

Preface

This twin issue of *Fizika Nizkikh Temperatur* is the Proceedings of the Sixth International Conference on Cryocrystals and Quantum Crystals (CC-2006) held in Kharkov, Ukraine on September 3 through 8. Traditionally, this Conference came in tandem after the International Matrix Isolation Conference, held right before CC-2006 in Chernogolovka, Russia, which allowed many participants to attend both conferences. The CC-2006 Conference was convened at the B. Verkin Institute for Low Temperature Physics and Engineering of the National Academy of Sciences of Ukraine in recognition of Institute's achievements in the title fields of the Conference. It is therefore no wonder that researchers from the Verkin Institute constituted a substantial percentage of the attendance, not to mention those unregistered who were present during the talks in the convention hall.

It should be added that CC-2006 was part of the events sponsored by the National Academy of Sciences of Ukraine to commemorate the centenary anniversary of Acad. Antonina F. Prikhot'ko. The general attitude of the Academy was clearly and to the point expressed in the opening address of Academician Secretary of the Division of Physics and Astronomy Acad. Vadim M. Loktev:

«It is a great honor for me to greet the participants of the opening Conference CC-2006 on behalf of the Presidium of the National Academy of Sciences of Ukraine, its President Prof. Boris Paton, and on my own. The President not only asked me to convey his best wishes but also to say that we all are very happy that such a well known and prominent physics Conference has at last come to Ukraine. Some of you might remember that Ukraine's turn to host this biannual Conference was two years ago, in 2004. However, the International Advisory Committee did us a favor and postponed the convening of this Conference in our country to 2006. It was so because this year we commemorate the centennial of two outstanding Ukrainian physicists who made a substantial contribution to the development of low-temperature physics in general and physics of cryocrystals and quantum crystals in particular. I mean Antonina Prikhot'ko and Boris Lazarev. Today I would like to say a few words about Acad. Prikhot'ko, the only woman among physicists who was a Full Member of the National Academy of Sciences of Ukraine. Her fundamental results are in the fields of low-temperature optics and cryocrystals, especially and specifically in spectroscopy of molecular crystals and solid oxygen among them. She and her colleagues were first to grow large enough oxygen single crystals, an achievement other laboratories were long unable to reproduce. Prof. Prikhot'ko did not like the widely accepted slightly contradictory term «solidified gases»; therefore,

she and a close circle of her collaborators came to invent the term «cryocrystals» as the most appropriate for the case. Her choice was subsequently accepted, becoming the only generalizing word designating a wide family of solids. So, I believe you will understand me if I call Ukraine the homeland of cryocrystals. By saying so I just wished to emphasize why we wanted to see all of you in Ukraine particularly this year at this Conference.

But there is something else I need to say. Ukraine is a big country with a population of almost 50 million with many really large cities. Then why Kharkov was chosen as the venue of this Conference? First of all, this city was the first political capital of Ukraine after the Soviets came to power. In the mid-thirties of the last century Kharkov became the «physical capital» of Ukraine and an internationally known center of physics. When the political capital moved to Kiev, the position of Kharkov as physical capital of Ukraine was put to doubt. Yet, as far as cryogenics and, especially, physics of cryocrystals, Kharkov fully retained its status of the «capital». It is here in Kharkov that the first cryogenic laboratory in the Soviet Union was founded in the early 30-ties and afterwards, in 1960, the world renowned Institute of Low Temperature Physics (now named after its founder Prof. Boris Verkin). Kharkov is known for the fact that both geniuses Lions (Levs, in Russian), Shubnikov and Landau, worked here as well as Ivan Obreimov, Boris Lazarev, brothers Ilya and Eugene Lifshitz, Antonina Prikhot'ko, Boris Verkin, Vladimir Khotkevich, and Boris Eselson. Active now are Viktor Eremenko, Vadim Manzhelii, Igor Yanson, Sergei Gnatchenko, Mikhail Strzhemechny, Eduard Rudavskii and many others, whose results have enriched the physics of quantum fluids and crystals, cryocrystals, magnetism, low-temperature materials science, and others. I wish you to enjoy your stay in this beautiful city and every success to this Conference».

Typically, the papers submitted for publications are classified into four sections: 1) Quantum crystals; 2) Classical cryocrystals at ambient pressure; 3) Cryocrystals under high pressures; 4) Excitation-stimulated processes in cryocrystals. The last topic proved to be quite abundant, which necessitated singling it out from topic 2. All papers submitted have been reviewed by two or three referees.

The comparative narrowness of the conference subject made CC-2006 a notable event, the audience keeping keen interest during the working hours and developing mutually beneficial contacts. The Organizing Committee did everything to make CC-2006 a success. The only thing that did not fit was the weather, rains pouring all four working days, which considerably spoiled ladies' program but helped to keep the participants inside.

The next Cryocrystals Conference is preliminarily scheduled to be held in Poland early fall of 2008.

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enthusiasm and application of the young researchers from Verkin Institute, who helped a lot to take care of numerous and versatile everyday conference chores, contributed essentially to bring the CC-2006 Conference to a successful finish.

Mikhail A. Strzhemechny,
Co-Chair of CC-2006

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