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ACADEMICIAN OF THE NATIONAL ACADEMY OF SCIENCES OF UKRAINE OF UKRAINE LEONID ANATOLIIOVYCH BULAVIN (on the occasion of his 80th birthday)

On August 18, 2025, Academician of the National Academy of Sciences of Ukraine, Professor Leonid Anatoliiovych Bulavin turns 80 – an outstanding Ukrainian physicist specializing in the fields of liquids and liquid systems, phase transitions and critical phenomena, neutron spectroscopy of condensed matter, and medical physics.

Leonid Anatoliiovych was born in Poltava. After graduating from the Faculty of Physics of Kyiv State University named after T.G. Shevchenko in 1967 and completing his postgraduate studies in 1970, he joined the same university, where his entire scientific and academic career unfolded. Over the years, he advanced from research associate and assistant to professor, head of the Department of Molecular Physics (1989–2022), and dean of the Faculty of Physics (1990–2007).

In 1980, L.A. Bulavin defended his PhD thesis titled "Study of Ethane near the Liquid–Vapor Critical Point Using Slow Neutrons" (specialty 01.04.15 – Molecular Physics). In 1989, he defended his doctoral dissertation "Neutron Studies of Equilibrium and Kinetic Properties of Liquids" (specialties 01.04.14 – Thermophysics and Molecular Physics; 01.04.16 – Nuclear and Elementary Particle Physics). In 1991, he was awarded the academic title of professor. He was elected a corresponding member of the NAS of Ukraine in 1995 (Experimental Physics) and a full member (academician) in 2006 (Experimental Nuclear Physics).

L.A. Bulavin's scientific work spans a wide range of problems related to soft matter and its interaction with slow neutrons. Starting with his student years, he demonstrated all the qualities of a talented physicist when applying neutron diagnostic techniques to study the liquid state of matter. His persistent research efforts laid the foundation for a new scientific field – neutron spectroscopy of liquids, liquid systems, and phase transitions. Within this field, various experimental methods were developed and advanced: neutron optics, slow neutron transmission, quasielastic and inelastic neutron scattering, small-angle neutron and synchrotron X-ray scattering, and neutron reflectometry. These methods provide unique information on density profiles in liquids, concentration profiles in solutions near liquid–vapor and liquid–li-

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quid critical points, structure of colloidal systems, molecular and ionic diffusion in liquids and liquid systems, generalized frequency spectra, and surface layer structure of liquid systems.

The analysis of quasielastic neutron scattering in biomedical systems allowed the development of early diagnostic approaches to carcinogenesis. Inelastic neutron and synchrotron scattering were used to study collective molecular excitations in lipid membranes. Leonid Bulavin's studies of nanoscale liquid systems revealed size-dependence of the transport coefficients, marking a breakthrough in the nanophysics of liquids.

He played a key role in establishing small-angle neutron scattering as a major research tool for soft matter in Ukraine. This allowed detailed studies of the supramolecular structure of various liquids, including systems of biomedical interest such as magnetic fluids, fullerene solutions, and nanodiamond colloids. Neutron reflectometry was used to investigate surface layers of fluid systems.

The scientific school established by L.A. Bulavin enjoys broad international recognition. The research fields he pioneered are actively pursued in leading laboratories worldwide. Among his students are 20 Doctors of Sciences, 36 PhDs, and 4 Doctors of Philosophy.

L.A. Bulavin is the author of over 700 scientific publications, including more than 500 articles indexed in *Scopus* (h-index = 33), two single-authored monographs (*Neutron Diagnostics of the Liquid State of Matter*, *Critical Properties of Liquids*), 28 co-authored monographs (five published abroad, including those by *Springer*), and eight textbooks. His scientific results have been integrated into academic curricula.

He coordinated major research projects funded by the NRF of Ukraine and NATO's Science for Peace and Security Programme ("Technology for Reliable Identification of Radioactive Materials by Spectrometric Data"), as well as many government-funded R&D projects.

