PERSONALIA

Dmitriĭ Nikolaevich Nasledov (obituary)

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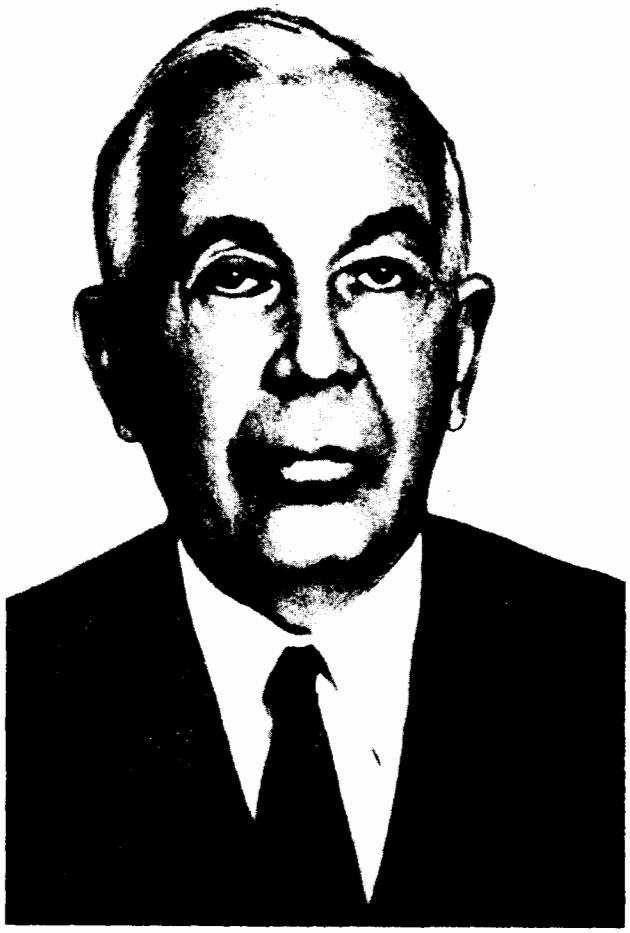
Doctor of Physico-mathematical Sciences and Professor Dmitriĭ Nikolaevich Nasledov, a prominent Soviet physicist, one of the leading scientists in the physics and technology of semiconductors, a member of the Communist Party of the Soviet Union since 1942, Lenin Prize winner and Honored Scientific and Technical Worker of the RSFSR, died suddenly on January 8, 1975.



Nasledov had devoted more than 50 years of his life to the service of Soviet science. He made a major contribution to the development of solid state physics. His works and those of the school that he created are known all over the world. His papers had a strong influence on the development of semiconductor electronics in the Soviet Union and abroad.

Nasledov was born in 1903 into the family of a Kiev proofreader. He completed his secondary education here and graduated in 1924 from the Physico-mathematical Faculty of Kiev University. His scientific career began in 1924 at the Kiev Roentgen Institute, and his teaching activity in 1927 at Kiev University. From that time, science and higher education were inseparable parts of his life. His very first papers on the ionization of solid dielectrics by x-rays and their high-voltage polarization were published in Soviet and foreign journals and won high recognition and esteem.

In 1930, the young scientist was invited by Academician A. F. Ioffe to come to work at the Leningrad Physico-technical Institute. As a laboratory head, Nasledov dedicated himself completely to his beloved work, becoming immersed in the creative atmosphere characteristic of the Institute and in its scientific traditions and making a better than average contribution to the general effort of the Institute's staff. He participated directly in studies of the electrical conductivity and rectifying properties of cuprous oxide and selenium. These studies marked the origins of semiconductor physics in our country and contributed in many respects to the development of Soviet selenium rectifier production.

