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Inorganic Chemistry

Mark E. Vol'pin
1923−1996

IN MEMORIAM

The world chemical community suffered a great loss with the death on September 28, 1996, of Professor Mark E. Vol'pin, one of the most prominent scientists of our time. His death shocked all who had known and loved him.

Mark Vol'pin was born in Sympheropol' (Crimea) on May 23, 1923, into the family of a physician. In 1940 he entered the Chemical Department of Moscow State University, but his education was interrupted by war. In 1941 he joined the Red Army; however in July 1942 he was demobilized because of illness and was subsequently employed at armament works in the Ural region. He could resume his education at Moscow State University only in 1945.

For his Ph.D. degree (awarded in 1952), Vol'pin studied under the supervision of Professor A. F. Platé at Moscow University. The title of his Ph.D. thesis was "Interaction of olefins with ammonia in the presence of oxide catalysts. Synthesis of acetonitrile". In 1955, he began working at the Institute of Organoelement Compounds (INEOS) of the USSR Academy of Sciences (Moscow) in the laboratory of Professor D. N. Kursanov. Here, Vol'pin created a small research group and carried out his excellent work on non-benzenoid aromatic compounds, carbenes, and carbenoids. Here also, the studies on nitrogen fixation were started. The results obtained by Vol'pin during this period were so impressive that already in 1959 he could defend his Dr.Sci. thesis "Studies of novel non-benzenoid aromatic systems" and in 1964 he became the head of the laboratory for the study of complex organometallic catalysts which was established by the administration of INEOS specially for him. In this laboratory he performed most of his outstanding work which is well-known to the world chemical community.

Professor Vol'pin possessed outstanding intuition and a broad vision. His studies gave rise to essentially new fields in organic, organometallic, coordination, and biocoordination chemistry and in catalysis. He was the author of pioneer works on non-benzenoid aromatic systems as well as carbenes and carbenoids; he discovered chemical nitrogen fixation by transition metal compounds under mild conditions and carried out fundamental

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studies on binding of carbon dioxide by transition metal complexes. Professor Vol'pin's team was the first to report the synthesis of lamellar graphite complexes with zerovalent transition metals and to investigate their catalytic properties. He described a new class of catalysts, the aprotic organic superacids, and succeeded in using them for alkane functionalization. Also, he obtained the first amino acid and peptide derivatives of fullerenes, he synthesized organometallic complexes capable of acting as pH-dependent sources of free radicals and applied them for the initiation of radical reactions, and he demonstrated the potential of transition metal complexes for regulating enzymatic redox processes.

Professor Vol'pin's permanent interest in transition-metal-dependent processes in living organisms led to remarkable results in his last years, when he concentrated his research activity on the development of novel approaches to the chemotherapy of cancer and other serious diseases. Essentially new antitumor and fungicide agents based on certain cobalt complexes as the sources of active radical species were elaborated under his guidance.

Vol'pin's outstanding contributions to chemistry were appreciated throughout the scientific community. He was a full member of the Soviet and then Russian Academy of Sciences (RAS) and the Academia Europaea, a laureate of the highest national scientific awards, the Lenin and USSR State Prizes, the recipient of several other national and foreign awards and medals, and an invited honorary lecturer at the most prestigious events of the chemical sciences.

Whereas Professor Vol'pin's school attained one of the leading positions in the field of organometallic and biocoordination chemistry and catalysis, his ideas, which he generously shared with his colleages, had a much wider influence. He was an excellent lecturer. As a skillful editor of scientific papers, Professor Vol'pin was a member of the editorial boards of numerous authoritative chemical journals and serial editions. Furthermore, he made an essential contribution to the establishment and development of the scientific information system in Russia.

Professor Vol'pin's gifted ability as a scientific leader will also be long remembered. For many years he served impressively as first Deputy Director and then Director of INEOS, as one of the coordinators of the chemical branch of the RAS, as chairman of the Scientific Council of the RAS on organoelement chemistry, and as an organizer of conferences. It is certainly due to his skillful leadership, constant efforts, and great respect within the scientific community that INEOS retained its creative potential and remained a leader in the chemical world throughout the recent years which proved so difficult for Russian science.

Mark Vol'pin was a an outstanding scientist and a wonderful human being: vivid, optimistic, steadfast, charming, responsive, and generous. His friends, colleagues, and pupils will long find strength and comfort in his treasured memory, and new generations of chemists throughout the world will draw inspiration from his brilliant work.

Professor Yu. N. Bubnov
Director of INEOS

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