

19th Research Workshop
Nucleation Theory and Applications
Dubna, Russia, April 1 – 30, 2015



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 co-operation between the Department of Physics of the University of Rostock, Germany (Dr. Jörn 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. Priezhev, 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), the Russian Foundation for Basic Research and others.

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, 2008, 2011, and 2013 (special issue, vol. 1). In the present year, another monograph (J. W. P. Schmelzer (Ed.): *Glass: Selected Properties and Crystallization*, de Gruyter, 2014) was published reflecting different circles of problems analyzed at the workshops.

Time-table

- The 19th research and scientific communication meeting will be held in Dubna for a period of one month in the range from April 1 - 30, 2015, 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), 2015**. Work on common projects under way (1. 4. - 30. 4. 2015) 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 program of the workshop part will be tentatively finalised in January, 2015. Please, submit us your proposals for contributions till the end of December, 2014. Some proposals for talks which could either not be presented in this year or have been already submitted or tentatively agreed upon are listed below (please, reconfirm in any case):

1. Valeri V. Levdansky (Minsk, Belorussia), J. Smolik, and V. Zdimal (Prague, Czech Republic): Effect of Size-Dependence of Cohesive Energy on Phase Transitions in Aerosol Systems with Nanoparticles
2. Vladimir N. Piskunov, D. V. Tsaplin, and R. A. Veselev (Sarov, Russia): Simulation of Particle Ejecta Effects from the Surface under Impulse Action
3. Andriy M. Gusak (Cherkassy, Ukraine): Competitive Nucleation in Open Nano-Systems
4. Vadim V. Brazhkin and K. Trachenko (Troitsk, Russia & London, UK): What Separates a Liquid from a Gas?
5. K. Trachenko and Vadim V. Brazhkin (Troitsk, Russia & London, UK): Liquid Heat Capacity and the Glass Transition
6. Karolina Adrjanowicz, M. Paluch, A. Grzybowski, K. Kaminski, and S. Jurga (Katowice, Poland): Crystallization of Glass-Forming Liquids under Elevated Pressure: Isochronal Crystallization Kinetics Approach
7. Georgy N. Gontcharov (St. Petersburg, Russia): Cluster Nucleosynthesis of Chemical Elements beyond Iron (Including Actinides and Superheavy Elements)
8. Georgy N. Gontcharov (St. Petersburg, Russia): Expanding Earth: Model Based Evaluation of Process Parameters
9. Anatoli V. Mokhov (Groningen, The Netherlands): Experimental Studies of Formation and Growth of Silica Particles in Flames
10. Andriy M. Gusak (Cherkassy, Ukraine): Competitive Nucleation in Open Nano-Systems
11. Vladimir G. Baidakov (Yekaterinburg, Russia): On the Surface Free Energy of Droplets, Bubbles, and Crystallites
12. Jörn W. P. Schmelzer and Timur V. Tropin (Rostock, Germany & Dubna, Russia): Theoretical Description of the Glass Transition: Some New Results

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. Please specify the time you need in submitting your proposal.

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 is required. However, as compared to previous years, we had to introduce some severe changes in the financial regulations. **In dependence on the funds available we will attempt further to support financially travel and accommodation of some of those colleagues who are not able to realize the participation in the workshop by own funds. By this reason, provided such financial support is required, please, apply in your application for it and indicate as well what amount is required.**

Accommodation in the hotel Dubna will be reserved, again, by the organizing committee (the prices for last year have been for one-bed rooms 1660 and 2030 roubles (single, separate) and 1100 (class A, single, but combined with a second room) and for double-bed rooms 1550 (separate) and 900 roubles per person (class B, combined with a second room).

Addresses for Contacts

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

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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.

Jörn W. P. Schmelzer Gerd Röpke Vyatcheslav B. Priezzhev Kholmirzo T. Kholmurodov