
ANTON GRYGOROVYCH NAUMOVETS (to the 75-th Anniversary of His Birthday)



On January 2, 2011, the outstanding physicist, the scientist and the science manager, the known expert in physical electronics and surface physics, Academician of the NAS of Ukraine, the Vice-President of the NAS of Ukraine Anton Grygorovych Naumovets was 75 years old.

A.G. Naumovets was born and grew in the village of Rudka (the Pinsk district of the Brest region, Belarus) in a teacher's family. In 1952, he entered Taras Shevchenko Kyiv State University, where he studied at the Faculty of Radiophysics and graduated with a honor degree in 1957.

The same year, A.G. Naumovets came to the Institute of Physics of the NAS of Ukraine, which his whole long-term fruitful scientific activity has been connected with. Here, in a team of researchers headed by the leaders and founders of the Ukrainian scientific school in physical electronics, Corresponding members of the AS of the UkrSSR N.D. Morgulis and P.G. Borzyak, he began his scientific work. In 1959, Anton Gry-

gorovych entered, on the job, the postgraduate course, which he successfully finished, and, in 1964, defended his Ph.D. thesis. The scientific supervisor of his work was N.D. Morgulis. In 1973, A.G. Naumovets defended his thesis for the doctoral degree on the topic «Electron-adsorption properties and atomic structure of films of electropositive elements on metal single crystals». Since 1981, he guides the Department of Physical Electronics. In 1983–1998, he held the post of the Deputy of Academician-Secretary of the Division of Physics and Astronomy of the NAS of Ukraine and then, in 1998–2004, the post of the Academician-Secretary of this division. Since 2004, he is the Vice-President of the NAS of Ukraine.

The results of detailed theoretical and fine experimental researches carried out by A.G. Naumovets and his disciples for more than half a century of his active creative work are well-known to experts, being included into textbooks and monographies. Not analyzing his works in detail, we briefly mention some of them.

As early as at the beginning of his scientific activity, A.G. Naumovets created a helium autoionic projector with atomic-size resolution, the first such projector in the USSR. Using this device, some of the first-ever reliable results concerning the influence of the adsorption on the work function for various single-crystal faces were obtained, and the drift of adsorbed atoms in a non-uniform electric field was studied.

A.G. Naumovets was the first who observed structures in submonolayer adsorbed films at low temperatures, found long-period two-dimensional structures with long-range lateral interaction, and discovered the phenomenon of two-dimensional condensation in adsorbed layers with repulsive interaction. He revealed the differences between the characters of ordering in two- and three-dimensional systems, proved that the work function of a surface covered with an adsorbed layer mainly depends on the short- rather than the long-range order in this layer, discovered and studied the phase character of the surface diffusion in adsorbed layers and the phase self-organization of the diffusion zone on the surface, experimentally substantiated the soliton mechanism of surface diffusion in the range of a phase transition between commensurate and incommensurate phases.

Under the guidance of A.G. Naumovets and with his immediate participation, the technology of fabrication of nano-island films with a regular chain structure has been developed, the phenomenon of electron-induced surface diffusion and its main mechanisms have been discovered, a two-dimensional glass has been revealed experimentally in a “metal-on-metal” system, and a theoretical criterion of the formation of a two-dimensional glass on a surface has been formulated.

Among the results obtained within recent years, the observation of the stable low-field electron emission from piezoelectric materials and the resonant tunneling of electrons at the field electron emission from quantum dots should be mentioned.

Now, A.G. Naumovets and the team of researchers headed by him intensively work in the branch of molecular electronics and nanophysics. The researches of diamond and diamond-like films, organic pyroelectrics, and the phenomena of self-organization in nonequilibrium processes running on the surface are carried out at the department.

The works by A.G. Naumovets are characterized by exclusively high experimental standards. His researches are carried out under carefully controllable conditions of ultrahigh vacuum, on surfaces with well-determined atomic structure and chemical composition, by using a lot of methods for surface diagnostics. All that enables him to obtain reliable results and helps to determine the mechanisms of studied phenomena at the atomic level.

