
IVAN PAVLOVYCH ZHAD'KO (to the 70th anniversary of his birthday)



(1937–1995)

On August 18, 2007, Ivan Pavlovych Zhad'ko – Doctor of Science in physics and mathematics, a leading scientific researcher at the V.E. Lashkarev Institute of Semiconductor Physics of the National Academy of Sciences of Ukraine, a well known scientist in the domain of semiconductor physics – would have been 70 years old.

I.P. Zhad'ko was born in the village of Mar'yans'ke, the Dnipropetrovsk region. His father Pavlo Grygorovych and his mother Onysiya Dmytrivna were professional fishers. There is the evidence that the Zhad'ko's family is descended from Ivan Sirko, the commander of the Cossack army at Zaporizhzhya. It cannot be excluded that the extant inscription "Zdes byl Zhadko", which is dated to the 13-th century, made

on the initial fragment of a wall in the Kyiv St. Sofia Cathedral is related to the Zhad'ko's family.

After leaving school, where he was awarded a silver medal, I.P. Zhad'ko entered the Faculty of Physics at the T. Shevchenko Kyiv State University and graduated from it in 1961; his speciality being "solid state physics". The same year, he was taken on the staff of the Department of Semiconductor Photoelectronics at the Institute of Semiconductor Physics of the NASU; the head of the department at that time was V.E. Lashkarev, the founder of this institute, Academician of the NASU. Since then and till his last day, the life of Ivan Pavlovych had been connected with semiconductors. In 1967, he defended his Ph.D. thesis "Some features of electric and photo-electric properties of semiconductors with a macroscopically anisotropic bipolar conductivity". In fact, this experimental work, where the results of E. Rashba's theoretical researches concerning the crystals with a tensor character of conductivity had been convincingly confirmed, started a new fruitful scientific direction, the physical basis of which is associated with the significance of a nondiagonal component in the tensor of dielectric properties of anisotropic crystals for the emergence of transverse forces (fields, currents, fluxes) in them. In this direction, Ivan Pavlovych initiated and actively participated in a series of researches, where a harmonic system of effects – such as photo-, piezo-, magneto-, thermoelectric, and other effects – caused by the nondiagonal matrix component has been discovered. Only the minority of them were included into his doctoral dissertation "Photovoltaic effects in anisotropic semiconductors and structures" defended in 1981, while the others became, in due course, the subjects of four Ph.D. and two Dr.Sci. dissertations of his disciples. The electric pinch effect, the oscillistor effect in anisotropic crystals, the intervalley component of photomagnetic emf, and the intervalley photo-emf comprise a list – not at all complete – of the effects which were discovered by I.P. Zhad'ko, and the scientific

importance of which has been verified by time. The practical orientation of fundamental researches, which Ivan Pavlovych providently followed, logically brought him to a number of technical implementations protected by more than twenty patents. Among them, integral sensors of pressure, whose characteristics are at the level of those of the best world specimens, have a special place.

Ivan Pavlovych had a strong, freedom-loving character; his adherence to society's principles always commanded respect. He could not stand aside, by signing the appeal, with which a group of employees at scientific institutions of the Academy of Sciences came

forward in defence of Vyacheslav Chornovil and against persecutions of the Ukrainian intelligentsia in 1968.

Twelve years passed after Ivan Pavlovych's premature demise. His disciples and the employees of the V.E. Lashkarev Institute of Semiconductor Physics of the NASU keep a blessed memory about their Teacher and colleague, who used his persistence to realize his talent and who continues to be an example of the service to science and Ukraine for all of us.

Disciples, colleagues, and friends