



SERGEI ZAKHAROVICH MAKAROV

(Obituary)

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On July 26, 1961 the great Soviet scientist Professor Sergei Zakharovich Makarov died after a serious illness; he was a member of the Communist Party of the Soviet Union, a State Prize winner, Doctor of Chemical Sciences, and Head of the Laboratory of Peroxide Compounds in the N. S. Kurnakov Institute of General and Inorganic Chemistry of the Academy of Sciences, USSR.

Sergei Zakharovich was born on October 14, 1898 in the village of Novyi Studenets in the Samarsk province; his father was a railway worker. After graduating from the Tashkent Secondary School in 1916 he entered the St. Petersburg Mining Institute. During the Civil War Makarov left the Institute and worked as an engineer in the military engineering administration of Tashkent. In 1920 he returned to Petrograd, and worked as an outside analytical chemist in the Uralplatin Institute. In 1924 he resumed his studies in the Mining Institute. Because of his outstanding ability, exceptional energy and organizing talent, Sergei Zakharovich soon attracted the attention of Academician N. S. Kurnakov and later became one of his closest students and co-workers. While still a student he was appointed scientific co-worker of the Institute of Physicochemical Analysis in the Academy of Sciences, USSR. After graduating from the Mining Institute in 1928 he remained in the Chemistry Department as a lecturer, also working in the Academy of Sciences.

S. Z. Makarov performed his first research work under Academician N. S. Kurnakov; he worked on ternary and multicomponent systems of carbonates, sulfates, chlorides of sodium, potassium, magnesium and the physicochemical characteristics of salt deposits and natural brines of the chloride-sulfate and soda lakes of Western Siberia and the bays of the Caspian Sea (Karabogaz, Kaidak, and Komsomolets). Using the data from Expeditions the laboratory investigations on the salt lakes of Western Siberia, Makarov made important theoretical generalizations and suggested efficient methods for producing soda, bromine, magnesium salts, sodium chloride and sulfate. All this material was published in a monograph "The Physicochemical Investigation of Kulundinsk Salt Lakes" (1931-1932) and was used in the planning of the soda plant near the Mikhailovsk Lakes and the sulfate industry near Lake Kuchuk.

As Head of the Department for Water-Salt Equilibria in the Institute of General and Inorganic Chemistry of the Academy of Sciences, USSR (1936-1944) Makarov creatively developed the teaching of N. S. Kurnakov in application to systems of basic and acid oxides and salts. With his students and co-workers, Makarov synthesized a number of new chemical compounds, various types of solid solutions – of continuous and limited solubility, and also "Berthollet" type phases and prepared new types of isothermal, polythermal and cyclic phase diagrams. To obtain the characteristics of the new phases extensive use was made of physicochemical analysis with the determination of solubility, density, thermal stability, crystalloptical constants, and structure.

A characteristic feature of Makarov's scientific activity was the development of topics which made it possible to advance the theory and produce valuable results for industry and the country's defence. One of the most important projects of S. Z. Makarov and his co-workers was the investigation and preparation of a highly active calcium hypochlorite from a study of systems with chlorides, hypochlorites and hydrate of calcium oxide. The results of this investigation were put into practice and were highly praised.

Another program of work developed by S. Z. Makarov in 1936-1944, when he was Head of the Laboratory of the Mining Institute in the Academy of Sciences, USSR, together with Academician A. A. Skochinskii, was the study of pyrogenic processes and the search for chemical methods of combating the spontaneous combustion of coal and pyrites ores. Makarov proposed and successfully tested certain antipyrogenic solutions and suspensions on coals of the Moscow Basin.

During the Fatherland War, Makarov conducted a number of investigations to find new forms of industrial raw materials and new chemical compounds (degassifiers, bleaching agents, chromium compounds, peroxides). The used investigations into degassing and bleaching agents to develop new direction in this activity, connected with the problem of peroxide compounds, with which he was occupied for the rest of his life. Makarov and his co-workers synthesized a number of new peroxide compounds. Rational methods were developed for the industrial production of a large number of peroxides.

S. Z. Makarov published 133 scientific works, including 3 monographs, and obtained several certificates of authorship. The results of 23 of his investigations have been introduced into production – in factories and salt industries. He has given technical assistance to factories, applied and planning institutes and other organizations. Sergi Zakharovich served as a member of technical and scientific councils of many scientific institutions. He has often been the scientific leader of several expeditions. As well as his varied research and scientific organization activity, from 1929 to 1961 S. Z. Makarov was engaged in teaching work in many institutes. Under his direction 23 people have prepared their degree theses, and some of his pupils are doctors and professors. For his fruitful activity S. Z. Makarov was awarded the State Prize of the Order of "Red Star" in 1941; he has also been awarded medals and citations of the Presidium of the Academy of Sciences, USSR.