Germany): Path Integral and Thermodynamics
Reserve lectures:

53. Roman V. Shapovalov, V. V. Slezov, A. S. Abyzov, L. N. Davydo (Kharkov, Ukraine): Nucleation and Growth of Nanoparticles in Confined Domains at Variable External Parameters

54. Dragomir Tatchev, A. Hoell, A. Heinemann, S. Haas, D. Tatchev, R. Kranold, M. Müller, G. Goerigk (Sofia, Bulgaria & Berlin, Germany): Nanostructure and Chemical Composition of Precipitates in Silver-free Photo-chromic Glasses


56. Jünn W. P. Schmelzer (Rostock, Germany and Dubna, Russia): On the Determination of the Kinetic Prefactor in Crystal Nucleation in Multi-Component Systems

57. Alexander S. Abyzov (Kharkov, Ukraine), J. W. P. Schmelzer (Dubna&Rostock), A. A. Kovalchuk (Cherkassy, Ukraine), V. V. Slezov (Kharkov, Ukraine): Evolution of Cluster Size-Distributions in Nucleation-Growth and Spinodal Decomposition Processes in a Regular Solution

Sunday, April 18

Departure of the participants

Some Hints Concerning Presentations

The time for the speakers in their lectures is not strictly limited to allow one a detailed explanation even of details of the research and an extensive discussion. Nevertheless, due to the large number of highly interesting contributions already proposed now and to have some order in anticipating the program, commonly 30 minutes to one hour are taken as a rough estimate for the duration of one lecture.

The workshop languages are English and Russian. If possible, English should be preferred. At least, the presentations (Power point etc.) should be written in English. Summaries of the content in the respective alternative language will be given as far as necessary.

Accomodation and Financial Regulations

No conference fee is required. We will cover, as a rule, the costs for accomodation in Dubna and, as far as possible, the travel expenses (at the level of the costs for railway tickets of the cheapest category (“plazkartnyi vagon”)) for invited speakers from Russia and the former Soviet Republics to Dubna and back (for refunding the expenses, please, do not forget to take a komandirovotschnoe udostoverenie with you). Note further that in contrast to previous years, the payment for return tickets will be performed by bank transfer to an appropriate bank account. So, for those these regulations refer to, please, do bring with you the respective bank account information or send it after return home with the ticket to the address to be announced in Dubna. Moreover, our colleagues from Moscow and Moscow region we would like to ask to pay the travel costs by themselves as already done in previous years. In case of questions, please, contact us.

Accommodation for the participants of the workshop will be reserved in the older (small) hotel Dubna (ul. Vekslera 8; in case that changes occur here, we will inform you as soon as possible). For reservation of accommodation, please, submit us your planned days of arrival and departure as soon as possible (not later than March 20). For colleagues arriving by plane, a shuttle service will be organized. So, these colleagues are asked to submit in advance the dates/times of arrival and departure and flight numbers (if not done so far). For colleagues arriving by train, below the schedule of the train connections
from Savelovo railway station to Dubna and back is supplied. Changes are possible here, so check it at the homepage of the LTP of JINR (http://theor.jinr.ru/~nsrt03/table.htm). Note that there is also a bus service from Savelovo railway station to Dubna and back.

<table>
<thead>
<tr>
<th>FROM DUBNA</th>
<th>FROM MOSCOW</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>departure</strong></td>
<td><strong>arrival</strong></td>
</tr>
<tr>
<td>from Dubna</td>
<td>to Moscow</td>
</tr>
<tr>
<td>4:55</td>
<td>5:05</td>
</tr>
<tr>
<td>5:30</td>
<td>5:40</td>
</tr>
<tr>
<td>7:11</td>
<td>-</td>
</tr>
<tr>
<td>7:45</td>
<td>7:54</td>
</tr>
<tr>
<td>10:38</td>
<td>10:51</td>
</tr>
<tr>
<td>13:08</td>
<td>-</td>
</tr>
<tr>
<td>14:03</td>
<td>14:12</td>
</tr>
<tr>
<td>17:32</td>
<td>17:41</td>
</tr>
<tr>
<td>21:51</td>
<td>22:00</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Express (non-stop train)

Week-ends only

(w) - working days only

To get to Dubna from Moscow, you should go to the Savyolovsky railway station (underground station Savyolovskaya) and take a train to Dubna.

**Entry Permission and Some Additional Rules**

For entry permission to the Laboratory of Theoretical Physics, please submit us the following information (if not available already from previous or the present workshop preparations):

1. Surname:
2. First and (eventually) fathers names:
3. Citizenship:
4. Date/Place of birth:
5. Passport (number and expiry date):
6. Place of work (mailing address):
7. Phone/Fax/Email:
8. Dates of arrival and departure and flight number (if appropriate):

We ask all participants (also those who sent us the respective information in the preparation of previous workshops) to send us with the times of arrival and departure also once more the
passport numbers (this does not refer to those colleagues who sent us their data this year already, e.g., for visa-applications). These passport numbers will be required for the preparation of the entry permission list. Some of the passport numbers submitted to us some time ago may be not valid already.

We will apply, again, for the permission for all participants, to take their laptops in and out of the territory of the institute during the time of the workshop, such permissions are usually obtained without any problems. A beamer & PC will be available to allow for Power-point or similar presentations.

Note as well that for taking photos inside the territory of the institute, a special permission is required. So, if you have some plans in this respect, please, let us know it in advance. Here the chances to get the respective permission are not so high, however.

