

Personalia

Anatoly Zagorodny's 75th Birthday



The year 2026 marked the 75th anniversary of the birth of Anatoly Zagorodny, the famous theoretical physicist, organizer of science, Doctor of physical and mathematical sciences, Professor, Academician, and President of the National Academy of Sciences of Ukraine.

The scientific interests of Professor A. Zagorodny cover a wide range of problems in modern plasma physics and statistical physics. The main scientific works concern general issues of the theory of kinetic processes, the theory of turbulent plasma, and the theory of transport processes in thermonuclear plasma.

Anatoly Zagorodny was born on January 29, 1951 in Velyka Bahachka of Poltava region. The scientific activities are closely connected with the Bogolyubov Institute for Theoretical Physics of the National Academy of Sciences of Ukraine. He began working here in 1972, immediately after graduating from the Faculty of Radiophysics of Kharkiv State University. Here he was later promoted from the research intern to the scientific secretary, and after that to the head of the department, research deputy director, director, and honorary director of the Institute.

Since the late 1990s, Anatoly Zagorodny has actively combined his work at the Institute with scientific and organizational activities at the NAS of Ukraine. In 2009–2011, he worked as the Chief Scientific Secretary of the NAS of Ukraine, and in 2011–2020, he was the Vice President of the Academy. In October 2020, the General Meeting of the NAS of Ukraine elected him as the President of the Academy, and in October 2025, the scientific community of the Academy entrusted him with this high position for the second time.

The first scientific works of A. Zagorodny concerned the influence of plasma confinement on the spectrum and level of fluctuations in it. They were important for improving plasma diagnostic methods, in particular those based on the analysis of electromagnetic radiation scattered by fluctuations. Later, he generalized the theory of plasma-molecular systems. He derived kinetic equations with the Balescu-Lénard type collision integral for free and bound charged particles and investigated the effect of the

system boundary on the spatial distributions of electrons, ions, and molecules. At the same time, he developed the theory of *bremstrahlung*, taking into account the mutual scattering of plasma particles and molecules, ionization and recombination processes, as well as scattering by collective fluctuations. As a result, a number of completely new effects were predicted for plasma with a molecular component. In the 1990s, together with O. G. Sytenko, he proposed a theory of turbulent plasma with diffusion-drift motions of a liquid type, which allowed him to explain the unusual scattering spectra, observed experimentally. Further development of these ideas has led to the study of anomalous transport processes in plasma that cannot be described within the framework of Markov models. A. Zagorodny formulated kinetic equations for the systems with non-Markovian relaxation processes and obtained their solutions that explain the emergence of super- and subdiffusion regimes in plasma. An important direction of his later research is the study of plasma with small particle impurities, the so-called dusty plasma. He formulated microscopic equations for such plasmas, derived a chain of Bogolyubov equations and found the effective interaction potentials between dust particles. The results obtained are of fundamental importance for the modern plasma diagnostic methods. In the recent years, a considerable attention has been paid to the search equations relating the energy characteristics of fluctuation fields in media with temporal and spatial dispersion outside the region of transparency. This is a classic problem for which there had been no rigorous solution for a long time.

Professor Zagorodny is the laureate of the State Prize of Ukraine in the field Science and Technology (2005), the Honored Science and Technology Figure of Ukraine (2012), the laureate of the Synelnikov Prize (1991), Bogolyubov Prize (2012) and Davydov Prize (2019) of the National Academy of Sciences of Ukraine. He is a foreign corresponding member of the Austrian Academy of Sciences (2012), a corresponding member of the International Academy of Sciences, Arts and Humanities (Paris, 2004), and the honorary professor of Jilin University (Chanchun, PRC, 2017). Anatoly Zagorodny is the Doctor Honoris Causa of V. N. Karazin Kharkiv National University (2010), Yukhnovskii Institute for Condensed Matter Physics of the NAS of Ukraine (2010), Odessa National University (2015), Taras Shevchenko National University of Kyiv (2017), the Honorary Scientist of the International Institute for Applied Systems Analysis (2020). Anatoly Zagorodny is the Editor-in-Chief of the Ukrainian Physical Journal as well as a member of the Editorial Board of Condensed Matter Physics.

Heading the National Academy of Sciences of Ukraine, A. Zagorodny actively responds to the challenges of the present and simultaneously preserves the glorious traditions of the Academy. His activities as the President of the NAS of Ukraine contribute to the growth of its status and its role in our country and increase the presence of the Academy in the informational space of Ukraine.

The Editorial Board of Condensed Matter Physics wish Professor A. Zagorodny good health and inspiration to realize all his scientific and state-building plans.