During the Second World War, Nasledov became director of one of the physics departments of the Military Academy, but in 1947 he returned again to the Physico-technical Institute as Deputy Director for Science; for twenty years he headed the Electronic Semiconductors Laboratory. Here he began the main business of his scientific life: the organization and supervision of broad-gauge research on a new class of semiconductors—type $A^{III}B^{V}$ compounds. These compounds were destined to play a revolutionary role in semiconductor electronics, and the work of Nasledov and his school laid a firm foundation for our country's progress in this extremely important area of science and engineering. Nasledov's breadth of erudition, his talents as an organizer, his high degree of scientific foresight, and his ability to concentrate the efforts of large workforces on mainline trends came most strongly into evidence at this time. As early as in the 1950's, Nasledov's laboratory prepared the purest indium antimonide crystals in the world and developed technologies for the production of gallium arsenide and indium arsenide single crystals and n-p junctions based on them; it investigated the electrical, optical, photoelectric, and luminescence properties of the new materials and discovered and studied new physical phenomena related to energy-spectrum features and carrier transport in $A^{III}B^{V}$ compounds. Highly efficient photoelectric solar-energy converters, highly sensitive radiation detectors for various regions of the spectrum, tunnel diodes, and many other devices were designed and built. Nasledov established close contact with other organizations and institutes and directly with the industry, so that the scientific advances made in the laboratory could be of direct benefit to the country's economy. The success of the scientific work and of the whole major undertaking were also due in many ways to the remarkable personal qualities of Nasledov: tact, kindliness, profound humanity in his attitudes toward others, and his readiness to offer his knowledge, experience, and strength in the pursuit of high common objectives.

In 1964, for his part in the basic research on gallium arsenide leading to the development of the first semiconductor lasers in the Soviet Union, Nasledov and a group of staff members of the A. F. Ioffe Physico-technical Institute and the P. N. Lebedev Physics Institute of the USSR Academy of Sciences were awarded a Lenin Prize. The studies in this cycle, first among which we should note the 1962 report of the possibility of stimulated emission of gallium arsenide p-n junctions, formed the basis for new areas of solid-state physics – semiconductor quantum electronics, injection luminescence, semiconductor light sources, and opto-electronics.

Nasledov's work has received worldwide recognition. He was the author of numerous scientific papers and 11 monographs, a participant in and organizer of major world congresses on semiconductor physics, and a member of the editorial staffs of international solid state physics journals; he was elected a member of the French Physico-chemical Society and a Corresponding Member of the Academy of Sciences and Literature at Mainz (West Germany).

Nasledov was not only a talented scientist and organizer, but also a brilliant lecturer and teacher and a popularizer of science. He wrote a series of textbooks on the physics of electronic processes and many popular science books and brochures. He participated actively in the work of the "Znanie" society, and his lectures were invariably well received by all of his audiences.

From 1937 until the day of his death, he was head of the Experimental Physics Department of the M. I. Kalinin Leningrad Polytechnic Institute. His lectures in physics had a decisive influence on the career choice of many of our country's well-known physicists. He liked young people very much and applied every effort to inculcating his love of science in them. He was able to set forth the most complex problems clearly and understandably without sacrificing scientific rigor. His seminars were a genuine school of instruction in scientific thought and a workshop in which new scientific ideas were born and tested. While extremely courteous to all persons and attentive to their views and ideas, he would also, very subtly and with his characteristic considerateness, point out deficiences in work and find better ways to develop and solve the problem. Association with Nasledov was invariably an emotional and scientific inspiration that enriched anyone who came to know him.

Nasledov rendered great service in the training of highly qualified cadres for the higher educational institutions and Republic Scientific centers of the USSR. His students, more than a hundred of whom became Doctors and Candidates of Sciences, are at work all over the Soviet Union, heading laboratories, institutes, and academic departments, conducting physical research, and participating directly in production. The Kishinev, Baku, and other semiconductor schools, which are working to develop the physics of $A^{III}B^{V}$ and other multicomponent compounds, are closely associated with Nasledov's name.

Nasledov's scientific, scientific-educational, and civic activities were held in high esteem by his country. He was awarded an Order of Lenin, an Order of the Red Star and many medals. In 1964, the honorary title of Honored Scientific and Technical Worker of the RSFSR was conferred upon him.

To his last day, Nasledov remained an example of self-denying and devoted service to the high ideals of science and country. Everyone who associated with him saw in him a repository of the best traditions of the Soviet intelligentsia, a wise teacher of youth, and a man of generous spirit and great charm.

He will remain forever a glowing memory in the hearts of those who knew him.

Translated by R. W. Bowers