



**Yanson Igor Kondratievich
(1938-2011)**

I. K. Yanson was a prominent Ukrainian scientist, experimental physicist, talented teacher, member of the National Academy of Sciences of Ukraine (1992), Doctor of Science (1976), recipient of the State Prize of Ukrainian SSR in Science and Technology, Professor at the Department of Low Temperature Physics at Kharkov State University (1979-1987), Honored Scientist of Ukraine (2005), Honored doctor of Kharkov National University (2005).

I. K. Yanson was born and lived his whole life in Kharkov, Ukraine. His father was repressed and executed by the Stalin's regime in the year of his birth. In 1961 Igor K. Yanson graduated with honors from the Faculty of Radiophysics at Kharkov State University.

Yanson's impressive scientific career was firmly linked to the B. Verkin Institute for Low Temperature Physics and Engineering (ILTPE), where he worked his whole life after the foundation of the institute. Yanson did his first significant discovery already during his graduate study (1961-1965) at ILTPE: he was one of the first scientists in the world who succeeded to prove experimentally the existence of the AC Josephson effect in superconductors. Brian Josephson mentioned Yanson's experimental work during his Nobel Prize lecture in 1973.

I. K. Yanson defended his doctoral candidate thesis titled "Investigation of tunneling effect in superconductors" in 1965. Already in 1970, he became the head of the Department of Point-Contact Spectroscopy. He held this position until 2011. In 1976 Igor Kondratievich defended his doctoral thesis on "Tunneling spectroscopy of impurities and quasiparticle excitations in solids". In 1978, he became professor at Kharkov University.

Igor Kondratievich became a corresponding member of the Academy of Sciences of Ukrainian SSR in 1979 in the area of Physical Instrumentation, and a full member of the National Academy of Sciences of Ukraine in 1992 in the field of Electronics.

I. K. Yanson was a member of the editorial board of the Journal of Low Temperature Physics. He was also a member of the doctoral thesis defense experts committee of the Institute for Low Temperature Physics and Engineering.

Without a doubt, the focus of the scientific interests of I. K. Yanson was on the problems of solid state physics and low temperature physics. He made important contribution to our understanding of the physics of superconductivity by his experimental works. Apart from the above-mentioned pioneering experiment on the AC Josephson effect, I. K. Yanson conducted his well-known experimental studies on weak superconductivity and inelastic tunneling spectroscopy in solids.

The invention of the principally new and method of studying energy spectra of conductors, known as the point-contact spectroscopy, belongs to I. K. Yanson. This method is highly valued and recognized internationally by experts. Igor Kondratievich established that electrical properties of point-contacts at low temperatures contain detailed information about the energy spectrum of the interactions between the conductance electrons and the crystal lattice vibrations, or phonons. For his discovery, I. K. Yanson received one of the most prestigious awards in physics: the European Physical Society Prize (1987).

In his later work, Igor Kondratievich addressed the problems of quantum and mesoscopic effects in ultra-small contacts, and studied fundamental properties of novel materials and alloys. In the recent years the method of point-contact spectroscopy is gaining significance thanks to its applications in nanophysics. For example, this method is being employed in the studies of charge- and spin-transfer effects in nanoscopic objects, and in studies of their magnetic properties under the influence of ultra-high density electrical current. Recently, the formation of spin-valve structures on atomic level was observed by point-contact spectroscopy.

The broad spectrum of scientific interests of I. K. Yanson also included modern problems of biophysics. He determined with great precision the interaction energies of biological molecules in gas- and crystalline phases. Igor Kondratievich conducted remarkable experiments to determine the binding energies for nitrogen bases of nucleic acids. This work, which was published in 1979 in *Nature*, remains relevant even today: it is being referenced by the international science community for almost forty years.

Fruitful scientific practice of I. K. Yanson is reflected in the great number of publications. He authored or co-authored more than 250 articles in national and international journals, as well as five books.

I. K. Yanson closely collaborated with several universities and research institutes in such countries as France, Germany, Netherlands, Sweden, USA, Japan, and others. He gave numerous invited lectures at conferences and symposia. He was often invited to serve on the PhD theses defense committee in different countries. The signature of I. K. Yanson marks the wall at Kamerlingh Onnes laboratory at Leiden University, next

to the signatures of such famous physicists as Shubnikov, Einstein, Planck, Lorentz, and Bohr. These scientists had an honor to give a lecture at the well-known Ehrenfesti Colloquium.

For his significant accomplishments in science, I. K. Yanson received many awards and prizes: in addition to the European Physical Society Prize (1987), he also received the Ukrainian SSR Youth Prize in Science and Technology (1967), the Ukrainian State Award in Science and Technology (1980), the Humboldt Research Award (1995), the B.Verkin Prize of National Academy of Science of Ukraine (2006), Lise Meitner Prize (Sweden, 2008), and the award “For Scientific Achievements” by the National Academy of Sciences of Ukraine (2008). In addition, for his personal contribution to the development of science and technology in Ukraine during many years of fruitful work and for his high level of professionalism, I. K. Yanson received the Honorary Award of the Presidium of the Verkhovna Rada of Ukraine (1988), the Honorary Award of Kharkiv Regional State Administration (2008), the Order of Merit 3d Class (2008), and the Honorary Award of the Verkhovna Rada of Ukraine for “Merits to the Ukrainian People” (2010).

Apart from his scientific work, Igor Kondratievich paid a lot of attention to teaching and training of young scientists and future experts. In 1969-1970 I.K. Yanson taught at the Kharkov Institute of Radioelectronics, and from 1976 at the Kharkov Polytechnic Institute. In 1978 I. K. Yanson became professor at the department of Low Temperature Physics at Khrakov University. Former students of Igor Kondratievich include a corresponding member of the National Academy of Sciences of Ukraine, six doctors of science, and about 30 doctoral candidates (PhDs). One can say that I. K. Yanson left behind a scientific school, whose followers continue to implement and further develop his original ideas.

Apart from science, there was another passion in the life of Igor Kondratievich: music. In 1956, he graduated with honors from Khrakov music school, and in 1963 with honors from the extramural faculty of the N. A. Rimsky-Korsakov Leningrad State Conservatory in piano. At the beginning of his outstanding scientific career, I. K. Yanson had to make a very difficult choice: whether to dedicate his life to music or to science. He chose science, and he never regretted his choice.

Igor Kondratievich is remembered as a respectful, kind, and empathetic person with high moral standards, who is always ready to help in any matters. All people that worked with him, all his colleagues and students, will always honor the memory of him as a person, scientist, teacher, and citizen.