

Aleksandr Grigor'evich Zel'dovich (Obituary)

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An outstanding Soviet scientist Professor Aleksandr Grigor'evich Zel'dovich, Doctor of Technical Sciences, one of the greatest specialists in the field of cryogenic technology, recipient of Lenin and State Prizes, honored inventor of the RSFSR, passed away on September 10, 1987, in the seventy second year of his life.

Aleksandr Grigor'evich was born on October 19, 1915 into an economist's family. At the age of 15, studying at a factory vocational school, he discovered his interest in chemical technology. From 1932 onward A. G. Zel'dovich worked as an ammonia synthesis technician at the Bobrikstroï Plant (today the Novomoskovskii Chemical Plant). Then Aleksandr Grigor'evich enrolled at the D. I. Mendeleev Chemical-Technical Institute in Moscow, where he became interested in the problems of deep cooling. After graduating A. G. Zel'dovich worked at the newly organized turboexpansion engine division of the 1st Welding Works, where P. L. Kapitsa was simultaneously testing the first air liquefier equipped with a turboexpansion engine. Meetings and discussions with P. L. Kapitsa played an enormous role in the scientific development of A. G. Zel'dovich. Soon thereafter he transferred to the Institute of Physical Problems of the USSR Academy of Sciences. After the outbreak of war Aleksandr Grigor'evich took an active part in designing facilities for producing liquid oxygen which was essential to the country's defence capabilities. The objective was achieved quickly: already by 1943–1945 TK-200 and TK-2000 industrial oxygen machines came on line, producing 200 and 2000 liters/hour of liquid oxygen respectively.

In 1946 the IPP of the USSR Academy of Sciences, where A. G. Zel'dovich worked, was entrusted with developing a method and constructing a facility for isolating deuterium. Together with his colleagues A. G. Zel'dovich immersed himself in this very pressing problem. As a result they were the first in the world to achieve industrial deuterium production by means of low-temperature rectification of liquid hydrogen. A report of this research attracted great attention at the Second International Conference on the Peaceful Use of Atomic Energy in 1958.

From the early 1950's onward A. G. Zel'dovich participated in the construction of hydrogen and helium liquefiers essential to low-temperature physics research.

In 1956 V. I. Veksler asked P. L. Kapitsa for assistance in creating cryogenic capabilities at the High Energy Laboratory (HEL) of the JINR.

As a result A. G. Zel'dovich, by then a Doctor of Technical Sciences, moved from Moscow to Dubna, bringing with him a gift from the IPP to the JINR—a small hydrogen liquefier and necessary equipment. This permitted HEL to embark promptly on experimental research using liquid hydrogen.



ALEKSANDR GRIGOR'EVICH
ZEL'DOVICH
(1915–1987)

All of A. G. Zel'dovich's subsequent scientific activity was carried out at JINR, where he headed the cryogenic research department for over 25 years. There various new machines—high capacity hydrogen and helium liquefiers; liquid hydrogen bubble chambers; hydrogen, deuterium, and helium targets—were designed under his guidance. A. G. Zel'dovich then embarked with great enthusiasm on research in superconducting technology, soon becoming a leading specialist in this new scientific and technical field. The cryogenic research department designed test benches which were used to measure the superconducting and insulating properties of materials in liquid helium; test many such materials; solve many engineering problems in superconducting magnets; develop effective current leads into liquid helium and devices for removing energy from superconducting magnets; develop and test a number of experimental superconducting magnet systems. All this permitted JINR to begin designing superconducting accelerators.

A. G. Zel'dovich's scientific activity was characterized by a deep understanding and thorough treatment of scientific problems, as well as the search for practical engineering

solutions. Aleksandr Grigor'evich always devoted a lot of attention to the preparation and education of younger scientists. A large collective of qualified cryogenic specialists formed under his guidance: workers, engineers, Candidates and Doctors of Science. Today his students head various research efforts in the fields of cryogenic technology, superconducting technology, experimental techniques.

Aleksandr Grigor'evich was well known in socialist countries, as he devoted his daily attention to fostering scientific cooperation. Scientists from many countries participated in the work of the cryogenic research department and prepared their dissertations. Professor A. G. Zel'dovich was well known at the Electrotechnical Institute of the Slovak Academy of Sciences, at the Dresden Technical Institute, as well as many other scientific institutions in socialist countries.

A. G. Zel'dovich always treated his colleagues in a truly democratic fashion: he was organically incapable of authori-

tarian administration. He earned and maintained his high authority by his deep erudition and constant assimilation of new and frontline ideas. Both the office of Aleksandr Grigor'evich and his hospitable home were always open to his friends and colleagues.

Aleksandr Grigor'evich's interests were not confined to scientific research. He was always responsive to social initiatives and carried out a great deal of science administration work.

The achievements of A. G. Zel'dovich were highly valued by our country: he was awarded four Orders and many medals.

A fond memory of our colleague Aleksandr Grigor'evich Zel'dovich—scientist and outstanding human being—will forever live on in our hearts and deeds.

Translated by A. Zaslavsky