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Obituary

In memory of Professor Mykola Lebovka (1954–2026)

Professor Mykola Lebovka — a distinguished Ukrainian scholar in the field of physical chemistry of soft condensed matter, Head of the Laboratory of Physical Chemistry of Disperse Minerals at the F. D. Ovcharenko Institute of Biocolloidal Chemistry of the National Academy of Sciences of Ukraine (NASU), and a long-standing member of the Editorial Board of Condensed Matter Physics, passed away on August 27, 2026.

Mykola Lebovka was born in Kyiv on May 15, 1954. Raised with a deep reverence for knowledge and a strong work ethic, he demonstrated an early passion for history, mathematics, and physics. He completed his secondary education at Kyiv's prestigious Physics and Mathematics Specialized School No. 145. In 1976, he graduated with honors from the Faculty of Physics at Taras Shevchenko National University of Kyiv, specializing in optics and spectroscopy. He earned his Ph. D. in Molecular Physics in 1986 with a dissertation titled "*Structure of Boundary Water Layers*", followed by his Doctor of Sciences (Dr. Hab.) degree in 1995 with the defense of "*Distribution of Random Fields in Heterogeneous Systems*".

Professor Lebovka was a rare polymath — an accomplished theoretical physicist, a skilled mathematician, an innovative experimentalist, and a practical chemical engineer, as well as a master of computer simulations. His early experimental research focused on the behavior of aqueous systems and liquid crystals using nuclear magnetic resonance (NMR) spectroscopy, making fundamental contributions to the study of liquids near interfaces and in spatially confined geometries.

Over his prolific career, his research interests spanned a remarkably broad spectrum, including the physics and chemistry of soft condensed matter, interfacial phenomena, statistical and computational

physics, and composite systems. He made landmark contributions to percolation and jamming phenomena in systems filled with highly anisotropic particles (such as carbon nanotubes, nanorods, and clay platelets), and discovered the effect of electrical memory in liquid crystal composites filled with organo-modified montmorillonite and multiwalled carbon nanotubes. In parallel, he conducted groundbreaking applied research on the application of pulsed electric fields (PEF) and electroporation to control the permeability of biological cell membranes, revolutionizing processes for food drying, bio-resource processing, and biomass extraction.

In recognition of his pioneering work, Professor Lebovka was awarded the State Prize of Ukraine in Science and Technology (2011) for quantum effects and structural self-organization in novel multifunctional nanomaterials. His honors also included the American Physical Society Award (1993), the ISSEP Award (1998), research fellowships from the French Ministry of National Education, and the Web of Science Award (2018). He was the author or editor of 15 monographs, holds 5 patents, and authored over 350 publications indexed in Scopus (totaling over 500 scientific papers), accumulating an h-index of 62 — a testament to the global impact of both his fundamental and applied research.

Beyond his research, Professor Lebovka dedicated immense energy to education and scientific mentorship. Over the decades, he delivered specialized courses — such as Simulation of Physical and Biological Media, Physics of Disordered Media, and Fractals in Natural Sciences — at leading Ukrainian institutions, including Taras Shevchenko National University of Kyiv, the National University of Kyiv-Mohyla Academy, Igor Sikorsky Kyiv Polytechnic Institute, and the National Aviation University. He was also an invited professor at the Université de Technologie de Compiègne and Sorbonne University in France. Known as an exceptionally gifted lecturer who could make complex mathematical concepts intuitively accessible, he guided 12 Ph.D. students and 1 Doctor of Sciences to successful defenses, mentoring a new generation of scientists now active across Ukraine and Europe.

Professor Lebovka was an active leader in the scientific community both nationally and internationally. He served on the Scientific Council of the National Research Foundation of Ukraine, the Scientific Council for Physics of Soft Matter of the NASU, the jury for the L'Oréal — UNESCO For Women in Science Award in Ukraine, and represented Ukraine for many years on the Council of the International Association for the Study of Clays (AIPEA). He served on numerous specialized scientific councils and editorial boards of prestigious international journals, including Condensed Matter Physics, Chemistry, Physics and Technology of Surfaces, Polymer Journal, and Research in Agricultural Engineering. His public outreach aimed to popularize science both in Ukraine and worldwide, while supporting scientists who continue their work despite challenging and unfavorable conditions.

Those who knew Mykola Lebovka will remember him not only as a brilliant scholar, but as a person of extraordinary warmth, generosity, and resilience. Having endured significant personal losses throughout his life, including the passing of beloved family members before him, he maintained a remarkably gentle and optimistic disposition. His characteristic, warm smile — instilled by his mother — was a constant invitation to open dialogue, friendship, and collaboration. Whether discussing physics over coffee, drafting papers with international colleagues during conference breaks, or spending cherished moments with surviving loved ones, he brought openness, humor, and vitality to every interaction.

The Editorial Board of Condensed Matter Physics, along with his colleagues, collaborators, students, and friends around the world, express their deepest condolences to his family and relatives. His scientific legacy, his mentorship, and his warm human spirit will continue to inspire us.