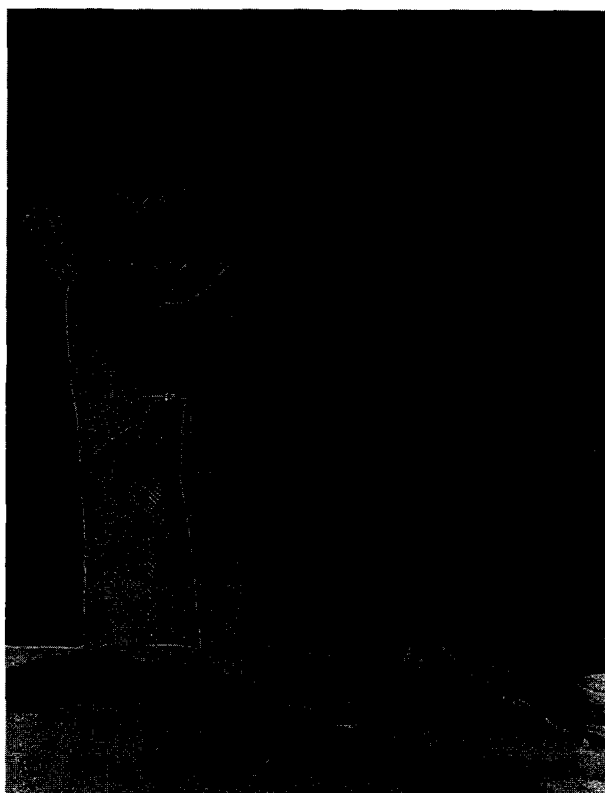


## Introduction

### Professor Yuri Struchkov (1926–1995)



An outstanding Russian organometallic chemist and crystallographer, Yuri Timofeevich Struchkov passed away on 16 August 1995 at the age of 69.

Yuri Struchkov was born in Moscow on 28 July 1926. He was educated at the Chemical Department of the Moscow State University during 1943–1948, and received his Ph.D. in 1953 for work in structural crystallography, supervised by Professor A.I. Kitaigorodsky. When, in 1954, the Institute of Organoelement Compounds was founded by Professor A.N. Nesmeyanov, Yu.T. (as many colleagues in Russia called him) joined its staff. Many readers, especially from Western countries, would probably be surprised to learn that this is where he would work for the rest of his life, more than 40 years. Here, in 1977, he received his D.Sc. and

established the Laboratory of X-Ray Structural Studies, which later, in 1989, became the X-Ray Structural Centre of the Russian Academy of Sciences. This Centre soon became known all over the world as one of the most efficient and productive laboratories in the field of structural crystallography. For many years it was a kind of Mecca for all young crystallographers of the Soviet Union, who were always welcomed heartily and received the advice of an expert, practical help and exhaustive professional tuition. More than 60 people received their Ph.D.s and about 20 scientists carried out their D.Sc. work under Yu.T.'s guidance.

The breadth and diversity of Professor Struchkov's scientific interests were amazing. His list of publications contained more than 1500 papers. His structural studies were of the utmost importance for the chemistry of cage hydrocarbons and fullerene derivatives, for the elucidation of superconductivity of organic compounds, and for the biological activity of steroid derivatives. He was a true expert in all these fields. However, while always quickly and eagerly responding to the most urgent scientific novelties of the moment, he never forgot the passion of his life, which from his early years stayed with him to his very last days, namely structural organometallic chemistry.

Strange as it might seem, this interest in structural organometallics was first ignited by a non-organometallic structure. As early as 1953, Yuri Struchkov, then a young post-graduate student, solved his first structure of a mercury derivative, which quite unexpectedly happened to be the  $\text{HgBr}_2 \cdot \text{coumarin}$  coordination compound rather than an organomercurial with a Hg–C bond, as had been believed initially. The Director of the Institute, known to every man and woman in the street in Russia as the President of the Academy of Sciences and to specialists all over the world as a famous organometallic chemist, academician A.N. Nesmeyanov, was enraged; the observation by the young scientist, based on the very sophisticated, and at that time not very popular, X-ray diffraction method, contradicted his own long-cherished ideas. It was not easy for the distinguished Director to admit his mistake, but he was too wise not to appreciate the persistence and enthusiasm of his young colleague.

Today you could find hardly any experienced organometallic chemist who has never made reference to the work of Yu.T. Struchkov. The organic derivatives of almost all elements of the Periodic Table have been structurally characterized in the X-Ray Centre at the Institute of Organoelement Compounds. These structural studies were never limited to mere analytical contributions. Professor Struchkov was always an active participant in the chemical aspects of the research, and many of his ideas, arising from a careful analysis of the structural results, stimulated new synthetic approaches, which in their turn gave rise to new and interesting structures. It was this kind of cooperation that brought about such important breakthroughs as the discovery of vinylidene complexes and allyl-olefin coupling reactions, and led to important advances in the structural chemistry of quinone  $\pi$ -complexes, ferrocenyl derivatives of the Group I and Group II metals, magnetoactive sulfide and large carbonylphosphine palladium clusters, transformations of organic ligands on triangular clusters of ruthenium and osmium, various carborane and metallocarborane derivatives, and many other systems.

