

Academician of NAS of Ukraine M. F. Kharchenko (1939–2026)



On February 16, 2026, Ukrainian science suffered an irreparable loss — Academician of the National Academy of Sciences of Ukraine, renowned expert in experimental physics, Mykola Fedorovych Kharchenko, passed away.

An eminent Ukrainian scholar, laureate of the State Prize of Ukraine in Science and Technology, laureate of the K. D. Synelnykov Prize of the NAS of Ukraine, laureate of the Prize of the Academy of Sciences of the USSR and the Polish Academy of Sciences, Professor, Doctor of Physical

and Mathematical Sciences, Chief Researcher of the Department of Magnetism at the B. Verkin Institute for Low Temperature Physics and Engineering of the NAS of Ukraine, Mykola Fedorovych Kharchenko was born on October 21, 1939, in the settlement of the KhtZ state farm, Chutove district, Poltava region.

In 1960, he graduated from the Faculty of Physics and Mathematics of V. N. Karazin Kharkiv National University with a degree in Physics. Since 1961, he worked at the

B. Verkin Institute for Low Temperature Physics and Engineering of the NAS of Ukraine, holding positions successively as engineer, leading engineer, junior and senior researcher, and head of department. In 1969, he defended his Ph.D. thesis in Physical and Mathematical Sciences, and in 1984, his doctoral dissertation in Solid State Physics. In 1974, he was awarded the academic title of Senior Researcher, and in 1993, the title of Professor. In 1995, he was elected a Corresponding Member of the NAS of Ukraine in Experimental Physics, and in 2009, a Full Member (Academician) of the NAS of Ukraine in Experimental Physics.

M. F. Kharchenko was a renowned experimental physicist and an outstanding world-class specialist in magnetism and the optics of magnetically ordered systems. More than six decades, his scientific life and creative activity were inseparably linked with the Institute, where he had worked since its founding year.

He made a significant contribution to the development of modern concepts in the physics of magnetism and magnetic phenomena in solids. Among his fundamental world-level achievements are the discovery of the linear magneto-optical effect and the magnetic-field-quadratic rotation of the plane of light polarization. He was the first to carry out optical visualization of collinear antiferromagnetic domains, developed methods for reorienting these domains in antiferromagnets with different magnetic symmetries, and demonstrated the possibility of preparing antiferromagnetic domain structures with predetermined configurations.

Among his many results that have become classical are the identification of magnetic-field-induced spin-reorientation transitions in collinear ferrimagnets and the discovery of new regularities in the formation and evolution of two-phase magnetic domain structures with four types of domains during spin-reorientation magnetic phase transitions. He also discovered modulated incommensurate phases in strongly anisotropic antiferromagnets and paramagnetic magnetoelastics with anti-ferrodistorsional ordering under the influence of a magnetic field, as well as super weak ferromagnetism in antiferromagnetic magnetoelectric crystals and the enhancement of magnetic-field-induced magneto-optical effects in nanofilms.

His scientific achievements were honored with the K. D. Synelnykov Prize of the Academy of Sciences of the Ukrainian SSR (1985), the Prize of the Academy of Sciences

of the USSR and the Polish Academy of Sciences (1987), and the State Prize of Ukraine in Science and Technology (2004). In 2012, he was awarded the Order of Merit, 3rd Class (Ukraine).

The scientific legacy of M. F. Kharchenko includes about 200 research articles and reviews. He was a co-author of the monograph “Magneto-Optics and Spectroscopy of Antiferromagnets,” later republished by Springer-Verlag. He delivered invited lectures at numerous international conferences, led research teams that received international grants, and enjoyed unquestioned authority in the global scientific community.

M. F. Kharchenko was also highly active in scientific and organizational work. He served as Head of the “Physics of Magnetic Phenomena” Section of the Scientific Council on the Problem “Low Temperature Physics and Cryogenic Engineering,” member of the specialized section of the Committee on the State Prizes of Ukraine in Science and Technology, Head of the Scientific Council of the B. Verkin Institute for Low Temperature Physics and Engineering on the problem “Low-Temperature Magnetism and Optics of Ferroids,” member of the editorial boards of the journals *Low Temperature Physics*, *Ukrainian Journal of Physical Optics*, and *Physics and Chemistry of Solid State*, and member of the Specialized Academic Council D 64.175.02 at the Institute.

It is difficult to overestimate his role in educating and mentoring new generations of scientists. For decades, he actively cooperated with V. N. Karazin Kharkiv National University, delivered lectures and specialized courses, and headed a branch of the Department of General Physics at the Institute. Among his students are an Academician of the NAS of Ukraine, several Doctors of Sciences, and about ten Ph.D. holders. In 1997, he was awarded the title of “Soros Professor.”

The bright memory of Mykola Fedorovych Kharchenko — an outstanding scientist, principled and demanding researcher, a person of high intelligence, a wise mentor deeply devoted to science — will forever remain in the hearts of his colleagues, students, followers, and all who had the honor of knowing, working with, and communicating with him.

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