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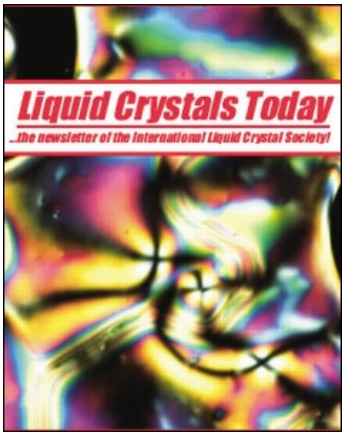

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INTERVIEW

Editor's interview with Professor Nadezhda Usoltseva

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ID: In the times of the Soviet Union, Russia produced some truly great liquid crystal scientists, often theoretically oriented academics, but also some great experimentalists. Do you feel that things have changed after the break-up of the Soviet Union?

NU: I think during the last 20 years that the number of great scientists in the field of liquid crystals has decreased not only in Russia, but all over the world. The peak of liquid crystal science, somehow, coincided with the research into fundamental properties and the historically conditioned opportunity of their practical application. Physicists, chemists, theoreticians, and engineers came to the field. Interdisciplinary approaches led to the rapid upsurge of liquid crystal science. In fact, I do not see people who are equivalent by their contribution to science to Freedericksz and Tsvetkov in modern Russia. There are also no foreign scientists matching Saupe, De Gennes or Gray. Nevertheless, the liquid crystals potential is not used up. It's not inconceivable that in the near future some new liquid crystal properties (not studied or not realised yet) will be very relevant. And then 'the best wits' will come to the science again.

After the break-up of the USSR objective difficulties for the development, as a whole, and the liquid crystal development, in particular, appeared. Difficult economical conditions for scientists, first of all the impossibility to realise their scientific ideas without suitable equipment and materials, made many gifted scientists take the decision to go abroad. This is typical not only of Russia, but also of the scientists from former USSR republics. That is why the 'generation connection' (we call it 'scientific school' in Russia) was broken. Nevertheless, liquid crystal research in Russia is developing successfully. It is the undoubted merit of our prominent scientists who continued their work even in the difficult conditions of Perestroika: Professors A.R. Khokhlov, V.P. Shibaev, A.S. Sonin, E.I. Rumtsev and many other colleagues from Nizhniy Novgorod, Krasnoyarsk, Kazan and other Russian cities.

ID: How has the funding situation changed over the last decade for Russian liquid crystal research in comparison to other research topics? In comparison to the rest of the world?

NU: During the last decade our government realised that it should support science as a whole. The Ministry of Education and Science of the Russian Federation announced some programs that finance different projects on a competitive basis. For example, there are contests for grants of scientific and educational centres development, of PhD student support, or of young scientists support. The liquid crystal field is not marked particularly. Our colleagues usually position themselves into different scientific grant sections: nanomaterials, fundamental physics, new material synthesis, etc. Another source of financing is the Russian Foundation for Basic Research (RFBR). It also provides some grants on a competitive basis for scientific research. Until now the concepts of the state support of the sciences are actively discussed. The criteria of grant allocation by the Ministry of Education and Science seem to be controversial to many scientists.

Concerning the funding in comparison to the rest of the world, it's not a secret that the amount

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of funding of scientific research in Russia is greatly lower than in the countries of Western Europe and America. Hence, there are problems with regards to modern equipment and materials acquisition and a resultant decline in the youth interest towards scientific work.

The government believes that the creation and support of 'elite' universities will be one of the ways out of the difficult situation. Probably, this 'spotty' financing will bear fruit in the future.

ID: **Have collaborations become easier? Are there now more collaborations between Russian and western European groups?**

NU: In fact, there is practically no prohibition to collaborate with foreign colleagues. Bilateral RFBR programs with a large number of countries promote cooperation. There are grants of the Russian Federation President for PhD students to study abroad, as well as agreements between different universities, and cooperation programs of the Russian Academy of Science with the academies of different countries. Nevertheless, these collaborations are not wide spread. One of the reasons for this is lack of funding. Without grant support it is impossible even for a senior professor to travel abroad, taking into consideration the generally rather poor academic salaries in relation to costs in western Europe and the north Americas. Legalisation of grant applications for different types of grants is very difficult without personal contacts. Also the process of attaining visas to the countries of Europe and America is still much formalised for Russian citizens which further prevents the widening of the collaboration.

