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### TO THE MEMORY OF GALYNA OLEKSANDRIVNA PUCHKOVSKA (1934–2010)

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On September 29, 2010, Galyna Oleksandrivna Puchkovska, one of the outstanding scientists of Ukraine in solid state physics, molecular physics, optics, and spectroscopy, Doctor of science in physics and mathematics, Professor, the winner of the State Prize of Ukraine, the Honored worker of Ukraine in science and engineering, the winner of the A.F. Prikhotko prize of the National Academy of Sciences of Ukraine, the Head of the Department of photoactivity at the Institute of Physics of the NAS of Ukraine, died in the 77-th year of her life.

G.O. Puchkovska was born in Kyiv in a family of physicians. In 1951, she finished the secondary school with a silver medal. In 1951–1956, she was a student of the Faculty of Physics at the Taras Shevchenko Kyiv State University. The professional activity of

G.O. Puchkovska began at the Institute of Physics of the AS of the UkrSSR, where she was appointed to after graduating from the university. In 1960, she became a postgraduate student (under the guidance of A.F. Mal'nev) and, in 1966, defended the Ph.D.'s thesis "Influence of temperature and phase transformations on infra-red spectra of normal paraffins".

From 1972, G.O. Puchkovska worked at the Department of photoactivity headed by Academician of the NASU M.T. Shpak. The mainstream of scientific researches carried out by Galyna Oleksandrivna included the mechanisms of intermolecular interaction, molecular dynamics, and phase transformations in the condensed state. The results of those researches were summarized in Galyna Oleksandrivna's Doctor's dissertation "Manifestations of structure, dynamics, and polymorphism in vibrational spectra of molecular crystals", which she successfully defended in 1988.

At the beginning of the 1980s, one of the challenging problems of solid state physics was the search for experimental evidences that the idea of the exciton theory by O.S. Davydov could be applied to the vibrational states in molecular crystals. Galyna Oleksandrivna was the first who proposed to use the phenomenon of Davydov's splitting in vibrational spectra of molecular crystals for the analysis of phase transformations in a crystal lattice and its dynamics.

A significant contribution was made by Galyna Oleksandrivna to the development of the theory of a vibrational dynamics of molecules that contain alkyl chains with polar endgroups. Those researches allowed the evolution of infra-red absorption spectra of mono- and dicarboxylic acids in various crystalline modifications of those compounds to be explained.

A remarkable stage in the scientific activity of G.O. Puchkovska was composed by her works dealing with the IR spectroscopy of crystals with hydrogen bonds. A relationship between the structure and spectral parameters of such objects was established, which

allowed the role of hydrogen bonds in the phase transformations of alkaline iodate crystals, homologs of alkyl- and alkoxybenzoic acids and their fluorine-substituted counterparts in the crystalline and liquid crystal states to be elucidated. The results obtained were summarized in the monography "IR Spectroscopy of Molecular Crystals with Hydrogen Bonds" by L.M. Babkov, G.O. Puchkovska, S.P. Makarenko, and T.A. Gavrylko (Kyiv, Naukova Dumka, 1989).

An important achievement of Galyna Oleksandrivna was her researches of surface polaritons in anisotropic crystals of alkaline iodates, zinc oxides, and beryllium. The dispersion branches of those polaritons were determined for the first time for bulk crystals, films on various substrates, and ceramics, which enabled important characteristics of those substances to be obtained.

In 1984, for her participation in the works dealing with the development of physical fundamentals for a new generation of pyroelectric infra-red radiation detectors, G.O. Puchkovska was awarded the State Prize of Ukraine in science and engineering.

From 1993, G.O. Puchkovska headed the Department of photoactivity at the Institute of Physics of the NAS of Ukraine. The same year, she was awarded the academic rank of Professor in the "Optics" speciality. In 2000, Galyna Oleksandrivna was given the rank of Soros Professor.

A stimulating factor of Galyna Oleksandrivna's scientific activity always was her aspiration for the new. The highly developed intuition and the capability to find promising directions of scientific searches can be considered as her main features. Within the last decade, she actively carried out the complex studies of physical phenomena related to self-organizing processes and the interaction between organic molecules in nano-sized heterogeneous structures of the inorganic-organic type.

Under the guidance of Prof. G.O. Puchkovska, a scientific school in the branch of vibrational spectroscopy of nonmetallic and liquid crystals was created in Ukraine. She was a supervisor of 19 Ph.D. theses. Her disciples are successfully working at educational and research institutions in Ukraine, Russia, USA, and so on. The works by G.O. Puchkovska and her disciples deserved the recognition both in Ukraine and abroad.

G.O. Puchkovska actively participated in the international scientific cooperation. For more than 20 years, she maintained close scientific contacts with scientists, in particular, in Germany, Russia, France, Poland, Estonia, Latvia, Lithuania, Armenia, and so on.

The scientific-managerial activity of G.O. Puchkovska was also quite fruitful. She was a member of Scientific

Council in Solid State Physics of the NAS of Ukraine, a member of the Academic Council of the Institute of Physics, a member of specialized academic councils of the Institute of Physics and the F.D. Ovcharenko Institute of Biomolecular and Colloid Chemistry of the NAS of Ukraine. For many years, she performed the duties of the member of editorial boards in a number of republican and foreign scientific editions and organizing committees of various international scientific forums. In 2001, Galyna Oleksandrivna was elected an Associated Member of the European Academy of Arts, Sciences, and Humanities (Paris, France).

With the active participation of G.O. Puchkovska, the Republican (later on, International) school-seminars "Spectroscopy of Molecules and Crystals" were started in Ukraine in 1973, and she was their permanent chair for 30 years. 19 such schools-seminars have been held till now in various Ukrainian cities (Uzhgorod, Lutsk, Lviv, Chernivtsi, Mukachevo, Cherkasy, Poltava, Ternopil, Kharkiv, Nizhyn, Sumy, Odesa, Chernigiv, Sevastopol, Beregove). The wide attraction of outstanding domestic and foreign scientists, as well as scientific youth, to this unique scientific forum promotes the propagation of advanced scientific approaches and spectroscopy techniques, the establishment of international scientific relations, and the enhancement of the authority of Ukrainian scientists throughout the world.

Galyna Oleksandrivna was awarded many times with state decorations: the jubilee medal "For Valiant Labor in Commemoration of the 100-th Anniversary since the Birth of Vladimir Il'ich Lenin" (1970), the medals "For Labor Distinction" (1976), "In Memory of the 1500-th Anniversary of Kiev" (1982), and "Veteran of Labor" (1985). In 2006, for the cycle of works "Polymorphic and Quantum-Mechanical Effects in Molecular Crystals", G.O. Puchkovska (as a member of authors' team) was awarded the A.F. Prikhotko prize of the NAS of Ukraine. The pool of her scientific publications includes over 250 papers.

Galyna Oleksandrivna's death is a heavy loss for the staff of the Institute of Physics of the NAS of Ukraine and the Ukrainian science. The memory of her will be kept forever in the hearts of those who were lucky to know Galyna Oleksandrivna and to work with her.

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