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. Jünn 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 general aim of the workshops was and is

- to discuss recent developments in this field with particular emphasis on the work done in the different groups invited;
- to establish and/or tighten direct co-operation links in the framework of different common projects (DFG, BMBF, DAAD, QSIL, etc.);
- to bring together a number of leading scientists in the field of the theoretical description and experimental investigations of first-order phase transformations and critical phenomena of the member countries of JINR, Germany and beyond in order to perform or develop new research projects in this field;
- to check whether the experimental facilities available at the JINR in Dubna can be utilised for an experimental investigation of the kinetics of phase transformation processes in different systems of interest.

These aims could be fully realised as it is evident also from the Workshop Proceedings which have been published in Dubna in 1999, 2002, 2005 and 2008 (copies of the proceedings 2008 will be available not later than April 2009). A special volume of selected lectures on topics presented in the workshops was published 2005 (J. W. P. Schmelzer (Ed.), Nucleation Theory and Applications, WILEY-VCH, 2005). These accounts can be supplemented by the monographs of W. Ebeling, R. Feistel, Chaos and Kosmos, Synergetics of Evolution, Moscow-Ishevsk, 2005 (in Russian), V. P. Skripov, M. Z. Faizullin, Solid-Liquid-Gas Phase

Time-table

- The 13th research and scientific communication meeting will be held in Dubna for a period of one month in the range from April 1 - 30, 2009, hereby the mutual detailed information on the research carried out in the different groups (workshop part) will be covered primarily in the time from April 11 (arrival) till April 19 (departure), 2009. Work on common projects under way (1. 4. - 30. 4. 2009) will be performed by special arrangement.

- Mutual research visits of the participants in the course of the year (in dependence on financial funds available).

The tentative program of the workshop part is enclosed. It is presently rather dense to allow the majority of announced contributions to be realized. Due to some common final “fluctuations” some relaxation of the intensity of the program can expected. If not, we will have even more fun as it is/was usually the case!!

Program of the Workshop Part

Saturday, April 11: 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 12: 9.30

1. Vladimir S. Balitsky (Chernogolovka, Russia): "Visualization " in situ " of the Behavior and Phase Transformations of Oil and other Hydrocarbons in Aqueous Solutions at Temperatures up to 400 °C and Pressures up to 150 MPa
2. Hans-Jürgen Hoffmann (Berlin, Germany): Energy and Entropy of Crystals, Melts and Glasses
5. Andriy M. Gusak (Cherkasy, Ukraine): Nucleation and Reactive Formation of Nanoshells and Nanowires
7. Nikolay S. Yuritsyn, V. M. Fokin (St. Petersburg, Russia): Crystal Nucleation and Growth in Na2O-CaO-SiO2 Glasses

Monday, April 13: 9.00
9. Galina G. Boiko (St. Petersburg, Russia): Modelling of Silicon Dioxide in the Liquid, Crystalline and Vitreous States by Molecular Dynamics Simulations
10. Irina G. Polyakova (St. Petersburg, Russia): Surface and Volume Crystallization of Sodium Borate Glasses
14. Oleg A. Prokhoronenko (Laboratory of Glass Properties, St.-Petersburg, Russia): Advancing of VIS-NIR Radiation Through Heterogeneous Silicate Melts

Special lectures: 18. 30

15. Kirill I. Shmulovich (Chernogolovka, Russia), L. Mercury, C. Ramboz, M. El Mekki (Orléans, France): Vapour Phase Nucleation in Micro-volumes (d =3-300 µm) of Liquids: Density, Negative Pressure, Concentration, Kinetic and Size Effects
16. Naoum M. Kortsensteyn: Some other Spectacular Adventures of N. M. K. and his Wife this time in Bavaria and eventually Poland

Tuesday, April 14: 9.00

17. Vladimir G. Baidakov (Ekaterinburg, Russia): Spinodal and Pseudo-Spinodal Curves: Definitions, Existence and Results of Molecular-Dynamics Computations
18. Attila R. Imre (Budapest, Hungary): Determination of the Location of the Spinodal by MD-Simulations
19. Vitaly B. Rogankov (Odessa, Ukraine): Quasi-binodal at Negative Pressures as a Possible Limit of Actual Metastability
20. Dmitry I. Zhukhovitskii (Moscow, Russia): Surface and Bulk Fluctuations of Lennard-Jones Clusters
22. Vladimir E. Vinogradov, P. A. Pavlov (Ekaterinburg, Russia): Experimental Investigation of Superheating of Liquids under Large Negative Pressures