All these major contributions became possible because Professor Struchkov, in contrast to the majority of his fellow crystallographers, always emphatically considered himself to be a chemist. Indeed he was a chemist, and his chemical intuition frequently served as the Ariadne's thread, which helped to keep the whole research on the right track. Only those who did not know Yu.T. sufficiently well might have been surprised when, after a 'purely chemical' lecture devoted say to fine organic synthesis, he would ask the lecturer about some minor preparative detail, and it was strange to know that this query came from a person who did not spend all his time pottering about with flasks and funnels.

We are sure that those who knew Yuri and met him at meetings and scientific gatherings would agree that his conference behaviour is certainly worthy of special mention. Being a member of several councils, editorial boards, etc., he naturally attended many sittings and sessions, and it would hardly be an exaggeration to say that at about 90% of such events of all sizes, ranging from laboratory seminars to International Union of Crystallography Congresses, he was the most attentive listener. His broad-mindedness made him almost equally interested in lectures devoted to various branches of chemistry, physics or biology; his questions were always just to the point and revealed a deep understanding of the subject. Many of those who had the chance to watch him closely at conferences or meetings were impressed by the detailed synopses he always made in his fast and neat handwriting.

His great scientific achievements were made possible by his rare combination of scholarly gifts and very strong personality. Handicapped from early adoles-

cence, when he lost his right arm in a road accident, he always lived and acted as if he had no disability. He became infuriated if someone tried to help him put on a coat or carry a suitcase, and he managed to drive a car with one hand so safely and skilfully that he never had any problems with the road police, even though he could not obtain a driving licence. His triumph over his handicap was such that those who knew him closely and met him every day often forgot about the disability, and this on occasion even caused some confusion.

A very gifted and independently-minded person, he was always his own man, but never indifferent to major and minor events in the life around him. Exacting towards both his colleagues and himself, he was at the same time a genuinely and unpretentiously kind person.

He was certainly fully absorbed in his work, and often spent both Saturdays and Sundays at his laboratory. Whilst in the Institute he could seldom spare time to talk about matters other than the work in hand, his colleagues would often be surprised to discover after several years of acquaintance that Yuri was an expert in both geography and history. He was particularly fond of dogs and used to keep one or two pets at home. He was the best friend of all the mongrels living in the backyards of many Moscow chemical institutes, and was even respected by those who roamed in the vicinity of the main headquarters of the Russian Academy of Sciences. Even at a time when the whole of the national scientific community was agitated by, say, the election of new members of the Russian Academy of Sciences, he could be found sitting in a long queue in a veterinarian's waiting room with an injured and homeless creature on his lap.

Yuri Struchkov was a man of remarkably great mental freedom and independence. Faithful to the memory of his father, who had been executed in Stalin's days as an 'enemy of the people', Yuri was never a time-server, and remained one of the very few laboratory chiefs in the USSR Academy of Sciences who did not join the Communist Party. The resulting complications, however, could not prevent him from taking good care of his laboratory, whose hard-earned and unique equipment and high standards he also succeeded in maintaining under the difficult economical circumstances that followed the collapse of the Soviet regime.

His merits were certainly widely recognized although, as often happens, their acknowledgement by scientific colleagues all over the world came much earlier than official recognition. In 1988 he was awarded the Nesmeyanov Gold Medal for outstanding contributions to the structural chemistry of organometallic compounds, and it was only in 1990 that he was at last elected a Corresponding Member of the Academy of Sciences. Even more surprisingly, he became a member of the National Committee of Crystallographers only in 1992. In the same year his investigations of highly

unstable and liquid compounds at low temperature and his variable-temperature studies aimed at elucidation of the regularities of molecular dynamics in crystals brought him the main crystallographic (E.S. Fedorov) Prize of the Russian Academy of Sciences.

Yuri was elected to the Executive Committee of the International Union of Crystallographers (as a member in 1990, then as Vice-President in 1993) rather late in his career, he nevertheless plunged into this novel activity with the youthful energy and dedication so typical of him. Suffice it to say that immediately after having undergone the simultaneous replacement of a heart valve and extraction of a malignant tumour from his right lung on 13 July 1995, Yuri's major concern was that his recovery would not take so long as to prevent him from going to the Executive Committee Meeting. Unfortunately, things did not turn out so well; shortly afterwards he unexpectedly developed a multi-system organ failure, resulting in cardiac arrest.

Each time brings its own heroes. Everyone knows that many centuries ago, when science had not yet grown out of its infancy, a single scholar could some-

times make major contributions to various branches of several sciences. Certain stages in the development of X-ray structure analysis demanded the emergence of scientists whose encyclopaedic knowledge and marvellous capacity for work were the prerequisites for successful application of this method to the most diverse subjects. Professor Struchkov was one of the most prominent of these scientists. In the future, X-ray crystallographers as well as specialists in organometallic, coordination, or organic chemistry will no doubt usually work with relatively narrow classes of compounds and their activity will hardly ever encompass a range of topics as wide as that studied by Professor Struchkov. One thing that is certain is that many researchers in the future will use in their work the fundamental results derived from the first X-ray structural studies that provided the milestones in particular fields, among them will be the structures determined by Yuri Struchkov.

Yuri is survived by his wife Irene Akhrem-Struchkov, his son Anton and his granddaughter Kate.

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