Efim Lazarevich Portnoy

Efim Lazarevich Portnoy — a leading researcher, Candidate of Physico-Mathematical Sciences, creator of the Laboratory of Integral optics on heterostructures of the Ioffe Physical-Technical Institute turns 85 on July 2, 2023.

All scientific activity of Yefim Lazarevich is inextricably linked with Ioffe Physical-Technical Institute. Shortly after graduating with a honors diploma from the Leningrad Polytechnic Institute 1964 he began working in the group of J.I. Alferov that studied the physics of semiconductor heterostructures. These studies began to develop intensively in the future with the direct participation of E.L. Portnoy in the laboratory of J.I. Alferov. The most important results of these studies were the proof of the superinjection effect in semiconductor heterostructures, as well as the creation of the world's first lasers on heterostructures operating in a continuous mode at room temperature. The results of these studies were highly appreciated in the scientific world and rightfully entered the golden pool of world science.

Efim Lazarevich created the laboratory of integral optics on heterostructures in Ioffe Physical-Technical Institute in 1993 and became its head. This laboratory conducted studies under his supervision that laid the foundation for a number of areas in semiconductor optoelectronics and laser physics. For the first time, semiconductor lasers with diffraction radiation output were created, which opened up the possibility of obtaining narrowly directed radiation from such lasers and made it possible to significantly increase their radiation power. The principles of construction were formulated for the first time in our country and almost simultaneously with foreign scientists, the basics of technology were developed and samples of single-mode heterolasers with distributed feedback (DFB) were created. In the future, DFB lasers began to be used as the main source of radiation in ultrafast fiber-optic communication lines. The development of a method for creating an ultrafast saturating optical absorber by deep implantation of heavy ions into semiconductor structures became one of the outstanding achievements of E.L. Portnoy. Semiconductor lasers operating in the mode synchronization conditions and generating subpicosecond optical pulses were created using this method. Semiconductor lasers were created in elaboration of these studies that generate short optical pulses with a repetition rate of more than 100GHz, and the principles of semiconductor terahertz optoelectronics were formulated.

E.L. Portnoy has a deep understanding of the problems of semiconductor physics, optoelectronics, and laser physics. He published more than 200 scientific papers, he repeatedly participated at prestigious international conferences as an invited speaker. 27 PhD dissertations were defended under the direct supervision of E.L. Portnoy thanks to extensive knowledge, experience, constant goodwill and pedagogical talent defended, his coworkers and students defended 5 doctoral dissertations. E.L. Portnoy was elected a visiting professor at the University of Glasgow, scientists from many countries of the world know him and maintain professional and friendly relations with him.

E.L. Portnoy was twice awarded the VDNKh Gold Medal (1974, 1986), awarded the „Medal for Labor Valor" (1974), the Certificate of Honor of the Russian Academy of Sciences for long-term and fruitful work (1999), A.F. Ioffe Prize for a series of studies „Picosecond Heterolasers" (2001), „a medal In Memory of the 300th Anniversary of St. Petersburg" (2004).

Dear Efim Lazarevich, we cordially congratulate you on your 85th birthday! We wish you good health. Keep sharing scientific ideas and wise advice with us, keep your love for science, your inherent optimism and sense of humor.

Your colleagues, friends and students
Editorial board and editorial board of the journal
„Physics and Technology of Semiconductors"
join the good wishes to the celebrator