

## Victor Aleksandrovich Kabanov (1934–2006)

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Academician Victor Aleksandrovich Kabanov, an eminent scientist; Member of the Presidium of the Russian Academy of Sciences; Academician Secretary of the Division of Chemistry and Materials Sciences of the Academy; head of the Chair of Macromolecular Compounds (Faculty of Chemistry, Moscow State University); laureate of the Lenin, State, Demidov, and Lomonosov prizes; and Honorary Professor of Moscow State University, died on March 31, 2006, at the age of 72.

One of the brilliant and outstanding successors of Academician V.A. Kargin—the creator of the Russian Polymer School and the founder of the Chair of Macromolecular Compounds—has passed away. The whole life of Kabanov was inseparably linked with the Faculty of Chemistry of Moscow State University, which he joined in 1951. After graduation, he received a position at the Chair of Macromolecular Compounds, where he

defended his candidate's dissertation in 1960 and doctoral dissertation in 1966. In acknowledgment of Kabanov's scientific achievements, he was elected a corresponding member of the USSR Academy of Sciences in 1968 and a full member in 1987. Kabanov began his career as a junior researcher and became head of the chair in 1970 at the age of 36. Under his guidance, the chair has gained world fame and occupied a position as one of the leading scientific centers in the field of macromolecular science and a first-rate educational institution training graduate specialists and highly qualified personnel—candidates and doctors of sciences. The chair has graduated more than 800 students; nearly 400 candidates and doctors of sciences are among its graduates.

One of the world leaders in polymer science, Kabanov is the founder of an important scientific school. A man of great erudition, combining scientific intuition with profundity of insight into modern tendencies in chemistry, Kabanov has made a significant contribution to macromolecular science. Synthesis of new polymers, the kinetics and mechanism of polymerization, interpolyelectrolyte reactions and interpolymer complexes, simulation of biopolymers and creation of biologically active macromolecules (including artificial immunogens), polymer metallocomplexes, and gel-immobilized metal-complex catalysts were among the key directions of his research.

Kabanov's fundamental scientific achievements include the discovery and explanation of the phenomenon consisting in abnormally fast low-temperature polymerization of solid monomers in glass-crystal phase transitions (Lenin Prize, 1980). Spontaneous polymerization of 4-vinylpyridine on polyanions, a process discovered by Kabanov, was the first specific matrix synthesis of an artificial polymer simulating the formation of biomacromolecules.

Together with his pupils, Kabanov substantiated and developed the concept of complex-radical polymerization of vinyl and allyl monomers as a specific type of polymerization processes where the complexing agents serve as catalysts or inhibitors of elementary events of chain growth, termination, and transfer reactions.

He also established the fundamental features of the free-radical polymerization of ionogenic monomers (Lebedev Prize of the USSR Academy of Sciences, 1984).

Kabanov discovered and quantitatively studied reactions of macromolecular exchange and substitution in interpolyelectrolyte complexes, which are of crucial importance for molecular recognition and self-assembly of supramolecular polyelectrolyte structures (Lomonosov Prize, 1999). These studies played an important role in developing scientific foundations for designing polymer–subunit immunogens and vaccines of a new generation. In the opinion of Academician R.V. Petrov, a leading Russian immunologist, Kabanov first suggested the use of the biological activity of polymers for preparing the most popular influenza vaccine (State and Demidov prizes, 2001).

In addition to fundamental studies, Kabanov had also been active in their practical implementation. The technology for the production of polypropylene tape yarns with enhanced strength characteristics, which is still used in industry, was developed and implemented under his scientific supervision. He also made an invaluable contribution to the design of organic glasses for aviation and other industries.

Another vivid example is the development of a recipe (based on interpolyelectrolyte complexes) for preventing the migration of radioactive dust in the zone of the Chernobyl accident. Kabanov was among the first who, together with the chair's research workers (A.B. Zezin, L.B. Stroganov), moved to oversee field testing in Chernobyl shortly after the accident. The optimum technical solution was found owing to earlier experimental investigations, and Kabanov's personal participation in practical works, including those at the location of the accident, made it possible to proceed from laboratory and field testing to industrial production and application of the recipe in the shortest possible time.

Kabanov was a self-sacrificing man. He was among those who were first to step forward from the line. A boy of the wartime generation with a strong sense of honor, he used to say, "This is a special debt to those who did not return home from war." He was a civil man but won the respect of military men and other accident liquidators. Chernobyl became his war spot, where he knew the feeling of frontline brotherhood and service to the fatherland.