Special lectures: 18. 30

23. Genry E. Norman (Moscow, Russia): Nucleation Phenomena at High Strain Rate Loading of Metals
   - Alexey V. Yanilkin. Spontaneous Dislocation Nucleation at Plastic Deformation;
   - Alexey Yu. Kuksin (Moscow, Russia): Nucleation Preceding Fracture of Metals
   - Vasili V. Pisarev (Moscow, Russia): Large-Scale Cavity Growth in a Lenard Jones liquid
   - Oleg V. Sergeev (Moscow, Russia): Kinetic Spinodal and Spectral Analysis of Fluctuations in a Lenard Jones Liquids
24. Vladimir V. Stegailov (Moscow, Russia): Nucleation During the Methane Clathrate Hydrate Decay

**Wednesday, April 15: 9.00**


27. Andriy A. Kovalchuk, A. S. Shirinyan (Cherkasy, Ukraine), J. W. P. Schmelzer (Dubna, Russia & Rostock, Germany): Cluster Size Distributions in First-Order Phase Transitions in Binary Solutions: General Approach (two models)

28. Dragomir Tatchev (Sofia, Bulgaria & Berlin, Germany): Kinetics of Primary Crystallization of Hypoeutectic Amorphous Ni-P Alloys Studied by in-situ ASAXS and DSC


**Special discussion: 18.30**

a) Andriy A. Kovalchuk, Aram S. Shirinyan (Cherkasy, Ukraine): Evolution of Cluster Size Distributions accounting for Heterogeneous Nucleation


d) ..... 

**Thursday, April 16: 9.00**

31. Arkady E. Glikin (St. Petersburg, Russia): Homogeneous Nucleation of Mixed Crystals in Solutions: Distribution of Crystals in Isomorphic Compositions and Sizes

32. Timur V. Tropin, M. V. Avdeev, V. B. Priezzhev, V. L. Aksenov (Dubna & Moscow, Russia): Application of Nucleation Theory for describing the Kinetics of Cluster Formation and Growth in Solutions of Fulleren C_{60}

33. Valeri I. Leiman, V. Maksimov, P. Valov (St. Petersburg, Russia): Size Distribution of CuCl-Particles Depending on Temperature and Time of Nucleation

34. Alexander R. Gokhman, F. Bergner (Odessa, Ukraine; Dresden, Germany): Application of Rate Theory to Interpret Positron Annihilation Lifetimes for Neutron Irradiated Pure Iron

35. Yu. S. Bilogorodskyy, Aram S. Shirinyan (Cherkasy, Ukraine), J. W. P. Schmelzer (Dubna, Russia & Rostock, Germany): Influence of Particle Sizes of a Nano-powder
on Nucleation and Growth of Different Crystallographic Phases during Temperature Cycling (30 min)
36. Alexander L. Tseskis (Leverkusen, Germany): On BEC in Weakly Interacting Systems (30 min)
37. O. A. Osmayev, Roman V. Shapovalov (Kharkov, Ukraine): Two-Mass Transport Mechanism of Grain Boundary Segregation (30 min)
38. V. V. Slezov, Oleg A. Osmayev, R. V. Shapovalov (Kharkov, Ukraine): New Phase Nucleation on Grain Boundaries (30 min)

Special lectures: 18. 30

39. Alexey A. Lushnikov: The Adventures of a Russian in Finland
40. Alexander L. Tseskis: Spectacular Adventures, this time of A. L. T. and his Wife in Europe

Friday, April 17: 9.00

41. Alexey A. Lushnikov (Moscow, Russia): Coalescence of Graphs
42. Werner Ebeling (Berlin, Germany): Soliton Effects in Thermodynamics and Transport
43. Alexander P. Chetverikov, W. Ebeling, M. G. Velarde (Saratov, Russia; Berlin, Germany; Madrid, Spain): Thermal Solitons in Nonlinear Lattices
44. Pavel V. Kashtanov (Moscow, Russia): Nucleation Processes in Magnetron Plasma
45. R. S. Berry, Boris M. Smirnov (Moscow, Russia): Phase Transitions in Metal Clusters
46. A. E. Kuchma, Gennady Yu. Gor, F. M. Kuni (St. Petersburg, Russia): Gas Bubble Growth Dynamics after its Nucleation in Supersaturated Solutions
47. Jürn W. P. Schmelzer (Dubna, Russia & Rostock, Germany): On the Concept of Temperature in Application to Small Systems