ID: **Have the habits of publication changed within the Russian liquid crystal community?**

NU: Publication habits have not changed recently. Editorial Boards of journals have more freedom to change their criteria now. Every journal is interested in attracting authors. That is why these criteria are usually quite similar to international journals. A lot of journals are translated into English, which is why the authors are also interested in being published there.

ID: Is the scientific outreach program of the European Union and the EU states sufficient to embrace the former Soviet Union states, including Russia? Should there be more possibility of academic exchange?

NU: The European Union works with the countries of the former USSR on the framework scientific programs and educational Tempus program. I see the efforts from our foreign partners to explain the participation rules to find partners, etc. But the number of grant holders from the countries of the former USSR is comparatively small. Of course, it would be desirable to have more academic exchange in all categories – young scientists, post-docs, etc. I always stress that science should have no limits or boundaries, and that it should be the property of all people. When we planned the journal '*Liquid Crystals and their Practical Application*' in 2000, we wanted to overcome any borders to preserve scientific discussion in the field of liquid crystals across the former USSR in conditions when traditional scientific contacts were destroyed.

ID: Do your students now have a better opportunity to present their research results on an international basis? If so, how has this changed their employability in Russia, in Europe/USA?

NU: This opportunity depends on some factors. If an international conference takes place in Russia, the opportunity to take part in it is quite real. If it takes place abroad, it depends on the grants and funding of the trip by the university (this happens very rarely). It is difficult to answer if the participation at international conferences changes the employability of young researchers. No doubt, work experience abroad or meetings at international conferences are an invaluable experience promoting the development of a young researcher. I try to provide these opportunities for my PhD students as far as I can, but I do realise that some group leaders struggle to provide the same for their students. Much of this again comes down to questions of funding.

ID: **How has access to international scientific literature improved? Has this led to problems concerning Russian journals?**

The number of foreign journals received by non-Moscow universities is still quite small because of their high cost. These are practically prohibitive for most universities. That is why international journals are not in competition with Russian journals; these are two different worlds. Access to full articles of most foreign journals is via Internet only, but requires payment. This is the progress we achieved during the last years. Some monographs are accessible on the Internet which is very important for us.

ID: How has the increased mobility of Russian academics and postdocs changed the liquid crystal community in Russia? Many of them work abroad, at least part-time. Is that a problem or maybe even an advantage?

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NU: As mentioned before, the scientists' mobility from Russia has largely increased. A considerable number of really prominent scientists went abroad, at least for a part-time job. To my mind, this was an advantage and a disadvantage at the same time in the 1990s. I think the real 'brain drain' is when scientists stay in their home country but have to work as a sales person or a taxi-driver, for example. If these scientists can rather work abroad and realise their scientific potential, this is a contribution to the world of science. Moreover, many Russian scientists did not lose the contacts with their university or institutes and also contributed to the young specialists' training. But now is the time to create conditions for the work of Russian scientists in Russia.

ID: Are investments being made into the infrastructure of Russian universities? Do these improve the possibilities for doing state-of-the-art research? How has liquid crystal research in particular profited from infrastructure investments?

NU: During the years before the crisis I believe that the infrastructure of universities and the introduction of conditions to achieve leading research were much improved, essentially because of state support. In particular, business-incubators appeared in some universities. Technoparks appeared and are appearing now. Nevertheless, there is a great gap between scientific research and research application. Numerous exhibitions of scientific achievements (also of young scientists) in the European part of Russia and in Siberia serve to overcome this gap. The main problem is the low interest of modern Russian businesses in the introduction of different ideas and inventions, including the field of liquid crystals. As long as our prominent businessmen do not think that part of their responsibility is the development of novel technologies, and do not make investments for scientific investigations, R&D, and implementation of inventions, there will be difficulties with the introduction of scientific achievements into the sphere of applications.

ID: Dear Nadezdha, thank you very much for the interview, and the interesting insights into the developments in Russian liquid crystal research after the collapse of the Soviet Union.

Ingo Dierking
Editor of *Liquid Crystals Today*

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