The scientific results obtained by A.G. Naumovets and his collaborators are widely known in the scientific community, both in Ukraine and abroad, being actively cited in the literature. He is an author and a co-author of more than 200 scientific publications, including two monographies. One of the latter, “Two-Dimensional Crystals”, was published in Russian and English, being the first-ever monography devoted to the two-dimensional crystalline state of substance. A.G. Naumovets published a number of reviews on surface physics in such prestigious journals as *Uspekhi Fizicheskikh Nauk* (UFN, the translated version is *Physics–Uspekhi*, earlier *Soviet Physics–Uspekhi*), *Soviet Science Reviews*, *Surface Science Reports*, *Ukrains’kyi Fizychnyi Zhurnal* (UFZh, *Ukrainian Journal of Physics*), *Fizika Nizkikh Temperatur* (FNT, *Low Temperature Physics*), and others. He made many invited reports and was a member of program committees at plenty of prestigious international conferences. Recently, the group of researchers headed by Anton Grygorovych revealed a high asymmetry in the electroconductivity of oxyphenyl-naphthylimide-based molecular

threads; the phenomenon can be used for the creation of molecular rectifiers.

A.G. Naumovets has sound achievements in training the scientific staff. Among its disciples, there are 7 doctors and 10 candidates of science. For many years, he is the Professor of Taras Shevchenko National University of Kyiv.

An important place in the activity of Academician A.G. Naumovets is occupied by a scientific managerial work, which he successfully executed and continues to do as the Academician-Secretary of the Division of Physics and Astronomy of the NAS of Ukraine, and, since 2004, as the Vice-President of the NAS of Ukraine. He actively works as a member of editorial boards of leading domestic and international scientific journals, such as *UFZh*, *Dopovidi NAN Ukrainy* (Reports of the NAS of Ukraine), *Visnyk NAN Ukrainy* (Bulletin of the NAS of Ukraine), *FNT*, *Semiconductor Physics and Optoelectronics*, *Kraina Znan’* (Knowland) (Ukraine), *Surface Science*, *Progress in Surface Science* (Netherlands), *Journal of Physics D: Applied Physics* (UK), *Physics of Low-Dimensional Structures* (Russia), *Science and Society* (France).

The fruitful scientific, scientific-managerial, and pedagogical activity by A.G. Naumovets was marked with high state and academic awards. He is an Honored worker of science and engineering of Ukraine (1995), the winner of the State Prizes of the USSR (1988) and Ukraine (1997), the M.M. Bogolyubov Prize of the NAS of Ukraine (2004), the V.I. Vernadsky Prize of the Fund “Ukraine – the XXI century” (2003), the Titular Member of the European Academy of Sciences, Arts, and Humanities (2001) and the Fellow of the scientific society “Institute of Physics” (UK) (2004), the Soros Professor (1997), and Doctor honoris causa, Taras Shevchenko National University of Kyiv (2009). He was awarded three medals and the certificate of honor of the Verkhovna Rada (the Supreme Council) of Ukraine, the Orders of Yaroslav Mudryi of the V-th (2003) and the IV-th (2007) degree. Anton Grygorovych is the government expert in surface physics and electronics, a member of the specialized council on dissertation defense at the Institute of Physics of the NAS of Ukraine, the chairman of the section “Surface science” of the Scientific board of the NAS of Ukraine on the problem “Solid-state physics”, a member of scientific-technical board of the Ukrainian-Russian program “Nanophysics and Nanoelectronics”, one of the coordinators of the Ukrainian-German program “Nanophysics and Nanotechnologies”. He is also a board member of the committee on surface physics of the International Union of Vacuum Science, Techniques,

and Applications, the Vice-President of the Ukrainian vacuum society, and the curator assigned by the Presidium of the NAS of Ukraine to supervise the scientific and technical cooperation between Ukraine and the Republic of Korea, between the NAS of Ukraine and the National Center for Scientific Research (CNRS, France), and between the NAS of Ukraine and the Marmara Research Center (Turkey).

Anton Grygorovych pays a lot of attention to the extension of scientific knowledge in the society. In 2007-2010, he was the Deputy of the co-Chairman of the Organizing Committee of All-Ukrainian Festival of Science, as a representative of the NAS of Ukraine. A.G. Naumovets is the author and a co-author of such manuals as “For those who blaze their way to science”, “This surpris-

ing mysterious nanoworld”, and “You and your audience. Something on the technology of preparation of reports, popular lectures, dissertational speeches, and competitive projects”.

The scientific community sincerely congratulates Anton Grygorovych with his 75-th anniversary and wishes him a good health and a further success in his work.

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