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

Saturday, April 18: 9.30

48. Valeri V. Levdansky (Minsk, Belorussia), J. Smolik, V. Zdimal, and P. Moravec (Prague, Czech Republic): Effect of Surface Phenomena in Condensation of Molecules on Small Charged Aerosol Particles
49. Alexander K. Shchekin, T. Podguzova (St. Petersburg, Russia): New Results on the Combined Effects of Disjoining Pressure and Electric Field in Nucleation on Nanosized Charged Solid Nuclei
50. Anatoly Kuchma, F. M. Kuni, A. K. Shchekin (St. Petersburg, Russia): Effect of Excluded Volume on the Nucleation Stage in First-Order Phase Transitions
51. Olaf Hellmuth (Leipzig, Germany), A. K. Shchekin (St. Petersburg, Russia), J.W.P. Schmelzer (Dubna, Russia & Rostock, Germany): On the Contribution of Organic Vapours to Atmospheric New Particle Formation
52. Victor B. Kurasov (St. Petersburg, Russia): Theory of Transversal Transitions in Nucleation

Reserve lectures

The following lectures will be incorporated into the program at next opportunity:
53. Leonid M. Landa, Sc. Thomsen (Carleton, USA): Negative Pressure and Strength of Glasses before and after Tempering and Application to Silica-Glass

54. Jürn W. P. Schmelzer (Dubna, Russia & Rostock, Germany): Thermodynamics of Glass-forming Melts and Glasses: Model-Independent Definition of Fictive Pressure and Fictive Temperature


Whether the subsequently announced lectures 56 and 57 can be given, depends both on the financial situation and eventual withdrawals of above announced lecture proposals. The authors will be informed about the final decision as soon as possible:

56. Andrey V. Vinogradov (Ekaterinburg, Russia): Fluctuational Effects in the Acoustic Cavitation of Liquids

57. Alexander L. Guraschkin (Ekaterinburg, Russia): Superheating of Liquids in Confined Space and on Modified Solid Surfaces

Sunday, April 19

Departure of the participants

Some Hints Concerning Presentations

The time for the speakers in their lectures is - if not specified otherwise - 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 either 1 hour or 30 minutes 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.

Accommodation and Financial Regulations

No conference fee has to be paid. We will cover, as a rule, the costs for the stay in Dubna and, as far as possible, the travel expenses (at the level of the costs for railway tickets) 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). In dependence on the funds available, we can try to support - in very limited cases - also the stay of colleagues beyond the circle mentioned above.

Due to the extreme continuing increase of travel costs, we have to cope with very serious problems in realizing above mentioned policy. In particular, 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.
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). Please, let us know as soon as possible the dates of arrival and departure for hotel reservation.

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. 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>arrival</th>
<th>FROM MOSCOW</th>
<th>arrival</th>
</tr>
</thead>
<tbody>
<tr>
<td>departure</td>
<td>to Moscow</td>
<td>Departure</td>
<td>to B.Volga</td>
</tr>
<tr>
<td>from Dubna</td>
<td>4:55</td>
<td>5:05</td>
<td>7:20</td>
</tr>
<tr>
<td>from B.Volga</td>
<td>5:30</td>
<td>5:40</td>
<td>8:09</td>
</tr>
<tr>
<td></td>
<td>7:11</td>
<td>-</td>
<td>9:05</td>
</tr>
<tr>
<td></td>
<td>7:45</td>
<td>7:54</td>
<td>10:16</td>
</tr>
<tr>
<td></td>
<td>13:08</td>
<td>-</td>
<td>15:03</td>
</tr>
<tr>
<td></td>
<td>14:03</td>
<td>14:12</td>
<td>16:33</td>
</tr>
<tr>
<td></td>
<td>17:32</td>
<td>17:41</td>
<td>20:01</td>
</tr>
<tr>
<td></td>
<td>21:51</td>
<td>22:00</td>
<td>00:43</td>
</tr>
<tr>
<td></td>
<td></td>
<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):

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:
Please send the required information – as far as not available already - to Dr. J. W. P. Schmelzer till the end of March.

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 Powerpoint 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 or 40 594
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 23, 2009)
juern@theor.jinr.ru (from March 24, 2009)

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 seeing you in Dubna.

