Honorary issue dedicated to the 70-th anniversary of Professor Ihor Stasyuk

On September 23, 2008 Professor Ihor Stasyuk, a prominent Ukrainian scientist, celebrates his 70th birthday. On this occasion, Institute for Condensed Matter Physics of the National Academy of Sciences of Ukraine and Editorial Board of "Condensed Matter Physics" decided to honour him with a collection of scientific papers. With great pleasure have numerous researchers, colleagues and coworkers of Prof. Stasyuk contributed their articles. The Editorial Board of "Condensed Matter Physics" expresses sincere gratitude to all of them. The highly skilled contributions deal with statistical theory of condensed matter, strongly correlated electron and spin systems, ferroelectrics and other areas which are close to the jubileer's interests during almost 50 years of his scientific activities.

Ihor Stasyuk was born on September 23, 1938 in Berezhany, Ternopil region, Ukraine. Having graduated from school in Stryj in 1954, he entered the Department of Physics of Ivan Franko Lviv State University at age of 16. Ihor Stasyuk started his research work already during student years, when, together with his supervisor Professor Abba Glauberman and V.V. Vladimirov, he developed a "new form of polar model" and introduced the "site elementary excitation" operators — predecessors of the well-known Hubbard operators. These results were summarized in an article which was acknowledged and recommended by N.N. Bogolyubov for publication in Doklady Akademii Nauk SSSR [Soviet Physics — Doklady].

Having graduated from the university in 1959 with honours, Ihor Stasyuk continued his research work during his postgraduate study (1959–1962) guided by Professor Abba Glauberman. In 1963 he successfully defended the Ph.D. (Cand. Sci.) thesis "The Method of Site Elementary Excitations in the Theory of Nonmetallic Crystals". In 1962 he received the position of an assistant, then an assistant professor at the Department of Solid State Theory and the Department of Theoretical Physics at Ivan Franko Lviv State University. At that period he obtained significant results in the theory of exchange interactions and ferromagnetism in strongly correlated electron systems. He developed the Wick's theorem and diagrammatic technique for Hubbard operators as well as model description of dynamic and thermodynamic properties of complex hydrogen-bonded ferroelectric compounds, elaborated microscopic theory of optical effects induced by external fields in dielectric crystals.

During 1978–1983 Ihor Stasyuk continued his research at the Institute of Applied Problems of Mechanics and Mathematics of the Academy of Sciences of Ukraine where he started investigations

in the theory of electron-deformation effects in semiconductors and systems with narrow bands, and crystals with cooperative Jahn-Teller effect. Since 1983 Ihor Stasyuk worked at Lviv Division of the Institute for Theoretical Physics (ITP) of the Academy of Sciences of Ukraine. In 1985 his research activities led to the Doctor of Science (Habilitation) thesis "Theory of Induced by External Fields Effects in Crystals with Structural Phase Transitions" and starting from 1986 he became Head of the Quantum Statistics Department. In 1990, Lviv Division of the ITP was reorganized into the Institute for Condensed Matter Physics (ICMP) of the National Academy of Sciences of Ukraine. Starting from the foundation of the ICMP Ihor Stasyuk was the Research Deputy Director for 16 years.

In 1995 Ihor Stasyuk was elected the Corresponding Member of the National Academy of Sciences of Ukraine.

It is in the field condensed matter physics theory that Professor Ihor Stasyuk gained his most important scientific achievements. He is widely recognized for developing mathematical methods of the theory of multilevel systems and for his research of fermionic systems with strong short-range correlations and physical phenomena in crystals with phase transitions. Professor Stasyuk investigates the effect of the Hubbard-type correlations and anharmonicity in the theory of high-temperature superconductivity. He is one of the authors of kinematic mechanisms of superconducting pairing in the Hubbard model. School by Professor Stasyuk is widely acknowledged for the development of microscopic theory of the effect of the fields of different nature (hydrostatic and uniaxial pressure, electric field, single-ion anisotropy, etc.) on the properties and thermodynamics of ferroelectric and Jahn-Teller crystals. Another field of his interests is connected with the protonic and ionic transport in the systems with superionic phases. Recent Stasyuk's interests concern the theory of the intercalation induced effects in various crystals. He is the author of almost 600 scientific papers and contributions, coauthor of two books.

Professor Ihor Stasyuk is a prominent teacher. He always combines his research work with the educational activities. Nineteen researchers under his supervision received Ph.D. degree; three of them became Doctors of Sciences. Numerous generations of students of the Ivan Franko National University of Lviv remember his brilliant lectures in Theoretical Physics, as well as more specific courses in quantum statistics, electrodynamics, solid state theory, phase transitions theory, mathematical methods in theoretical physics, etc.

Professor Ihor Stasyuk is an active organizer of science. He is vice-president of the Ukrainian Physical Society, full member of the Shevchenko Scientific Society, associate editor of the "Condensed Matter Physics", editor of the international journals, member of the International Advisory Committee on Ferroic Domains and Mesoscopic Structures. Ihor Stasyuk has been head and a member of the organizing and programme committees of many international and Ukrainian conferences in physics.

The Editorial Board of the "Condensed Matter Physics", collaborators from the Institute for Condensed Matter Physics and the authors of this honorary collection congratulate Professor Ihor Stasyuk on the occasion of his anniversary and acknowledges his unique and valuable contribution to science and wish him to stay in good health and many enjoyable years of fruitful scientific work.

List of main publications of Professor Ihor Stasyuk

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