
VOLODYMYR GRYGOROVYCH LITOVCHENKO (to the 75th Anniversary of his Birthday)



On December 24, 2006, the known scientist in semiconductor and solid state physics Volodymyr Grygorovych Litovchenko — twice Laureate of the State Prize of Ukraine and the UkrSSR in science and engineering, Corresponding member of the National Academy of Sciences of Ukraine, Professor — was 75 years old.

V.G. Litovchenko is a graduate of the Taras Shevchenko Kyiv State University. His creative development began in 1955, at the senior engineer position in the Semiconductor Scientific Laboratory at the Faculty of Radiophysics of the Kyiv University. In 1956, he entered the postgraduate courses at the Institute of Physics of the Academy of Sciences of the UkrSSR and, after finishing them, worked as a junior scientific researcher at the Laboratory of Surface Phenomena. In 1960, V.G. Litovchenko was transferred to the just-organized Institute of Semiconductor Physics of the AS UkrSSR, where he has been working till now. At the Institute, he made a carrier from a junior scientific researcher to the Head of the Branch “Surface Science and Microelectronics”. In 1961, he defended his PhD and, in 1971, doctoral theses. In 1974, Volodymyr Grygorovych was conferred the scientific rank of Professor. In 1985, he was elected Corresponding member of the NASU.

Having started the regular researches of the physical phenomena that proceed on semiconductor surfaces, V.G. Litovchenko became one of the founders and leaders of the Ukrainian school of the solid state surface science and microelectronics.

Since 1962, a new direction in the field of solid-state microelectronics and photoelectronics of MIS-systems has been intensively developed under his supervision at the Institute of Semiconductor Physics of the NASU. The physical models of this multiphase layered structure have been created; a number of the physical phenomena characteristic of such systems, including the condensation of excitons at interfaces, the effect of planar gettering, and so on, has been discovered. The theoretical and experimental studies of semiconductor layered structures, which are widely used in integrated microelectronics, were carried out under the guidance of V.G. Litovchenko; these researches opened qualitatively new opportunities for the research of not only artificially fabricated layered systems with complicated profiles of the potential relief — e.g., hidden layers — but also a class of crystals with inherent lamination that are rather widespread in nature. The results of those studies served as the basis for the explanation of the features of many phenomena that were found in layered systems for the first time.

The spread of the scientific interests of V.G. Litovchenko determined the versatility of his research activity. The large cycle of the works, fulfilled together with disciples and devoted to the phenomena of the carrier energy quantization and the electron and hole transfer through surface channels (the so-called nanophysics) became a logical result of the studies of the semiconductor surface. V.G. Litovchenko also developed a system for the determination of the parameters of crystalline bodies (similar to the Periodic Table of chemical elements).

V.G. Litovchenko is the author of a number of fundamental physical results. He experimentally discovered, for the first time, such new effects as the surface luminescence in semiconductors (1974), the enhanced planar expansion of a nonequilibrium two-dimensional electron-hole plasma (1983), the subthreshold stimulated emission in two-dimensional quantum-size heterostructures (1996), the band split in materials with a zero energy gap on the binding of point defects, and others.

In the recent years, an important place in V.G. Litovchenko’s researches is occupied by the optical and electric phenomena in diamond-like carbon

films. The elaboration of theoretical physical models of materials on the basis of carbon allows one to forecast the properties of new promising materials which are, in particular, harder than diamond. The application of diamond-like carbon films makes it possible to considerably enhance the electron field emission from semiconductor materials. This scientific work is carried on by Volodymyr Grygorovych in the active cooperation with foreign colleagues from the USA, Germany, and France.

V.G. Litovchenko gives much attention to practical implications of scientific ideas and achievements. The results of numerous scientific elaborations in the domains of integrated microelectronics, photo-electric converters, and sensors, which were obtained by either himself or under his guidance, gained him the deserved authority among leading experts in industry and engineering.

V.G. Litovchenko is actively engaged in the organizational work for science. During ten years, he was the assistant to the Academician-Secretary of the Division of Physics and Astronomy of the NASU. Now, he is the assistant to the Head of Scientific Council of the NASU on the problem "Semiconductor Physics" and the Head of the Section "Integrated Electronics" of this Scientific Council, the Head of the Section "Electronics and Photonics" of the Ukrainian Committee of the URSI, the President of the Ukrainian Physical Society, a member of the Ukrainian branch of the International Society for Optical Engineering SPIE, a member of the International Electrochemical and Vacuum Society, etc.

The high international authority of V.G. Litovchenko is confirmed by invitations made to him to be the member of the editorial-boards of leading scientific journals and the program committees of international conferences.

As a member of editorial boards of many periodicals, V.G. Litovchenko pays much attention to propagating the achievements of Ukrainian science among the world scientific community.

Volodymyr Grygorovych is an initiator and an active participant of international and Ukrainian conferences on semiconductor physics. As a member of many program committees, he is regularly invited to the known Western universities in Europe for lecturing and making scientific reports.

V.G. Litovchenko gives much attention to the scientific staff training. Among his disciples, there are 11 Doctors of Science and 35 PhDs. He is Professor of the Taras Shevchenko Kyiv National University, the Honored Professor of the Soros Fund (USA).

The scientific yield of Volodymyr Grygorovych is amazing not only owing to the body of executed researches and scientific works – 9 monographies, 16 reviews and brochures, over 400 papers in leading scientific journals – but, first of all, due to the importance and profundity of the results obtained.

At the same time, V.G. Litovchenko does not pay the permanent attention to scientific researches and developments only. He is also active in the educational activity and popularizes the imposing treasures of Ukrainian history and culture, being the Head of the T.G. Shevchenko "Prosvita" (Enlightenment) society cell.

V.G. Litovchenko's scientific and organizational activity gained him a deserved recognition. In addition to the State Prizes indicated above, he was conferred the honorary title "Honored Worker in Science and Engineering" (1992). Volodymyr Grygorovych is also the Laureate of the K.D. Sinelnikov Prize of the NASU (1988). He totally uses his large experience and non-ordinary talent for carrying out the further researches.

The scientific community, his colleagues, disciples, and friends congratulate Volodymyr Grygorovych with his jubilee. They wish him a sound health, personal happiness, and new creative achievements.

Colleagues, friends, and disciples