

Vladislav Yur'evich Khomich (on his 70th birthday)

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April 11, 2022 was the 70th birthday of the outstanding Russian scientist and organizer of science, academician of the Russian Academy of Sciences (RAS), research supervisor of the Institute for Electrophysics and Electric Power of RAS (IEEP RAS), Vladislav Yur'evich Khomich.

V Yu Khomich was born in Moscow. In 1975, he graduated from the Department of Radio Engineering and Cybernetics of the Moscow Institute of Physics and Technology. In 1980, he defended his candidate thesis, “Investigation of cooled elements on power optics,” at the Lebedev Physical Institute of the USSR Academy of Sciences (FIAN) and, in 1990, he defended his thesis, “Design and study of cooled optical elements of lasers,” for the degree of doctor of phys.-mat. sciences. In 1992, he was conferred the rank of professor in the specialty of laser physics.

In 2000, V Yu Khomich was elected a corresponding member and, in 2006, a full member of RAS in the Division of Energetics, Machine Building, Mechanics, and Control Processes of RAS (DEMBMCP RAS) in the specialty of energetics.

V Yu Khomich is one of the founders of power laser optics. His theoretical and experimental studies played a key role in the formation and development of this area of fundamental science. He was the first to justify the expediency of using different types of porous structures and heat-transfer agents, including liquid-metal ones, for cooling energetically strained elements of power optics; he suggested for the first time the use of diamond films for their covering and highly porous materials for designing large-scale elements.

V Yu Khomich guided and participated in research works on power static and adaptive optics and in developing and creating a whole class of essentially novel energized elements widely exploited in various areas of science and engineering. He developed new methods to measure and control basic characteristics of superpower laser radiation, which then underlay unique arrays of instruments.

Under V Yu Khomich's guidance, fundamental studies were carried out, electrophysical devices were designed and created, and new plasma technological processes for recycling and disposing of highly toxic, medical, and solid domestic waste were worked out. The new elaborated plasma technologies were aimed at solving urgent problems in ecology and environmental protection. He proposed new experimental methods and schemes and created a unique complex of facilities for analyzing physico-chemical processes in plasma.

V Yu Khomich worked out physical bases of the method of direct laser micro- and nanostructuring of solid surfaces and experimentally confirmed the possibility of using this method to obtain structures of various shapes on the surface of metals, alloys, and other materials applied in high-tech branches of industry.



Vladislav Yur'evich Khomich

Attempts to design new generation energy facilities to be applied in ecology and the solar energy industry were an important field of V Yu Khomich's research. An automated complex of spectral devices was developed and created and geophysical characteristics of the upper atmosphere were examined. V Yu Khomich participated in the creation of a mobile laboratory for observing the state of the environment and in a complex analysis of the physico-chemical composition of the atmosphere over the territory of the Russian Federation.

V Yu Khomich proposed for the first time and analyzed a new approach to creating and manipulating electrohydrodynamic flows. A theoretical model of such flows was developed under his guidance on the basis of fundamental studies of active control over gas flows, and a multi-bit actuator system for obtaining an air flow in a boundary layer of aerodynamic surfaces was created and was more effective than those currently available around the world. These research works served as the basis of the now rapidly

developing new area of fundamental science — plasma aerodynamics.

V Yu Khomich proposed a new method of formation of high-voltage nanosecond pulses with a high repetition frequency underlying the creation of a number of unique generators of pulses of various durations and forms, as well as electrophysical facilities that surpass others in the world in many parameters. Complexes of devices for the registration and measurement of various parameters of power facilities were created under his guidance and were widely applied at institutes and in industrial plants in Russia and abroad.

A large volume of scientific research works have been carried out in recent years under the scientific guidance of V Yu Khomich. The results of these studies exceed the best foreign equivalents. V Yu Khomich and scientists from IIEP RAS actively co-operate with leading scientific organizations and universities in our country and abroad.

From 2003 to 2008, academician V Yu Khomich headed the Russian Foundation for Basic Research (RFBR), where he did a great deal of scientific-organizational work on innovative development of Russian economics. On his initiative, new fields of competitive activity were developed at RFBR: basic elements of the engineering sciences and goal-oriented and fundamental research. At RFBR, V Yu Khomich considerably extended cooperation with federal departments, state academies, and Russian regions. As a result, the foundation supported quite a few scientists and organized joint contests with CIS and other countries. He took part in RFBR's development of a competitive program which promoted the education of young scientists in our country.

Academician V Yu Khomich is the author of over 360 scientific works, including 6 monographs and 39 author's certificates and utility patents. He is highly focused on preparing scientific brainpower and is head of a school for young scientists. Among his disciples are two corresponding members of RAS and 6 doctors and 18 candidates of sciences, all working successfully in scientific research organizations in Russia.

V Yu Khomich's scientific works are recognized by scientists and specialists both in our country and abroad. The results of V Yu Khomich's scientific research have been implemented and applied in several leading industrial enterprises and institutions in our country.

V Yu Khomich is a member of the RAS Presidium and bureau of DEMBMCP RAS, a member of the presidium of the St. Petersburg Research Center, RAS, and chair of the scientific council, Electrophysics, power energetics, and electrical engineering, RAS. V Yu Khomich is chair of the Joint Dissertation Council and the Academic Council of IIEP RAS. He is a member of the Supervisory Council and of the Council of Experts of the Zhukovskii Institute National Research Center. He is chair of the section, Fundamental research in the field of creation of armory and military hardware of the Council of Experts of the Ministry of Industry and Trade of Russia and is a member of several other scientific councils.

V Yu Khomich is a laureate of USSR and RF State Prizes in the field of science and technology. He was awarded the A N Krylov Prize of the St. Petersburg Government in the field of technical sciences and the P N Yablochkov Prize of RAS in the field of electrophysics and electrical engineering, and has state prizes from the RF and foreign countries.

Academician V Yu Khomich is a regular author and member of editorial boards of the journals *Doklady Rossiis-*

koi Akademii Nauk. Fizika, Tekhnicheskie Nauki (Doklady Physics), Prikladnaya Fizika (Applied Physics), Elektrichestvo (Electricity) (Electrical Technology Russia), and Uspekhi Prikladnoi Fiziki (Advances in Applied Physics).

Vladislav Yur'evich's friends, colleagues, and disciples congratulate him on his jubilee and wish him health and creative longevity, new scientific advances and discoveries, happiness, and all the best to his family!

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