Jürn W. P. Schmelzer Gerd Röpke Vyatcheslav B. Priezzhev
Appendix 1: Congratulations

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

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

Appendix 2: Postdoc Positions at Rutgers: Molecular Modelling of Nanoscale Systems

Dear Colleagues,

Please circulate this info among your co-workers and students: Two Postdoctoral Positions are available to study phase behavior and transport in complex nanoscale systems by using multiscale molecular simulations and/or density functional theory. Systems of interest include nanoporous adsorbents, nanostructured self-assembled membranes, and nanoparticle-polymer composites. Applicants are requested to send a letter describing their prior research experience, current interests and goals, and a curriculum vitae to aneimark@rutgers.edu.

Alexander V. Neimark, Professor II and Graduate Director
Department of Chemical and Biochemical Engineering
Rutgers, The State University of New Jersey
98 Brett Road, Piscataway, NJ 08854-8058
Email: aneimark@rutgers.edu; Voice: 1-732-445-0834
Web: http://sol.rutgers.edu/aneimark.html

Appendix 3: International Symposium Domain Structuring '09

First announcement

Dear Colleague,

I am glad to announce that we are intended to hold the Third International Symposium "Micro- and Nano-scale Domain Structuring in Ferroelectrics" (ISDS'09) in September 13 – 18, 2009 in the Ural State University, Ekaterinburg, Russia.

Scope:
The principal objective of the Third Symposium is to bring a discussion forum on periodically poled micro- and nano-structured ferroelectrics and their modern applications.
Topics:
1. Physical basis of domain engineering
2. Periodical poling and application of patterned ferroelectrics
3. Submicron and nano-scale domain structuring
4. Testing and characterization of domain patterns
5. Domain structures in thin films
6. Relaxors and polar nano-regions
7. Domains in multiferroics
8. Growth and characterization of single crystals
9. Ferroelectricity and related phenomena in biomaterials
10. Theory and modeling

For more information please visit official web-site of ISDS'09: http://labfer.usu.ru/ISDS09/

The preliminary registration on ISDS'09 has been started. If you are intended to participate in ISDS'09, please, send the filled registration form to the Organizing committee (isds09org@labfer.usu.ru) before March 1, 2009. You can find the registration form on the web-site.

Best regards,

ISDS'09 chairman
Vladimir Shur

***********************

Prof. Vladimir Ya. Shur
Lenin Ave. 51, 620083, Ekaterinburg, RUSSIA
Phone/Fax:+7(343)261-74-36
E-mail: vladimir.shur@usu.ru
http://labfer.usu.ru
http://spm.usu.ru

Appendix 4:  ASAXS-workshop Berlin: Registration now open

Dear Colleagues,

We would like to bring to your attention an International Workshop on Anomalous Small Angle X-ray Scattering (ASAXS) that will be organized from the Helmholtz Centre Berlin for Materials and Energy at the BESSY Synchrotron in Berlin, Germany from May 14 to 15, 2009.

This workshop will focus on theory, instrumentation and application of ASAXS in different fields of physics, chemistry, biology, materials- and geo-sciences. The workshop will provide an opportunity to initiate and intensify collaborations and should give a kick off for further developments in the field of anomalous scattering. It is also an important aspect of the meeting to specify new challenging fields for ASAXS and discus new efforts in the development of dedicated software. Moreover, the complementary use of neutrons can be included.

The scientific program will consist on the following topics:
• Theory of anomalous scattering
• Instrumentation
• Application
• Additional use of neutrons

The invited speakers are:
M. Ballauff ; A. Bota ; G. Goerigk ; H.-G. Haubold ; K. Huber ; H. Stuhrmann

Our workshop website with the registration is available via http://www.helmholtz-berlin.de/asaxs-workshop.

We cordially invite you to visit this website for more detailed information and to register before 20th March. Abstracts for an oral or poster contribution are welcome, but not necessary. In case you decide later what subject you would like to present please send an email to the organizers.
We would appreciate, if you could spread this information among colleagues and friends. Looking forward to see you in Berlin!

The organizing committee: Armin Hoell, Sylvio Haas, Yvonne Herzog

On behalf of the organizing committee
Armin Hoell.

Dr. rer. nat. Armin Hoell
Helmholtz Centre Berlin for Materials and Energy GmbH
Department of Structural Research
Material Research
Glienicker Strasse 100
14109 Berlin

phone: +49 30 6392-4678, Fax: -5752 (Wilhelm-Conrad-Röntgen-Campus, Adlershof)
phone: +49 30 8062-3181, Fax: -3059 (Lise-Meitner-Campus, Wannsee)

email: hoell@helmholtz-berlin.de

Appendix 5: 12th PNCS and Crystallization 2009