Vadim Evgenovich LASHKARYOV (7.X.1903-1.XII.1974)

Vadim Evgenovich Lashkaryov was born in 1903 on the 7th October in Kiev. In 1924 he graduated from Kyiv Institute for People's Education (now Taras Shevchenko Kyiv National University). His scientific carrier began in postgraduate courses at science-research chair of physics of Kyiv Polytechnical Institute (now National Technical University of Ukraine "KPI"). During 1929-1930 years Vadim Evgenovich was the head of X-ray physics department in Institute of Physics Academy of Science of Ukrainian SSR, and from 1930 – laboratory in Leningrad physico-technical institute (at present A.F.Ioffe Physico-technical institute RAS). During this period V.E.Lashkaryov together with V.P.Linnyk performed cycle of investigations on optics of X-rays for vast amount of substances.

In 1933 V.E.Lashkaryov wrote first in the former USSR monograph on the diffraction of electrons. In 1935 he received scientific degree of Doctor of physico-mathematical sciences.

Starting from 1935 up to 1939 V.E.Lashkaryov delivered lectures in physics at Archangelsk medical institute.

In period from 1939 from 1960 he worked in Institute of Physics Academy of Science of Ukrainian SSR and simultaneously lectured in Taras Shevchenko Kyiv State University (1939-1957).

Scientific activity of V.E.Lashkaryov covered a wide area of actual directions in solid state physics and, especially, in physics of semiconductors. He is author of more than 90 scientific papers on X-ray physics, diffraction of electrons, biophysics and physics of semiconductors. Most important of them were his fundamental works in the field of physics of semiconductors and semiconductor electronics. He carried out many investigations on this problem, which have found recognition and further development as well in leading laboratories of the former USSR and as abroad. Among the numerous scientific merits of V.E.Lashkaryov it is necessary to mention his great personal contribution, his pupils and collaborators in the organization and development of the physics of semiconductors in Ukraine. Development of these investigations has led to the discovery of *p-n*-junction in copper protoxide, functioning of which served as a basis of modern semiconductor devices starting from simple rectifier up to the most complex large and super large integrated circuits. Photoresistors and photoelements with high sensitivity and stability in wide spectral range were developed.

Of great scientific and practical importance were ideas developed by V.E.Lashkaryov on bipolar diffusion of charge carriers, on the role of majority and minority carriers in this process, on the control of the diffusion of charge carriers by electric field. All these phenomena, as it is known, are very important for understanding of the operational principles of the modern semiconductor devices.

Series of works on the investigation of nature of the electromotive forces (e.m.f.) in semiconductors yielded considerable contribution to the physics of semiconductors. In these works for the first time influence of contacts to semiconductor with the illuminated electrode on the value and sign of the e.m.f. were quantitatively described, and idea on the bipolar diffusion control by electric field has been developed. Theory of the capacitor photo-e.m.f. has been elaborated and different aspects of this complex problem were considered in detail.

One of the important places in the works of V.E.Lashkaryov and founded by him Kiev scientific school was the problem of the photoconductivity in semiconductors. This problem is concerned with fundamental properties of semiconductors: their band structure, processes of generation and recombination of the charge carriers, their transport and scattering mechanisms, etc. On the other

hand, they serve as physical basis for development of many photoelectrical devices.

Performed by V.E.Lashkaryov investigations of the germanium have led to development, in collaboration with industrial companies, new semiconductor devices for the computer technique.

During years of Great Patriotic War V.E.Lashkaryov made substantial contribution to the improvement of the production technology and quality of the rectifiers for the military communication devices. The work was awarded by USSR state medal "For the valiant labor during Great Patriotic War 1941-45".

Without any exaggeration it is possible to assert that together with outstanding scientists in the field of physics of semiconductors as A.F.Ioffe, D.M.Nasledov, V.M.Tuchkevich, S.G.Kalashnikov (in the former USSR), V.E.Lashkaryov, O.S.Davydov, S.I.Pekar, V.I.Lyashenko are known as founders of the semiconductor science in Ukraine, and implementation of the achievements in this field provided revolutionary transformations in the automatic equipment, telemechanics, computer technique, without which it was impossible in the second part of the 20th century to use atomic energy for peaceful purposes, or to realize first steps in space explorations.

Scientific activity of V.E.Lashkaryov and scientific school founded by him provided scientific basis for the creation in 1960 of the Institute of Semiconductors Academy of Science of Ukrainian SSR. In order to achieve this V.E.Lashkaryov carried out tremendous organizational work. He was the director of the institute starting from the first days of its organization up 1970. Headed by V.E.Lashkaryov Institute of Semiconductors was intensively developing and already in 1970 it becomes the leading scientific center on semiconductor physics in the former USSR.

V.E.Lashkaryov paid great attention to the education and growth of scientific community. He had great pedagogical talent. In 1949 he organized and headed first in the former USSR chair on physics of semiconductors in Taras Shevchenko Kyiv University.

Under his guidance and consultations a great number of Dr.Sci. and PhD degrees were defended. In 1945 V.E.Lashkaryov was elected as academician of the Academy of Science of Ukrainian SSR.

In 1947–1951 V.E.Lashkaryov was member of the Presidium of the Academy of Science of Ukrainian SSR. During many years he was editor-in-chief of the Ukrainian Journal of Physics and headed scientific council of the Academy of Science of Ukrainian SSR on the problem "Physics of semiconductors".

Merits of V.E.Lashkaryov in the development of science and training of scientific specialists were decorated by the order "Sign of Honor" and by Honorary Diploma of the Presidium of the Supreme Council of the Ukrainian SSR. Since 2002 Institute of Semiconductor Physics NAS Ukraine, which was headed by V.E.Lashkaryov during 10 years, according to the decree of the Council of Ministers of Ukraine from 25/XII-2002 and decision of the Presidium of NAS of Ukraine from 04.02-2003 is called V.E.Lashkaryov Institute of Semiconductor Physics NAS Ukraine.

This honor obliges pupils of V.E.Lashkaryov, numerous worshippers of his talent and representatives of the young scientific generation working in the Institute to maintain and increase good traditions of the creative collective of the V.E.Lashkaryov Institute of Semiconductor physics NAS Ukraine, to work with endeavour in obtaining of the new knowledge, to support prestige of the domestic science by real deals and to represent its achievements to the world international scientific community, taking into account the interests of our country. All of these create necessary conditions for the hard but honorary work in the field of natural sciences and, in particular, in the field of physics of semiconductors, semiconductor electronics and optoelectronics.

