A. A. SAMARSKIY

Samarskiy A. A. – a word famous scientist that founded the mathematical modeling and created the modern numerical methods for the numerical solution of mathematical and physics problems.

Samarskiy A. was born on the 19 th of February, 1919 in the village of Svistuny (now v. Novo-Ivanivske, Donetsk region, Ukraine). In 1936 he graduated school in Taganrog and entered at the physical faculty of the Moscow State University. In 1941, after finishing of fourth year, he took part in the Word War II, where was wounded. In 1942 Samarskiy A. was discharged as a disabled soldier. After that, he worked as a teacher in Krasnoyarskiy region, Russia. In 1944 he came back to Moscow to finish university. In 1949 Samarskiy A protected candidate's dissertation and in 1957 — doctoral dissertation. In 1966 he was elected as the Corresponding Member of Mathematics Department of Academy of Sciences (USSA). In a year he became an academician.

In 1948 Samarskiy A. and Tikhonov A. elaborated the numerical methods and they were the first in USSA who made the direct calculations for the power of the nuclear bomb explosion and later — H-bomb explosion. The numerical results coincided good with the trial. So, the mathematical modeling base has put in their works already. Also, the main principles for formation and substantiation of difference schemes as the base of numerical methods have been created. Samarskiy A. and Tikhonov A. published the principled results of difference schemes theory in reports of Academy of Sciences in USSA in 1958 -1960.

At the beginning of 60th, Samarskiy A. with his colleagues was occupied with the problems of laser fusion synthesis, magnetic and radiation gas-dynamics", heavy lazer creating, aerodynamics, nuclear power, plasma physics etc. In these works was formed mathematical modeling and numerical experiment methodology (today it's well known as "model – algorithm – program" triada of Samarskiy A. The necessity to motivate the applied calculation with the help of computer induced the scientist to create the operator theory for difference schemes that was the forwad step at that time. Samarskiy A. and his follows worked intensively at this field and have created many high-performance algorithms for the numerical solution of actual scientific and technical problems.

The fundamental results in three main directions of difference schemes theory belong to Samarskiy A., such as mesh approximation theory for mathematical physics equations, stability theory for difference schemes, theory of methods formation and substantiation for equations solution using difference schemes with high order on nonuniform mesh.

The first large cycle of scientist's works was about solution of time-independent problems for mathematical physics. In these works the base for homogeneous difference schemes theory was put and the constructive principle of homogeneous difference scheme conservatism for the class of discontinuous coefficients was also formulated.

The second fundamental cycle of works was dedicated to the difference methods for the solution of time-dependent multidimensional problems for mathematical physics. In this cycle the a priori estimate method was developed. That was allowed to get the estimate for rate of convergence in different metrics. Also it was offered the summary approximation principle, which has become the base for the creating of economic difference schemes for the solution of linear and nonlinear equations for mathematical physics.

In the cycle "Stability problems in general theory of difference schemes" the theory for double-layer and three-layered schemes was build like as operator difference equations

in Hilbert space. The main achievement of his stability theory is in creating of unique canonic view for the difference schemes and getting the necessary and sufficient conditions for the stability in the terms of operator unequally.

Among the scientist's works on the mathematical physics and differential equations are also present the works about theory of nonlinear equations for mathematical physics. He suggested new analytic and numerical methods of investigation of nonlinear stage of processes, which are going in aggravation mode. These investigations allowed providing for new phenomenon in plasma physics, localization of diffusion processes, getting original results of the investigation of diffusive chaos.

In 1953–1991 Samarskiy A. headed one of the epartments in Applied Mathematics Institute of Keldish of Academy of Sciences in USSA. In 1991 he organized Mathematical Modeling Institute and he was the header of it until 1998. Nowadays Samarskiy A is the scientific leader of this institute and RAN adviser. More than 50 year he teachers in Moscow State University. The scientist founded and headed the Department of Numerical Methods at the Numerical Mathematics and Cybernetics Faculty and besides the Department of Mathematical Modeling in Moscow Physicotechnical Institute. Samarskiy created the large scientific school. Among his students were 5 corresponding members of RAN, more than 40 doctors and 100 candidates. His follows are working in Germany, Bulgaria, Hungary, USA, Ukraine, Byelorussia, Georgia, Uzbekistan, Azerbaijan, Armenia, Latvia, Lithuania.

Samarskiy has the close creative contacts with Ukraine. Schools of young scientists, conducted under his guidance regularly (especially in Lviv and Drogobich) have been the powerful stimulus for the scientific growth for his Ukrainian colleagues and students. With the help of these schools such scientists as Molchanov I., Prikazchikov V., Makarov V., Bondarchuk P., Slonovskiy R., Ludkevich I. have got the professor's degree. Samarskiy initiated the creating of Department of the Numerical Methods of Mathematical Physics in Kiev University of Shevchenko in 1981. This department headed Makarov V. — student of Samarskiy, professor, corresponding member of National Academy of Sciences in Ukraine.

Samarskiy is an author of more than 30 monographs and 450 scientific articles. His books help much generation of students studying. This scientist is the organizer and editor-in-chief of "Mathematical modeling" journal, member of editorial board of paternal and foreign journals, academic-secretary assistant of Department of Informatics, Computing Engineering and RAN Automation, chairman of Russian section of International Association in mathematics and computer modeling applying.