In parallel with his research activity, L.A. Bulavin has made a considerable contribution to science organization and higher education in Ukraine. He chaired the Organizing Committee of ten international conferences "Physics of Liquid Matter: Modern Problems" (1995–2018), each involving participants from over 20 countries, as well as the international conference "Spectroscopy of Liquids" (Samarkand, 2006) and IUPAC's "POLYSOLVAT 9" (Kyiv, 2012).

He serves as co-chair (together with Academician A.G. Zagorodny) of the Department of Target Training of Taras Shevchenko National University of Kyiv of the NAS of Ukraine. He is a member of the Presidium of the Department of Nuclear Physics and Energy of the NAS of Ukraine, the Scientific Council on Soft Matter Physics, and chair of the Liquid State Physics Section. Since 1990, he has chaired the doctoral dissertation council at Taras Shevchenko National University, under which more than 50 doctoral and 150 PhD theses have been defended.

He serves on the editorial boards of leading scientific journals indexed in *Scopus* and *WoS*, including *Ukrainian Journal of Physics* and *Nuclear Physics and Atomic Energy*. He was a guest editor of five special issues of *Journal of Molecular Liquids* (*Elsevier*, EU), two special issues of *Macromolecular Symposia* (*Wiley-VCH GmbH*, EU), and the 2025 special issue "Science from Ukraine: Advances in Applied Materials" of *ACS Applied Materials & Interfaces* (*USA*).

From 1989 to 2007, he was dean of the Faculty of Physics at Taras Shevchenko National University of Kyiv. From 1989 to 2022, he headed the Department of Molecular Physics, and in 1997 launched the specialization *Medical Physics*. In 2010, to strengthen international cooperation in education and research, he initiated a double-degree master's program with the University of Strasbourg (France) and developed ties with the Institute of Experimental Physics of the Slovak Academy of Sciences (Kosice).

His teaching excellence has been recognized through numerous honorary titles: Distinguished Professor of Taras Shevchenko National University of Kyiv, Honorary Doctor of V.N. Karazin Kharkiv National University and Odesa I.I. Mechnikov National University, Honorary Professor of Korkyt Ata Kyzylorda State University (Kazakhstan), and of Poltava V.G. Korolenko National Pedagogical University.

L.A. Bulavin's diverse and fruitful career, his contribution to the advancement of science and integration of research into education, and his dedication to training highly qualified specialists have earned him wide recognition. He is a laureate of the 2011 State Prize of Ukraine in Science and Technology, Honored Scientist and Engineer of Ukraine, and recipient of the O.I. Leipunsky and D.V. Volkov Prizes of the NAS of Ukraine. He has been awarded the NASU distinc-

tions "For Scientific Achievements", "For Training Scientific Successors", "For Professional Excellence", and is a full holder of the Order of Merit. He was also awarded the V.I. Vernadsky Gold Medal of the NAS of Ukraine.

Leonid Anatoliiovych Bulavin continues his active scientific work, filled with creative ideas and plans, inspiring colleagues, associates, and the younger generation toward new achievements.

We congratulate Leonid Anatoliyovich with his glorious jubilee and sincerely wish him good Cossack health, inexhaustible creativity, and new achievements!

The editorial board and the editorial staff of the Ukrainian Journal of Physics join in the congratulations of Academician Leonid Anatoliiovitch Bulavin and expect further fruitful cooperation!

A.G. ZAGORODNY, S.V. KONDRATENKO,
D.A. GAVRYUSHENKO, M.M. LAZARENKO,
K.V. CHEREVKO, T.Y. NIKOLAIENKO,
YU.F. ZABASHTA, M.P. KULISH, O.V. CHALYI,
K.O. CHALYY, M.I. LEBOVKA, V.V. KLEPKO,
YU.L. ZABULONOV, S.M. PEREPELYTSYA
his colleagues, friends, collaborators,
and disciples