

PEOPLE OF SOVIET SCIENCE

MIKHAIL FEDOROVICH ZHUKOV (ON HIS SIXTIETH BIRTHDAY)

Mikhail Fedorovich Zhukov, a great scientist in the field of low-temperature plasma, aerodynamics, and gasdynamics, the chief scientific secretary of the Siberian Branch of the Academy of Sciences of the USSR, assistant director of the Thermophysics Institute of the Siberian Branch of the Academy of Sciences of the USSR, corresponding member of the Academy of Sciences of the USSR, just celebrated his 60th birthday and his 35th anniversary of scientific and pedagogic activity.

Zhukov was born on September 6, 1917, in Orel district into the family of a railroad worker. He graduated from a workers' high school in 1935, and from the Mechanical-Mathematics Department of the Moscow State University in 1941.

During the Great War of the Fatherland Zhukov worked at N. E. Zhukovskii Central Aerohydrodynamic Institute (TsAGI), devoting all his efforts to increase the defensive capabilities of our native country. In the post-war years, during the period of his work at the Central Aviation Mechanics Institute (TsIAM) in connection with an intensive development of jet-propelled aviation, his interests concentrated on studying the flow of supersonic gas streams in the conduits of turbocompressors, on the study of gas flow characteristics in the vicinity of blunted edges of grid profiles at supersonic speeds.

In 1957, Zhukov became involved in the studies of low-temperature gas discharge plasma. He investigated the highly complex processes that take place in the electric arc plasma generators. This work was primarily connected with the growing needs of the aerospace technology for high-temperature gas streams for the modeling of both the flight of equipment at supersonic speeds and the reentry conditions of the space equipment into the atmosphere of the earth or of other planets. In the years that followed, his interest in low-temperature plasma and in equipment for its generation increased even more in connection with the need for technical application of plasma generators in the traditional branches of industry, primarily in the chemical and metallurgical industries.

In 1958, Zhukov moved to Novosibirsk to work in the Siberian Branch of the Academy of Sciences of the USSR. Since that time, under his direction, the Siberian school on the study and application of arc plasma started growing and now enjoys a well-earned reputation in our country and abroad.

In 1961, the first publications containing results of the study of physical processes in low-temperature plasma generators appeared. Zhukov and his co-workers carried out investigations of certain fundamental phenomena in an electrical discharge chamber which enabled them not only to clarify the various electric-arc processes, but also to plan constructive ways of developing powerful and efficient plasma generators.



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An important stage in this direction was the development of the similarity criteria reflecting the plasma generator specifics as electrotechnical, gasdynamic, and thermal installation. The method for calculating electrical and thermal plasmotron characteristics on the basis of criterial relationships is essentially the only engineering method available at the present time. The criterial equations obtained permit successful calculation of actual objects from the laboratory data.

Under the direction of Zhukov and with his direct participation a large number of investigations have been carried out of such specific generator processes as interaction of the arc with the turbulent gas flow, the solid surface, the external magnetic fields, etc. The basic mechanisms of the phenomena at the electrodes under the influence of specific thermal currents were studied, and realistic means for decreasing the electrode disintegration rate were determined in order to assure long working life to plasma installations.

Zhukov's first monograph written with V. Ya. Smolyakov and B. A. Uryukov, "Electric Arc Gas Heaters", appeared in 1973. It contains the results of theoretical and experimental investigations of gas discharge under various external influences. Another book, "Applied Dynamics of Thermal Plasma" (M. F. Zhukov, A. S. Koroteev, and B. A. Uryukov), was published in 1975. In 1977 three thematic books appeared under Zhukov's editorship and with his personal participation, which reflect the contemporary achievements in the study and application of gas discharge plasma.

Zhukov considers the popularization of scientific achievements to be of enormous importance and he devotes much of his energy and attention to the incorporation of the results of scientific studies into industrial production. The All-Union Conference on Low-Temperature Plasma Generators held in 1963 at the initiative of Zhukov has become a traditional forum in the workings of which the Soviet and the foreign scientists take part.

The fruitful scientific activity is successfully combined by Zhukov with teaching, with the preparation of highly qualified scientific cadres, and with numerous social obligations. Over the course of many years Zhukov has been the chief editor of the journal "Izvestiya Sibirskogo Otdeleniya Akademii Nauk SSSR" (Bulletin of the Siberian Branch of the Academy of Sciences of the USSR) and a member of the editorial staff of the journal "Applied Mechanics and Engineering Physics." In 1975 Zhukov became the chief scientific secretary of the Siberian Branch of the Academy of Sciences of the USSR [AN SSSR]. In this post his talent manifested itself especially brightly as that of a scholar who donates his intelligence and energy to the most important task of increasing the effectiveness and the quality of the scientific work, and the speediest incorporation of scientific achievements into the national economy.

His native country values highly his scientific, pedagogic, organizational, and social activities and has awarded him the Orders of the Red Banner and of the October Revolution, and other medals.

The editorial staff of this journal congratulates Mikhail Fedorovich Zhukov warmly and cordially with this celebrated anniversary and wishes him good health and new creative successes.