Addresses for Contacts

All questions concerning the workshop, please, submit to Dr. Jürn W. P. Schmelzer and Prof. Vyatcheslav B. Priezzhev:

Address: Joint Institute for Nuclear Research, Bogoliubov Laboratory of Theoretical Physics, Dubna 141980, Russia

Phone: Schmelzer: (+49 (0)381) 498 6943, (+7 49621) 63 703
       Priezzhev: (+7 49621) 65 333

Fax: (+49 (0)381) 498 6942; (+7 49621) 65 084

Email: juern-w.schmelzer@uni-rostock.de,
       juern@theor.jinr.ru (Schmelzer); priezzvb@theor.jinr.ru (Priezzhev)

preferably via Email:

juern-w.schmelzer@uni-rostock.de (till March 20, 2010)
juern@theor.jinr.ru (after March 20, 2010)

For further details see also the homepage of the Bogoliubov Laboratory of Theoretical Physics of the Joint Institute for Nuclear Research, Dubna, Russia, http://theor.jinr.ru, and the homepage of the JINR, http://www.jinr.ru.

Looking forward to see you in Dubna.

Jürn W. P. Schmelzer  Gerd Röpke  Vyatcheslav B. Priezzhev

P.S.: See also the appendix for some additional information!
Appendix 1: Congratulations to our ladies

*It is a particular pleasure to congratulate all ladies “s nastupayushim prasäñikom”.*

Enclosed “virtual flowers” – accompanied by the best wishes for March 8 and beyond - are for you!!!

Appendix 2:

ПЕРВАЯ ВСЕРОССИЙСКАЯ КОНФЕРЕНЦИЯ
Золь-гель синтез и исследование неорганических соединений, гибридных функциональных материалов и дисперсных систем «Золь-гель-2010»

22 - 24 ноября
Санкт-Петербург
2010

Appendix 3:

11th Lähnwitzseminar on Calorimetry 2010 in Rostock
June 6, evening until June 11, morning

The scope of the 11th Laehnwitz Seminar on Calorimetry is planned to be "Interplay between Nucleation, Crystallization, and the Glass Transition". We are convinced that calorimetry is, and will prove to be, an important tool for studying structure formation in a wide variety of materials.

One of the tasks of the Laehnwitz Seminar has always been to bring together scientists from different fields of calorimetry and science and to offer a platform for broad and intensive discussions, stimulating progress and further development. At this moment, we have begun the organization of the 2010 Seminar, but the introductory lectures are not yet fixed. Following the spirit of the previous Laehnwitz Seminars, we plan to have a few (maximum 14) introductory lectures of about 60 to 90 minutes in length, followed by an almost open-ended discussion. In addition, as before, poster presentations are kept up for discussion during the whole time of the seminar. It is planned to discuss the benefits and even the problems of different approaches to the study of structure formation on very different time scales (e.g., by chip calorimetry with time scale of milliseconds) or on larger samples by conventional calorimetry (with time scale up to days).

In a continuation of the last Laehnwitz Seminars, we will focus on chip calorimetry and temperature modulation (DSC and AC calorimetry) but do not exclude other techniques. The organizers wish to cover the whole field of techniques which can successfully be applied to calorimetry and thermodynamics of structure formation in complex systems.

Sincerely Yours,

Christoph Schick            Guenther Hoehne
University of Rostock       Eindhoven University of Technology

Appendix 4: Our best wishes and congratulations!!!

Vitaly Valentinovich Sle佐 was born on March 9, 1930 in city of Sokol, Vologda region, Russia. In 1941 he was evacuated from the blockade Leningrad with one of the last groups of children. In 1948 he entered the physical-mechanical department of the Leningrad Polytechnical Institute, which he graduated with distinction in 1954.

From that time till now Sle佐's scientific activity was constantly connected with the Ukrainian Physical-Technical Institute - nowadays National Science Center "Kharkov Institute of Physics and Technology" (KIPT). Starting his scientific carrier in a theoretical department headed by I.M.Lifshiz he soon developed the theory of evolution of supersaturated solid solutions, which was verified experimentally many times. Now the term "Lifshiz-Sle佐 theory" or "Lifshiz-Sle佐-Wagner theory" is often used in the condense matter physics. Later V.Sle佐 was consistently engaged in the investigations of the evolution in complex multi-component solid systems with phase instability where he discovered the universal laws of evolution. During his scientific carrier he researched also in such fields of theoretical physics, as superconductivity, electronic theory of solid state and behavior of solids under irradiation. Since 1993 and till now he works in the theory of new phase nucleation in solids and liquids.

The basic feature of Sle佐's theoretical works is their orientation on the solution of actual physical problems; he always works in close contact with experimental physicists.

He received his PhD degree in 1959 and the D.Sc. in 1969. Since 1973 he has been Professor and Head of Laboratory and since 1996 head of Department at KIPT. He was awarded the State Prizes of Ukraine in 1978 and 1993. In 1995 he was elected to the National Academy of Science of Ukraine as a corresponding member. He has a title of Distinguished Man of Science and Engineering of Ukraine.

V.Sle佐 lectures as a professor at the Kharkov National University. He was a supervisor of 6 Sc.D and 10 PhD thesis researches in physical and mathematical sciences.

He is the author and co-author of more than 200 scientific papers and of four monographs.
Dear Vitali Valentinovich,

in the course of preparation of our next workshop, we would like to send you our congratulations and the best wishes on the occasion of your 80th birthday. It was always a great pleasure and honour to work together with you in Kharkov and Rostock and to have you in our company in Dubna. Enclosed are some photos remembering some of our meetings.
With the warmest wishes and greetings from all of us

[Signature]

Dr. habil. Jürn W. P. Schmelzer