Kabanov's keenness on science, ability to deeply penetrate into the essence of phenomena and laws of the studied processes, and endeavor to pass all these things to his pupils and colleagues constituted the major features of his generous nature. He generously shared his fund of knowledge with his pupils and frequently repeated that "in science only the beggar may be robbed." His scientific luggage contained so many new ideas and original approaches that they could be sufficient for creating many novel directions.

The scientific authority of Kabanov originated not only from his professionalism and prominent position in Russian science but also owing to such human features as benevolence and kindness toward all people he

encountered. He enjoyed high respect and love of various people regardless of their education, social position, occupation, and nationality. He always had respect for peoples' dignity: He spoke to others in simple terms; did not intimidate them or cause them to feel less important; and used humanitarian values and principles, of which he had a delicate perception and which he never betrayed. People of different ages reached out to him because of his magnetic personality and aspiration to help them in solving not only scientific but also regular everyday problems. A man with a big heart, he was always ready to help in peoples' hours of need regardless of the time involved.

Kabanov paid much attention to research and organizational work and editor's duties. He was editor of *Entsiklopediya polimerov* (Encyclopedia of polymers) published in 1972–1977 and he carefully selected and edited articles of various kinds.

Since 1991, Kabanov had been editor-in-chief of *Doklady Akademii Nauk* (*Proceedings of the Academy of Sciences*), which is the central periodical of the Russian Academy of Science. He was also a member of the Scientific and Editorial Council for the publication of *Bol'shaya Rossiiskaya Entsiklopediya* (Comprehensive Russian Encyclopedia) and a member of editorial boards of several Russian and international scientific journals: *Priroda* (Nature), *Nauka v Rossii* (Science in Russia), *Journal of Biomaterials Science, Polymers for Advanced Technologies*, *Polymer Journal* (Japan), and *Korean Polymer Journal*. For many years, Kabanov had been a member of the editorial board of our journal.

Even though Kabanov was very busy with his work at the Academy of Sciences, he always gave preference to the Chair of Macromolecular Compounds of the Faculty of Chemistry, Moscow State University, to which he devoted the majority of his life. Kabanov was a talented teacher and excellent lecturer. His lectures for students and postgraduate students, as well as his lectures at international and national conferences, were always distinguished by exceptional profundity, clearness, and clarity. He could clearly and at the same time pronouncedly explain intricate problems, thereby making them understandable for any audience. At the faculties of Chemistry and Biology of Moscow State University, Kabanov delivered general courses of lectures on polymers. For students specializing at the Chair, he gave a special course "Introduction to Specialization." He also supervised the work of researchers, postgraduate students, and students within the framework of many international and national scientific projects and programs.

More than 60 young scientists defended their candidate's dissertations under his supervision; 15 of them became doctors of sciences, and 1 was elected a corresponding member of the Russian Academy of Sciences.

Kabanov was the author and coauthor of more than 600 publications, including two monographs. "A Treatise on Macromolecular Compounds" was issued under

his guidance. Long ago, it became the handbook for all students and postgraduate students at the Chair of Macromolecular Compounds, Moscow State University.

In 1996, Kabanov received the honorary title of Honored Professor of the Moscow State University. In addition, he became an Honorary Professor of Tver State University.

Kabanov was also highly active in science management. He was elected a member of the Presidium of the USSR Academy of Sciences in 1988, academician secretary of the Division of General and Technical Chemistry in 1992, and academician secretary of the Division of Chemistry and Materials Sciences (Russian Academy of Sciences) in 2002. From 1988 to 2003, Kabanov headed the Scientific Council of the Russian Academy of Sciences for Macromolecular Compounds. He was also a member of several other councils that coordinate federal scientific and technical programs in polymer chemistry and polymer materials science.

The state and the scientific community highly appreciated Kabanov's outstanding contribution to polymer science and its practical application. His

awards include the Order for Services to the Fatherland (3rd Class), the Order of Lenin, two orders of the Red Banner of Labor, the Order of Friendship, and the Medal of Reverence. He was elected a foreign member of the Royal Belgium Academy of Science, and a member of the European Academy of Sciences and the National Academy of Sciences of Ukraine. Kabanov is the first Russian scientist to be elected president of the Macromolecular Division of International Union of Pure and Applied Chemistry (IUPAC). He also made an important contribution to the establishment of international scientific contacts between the Russian Academy of Sciences; Moscow State University; major universities of the world; and research centers of a number of companies and firms in Europe, USA, Japan, and Korea. In 1995, he received the International Prize of the Polymer Society of Japan.

The memory of Victor Aleksandrovich Kabanov, a wise and charming man, outstanding scientist, and talented teacher, will always remain with his colleagues and friends who were lucky to be his pupils, friends, and colleagues.