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ON THE EIGHTIETH ANNIVERSARY OF THE L. V. PISARZHEVSKII INSTITUTE OF PHYSICAL CHEMISTRY, NATIONAL ACADEMY OF SCIENCES OF UKRAINE

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November 6 marks the eightieth anniversary of the creation of the L. V. Pisarzhevskii Institute of Physical Chemistry, National Academy of Sciences of Ukraine – the oldest institute of chemical profile in Ukraine and, probably, the first specialized institute of physical chemistry in the USSR.

The Institute was created from the department of electronic chemistry of Dnepropetrovsk Mining Institute, led by Academician L. V. Pisarzhevskii. In 1934 the Institute was brought into the system of the Academy of Sciences of the Ukrainian SSR, and it was given the name of the founder and first director L. V. Pisarzhevskii.

Today the Institute is a leading center of chemical science and includes widely known scientific schools. The investigations by scientists at the Institute on fundamental problems concerning catalysis, the chemistry of isotopes, the chemistry of free radicals and mechanisms of chemical reactions, adsorption and adsorbents, the physical chemistry of coordination compounds, and photochemistry have received general recognition and high appraisal in our country and abroad. The pioneering researches of Academician L. V. Pisarzhevskii in the region of electronic chemistry, which have formed the basis of contemporary electronic concepts about the nature of various chemical phenomena and processes, are well known. On account of the researches of Academician A. I. Brodskii at the Institute concentrates of the heavy isotopes of oxygen and nitrogen were isolated for the first time in the USSR, and "heavy water," essential for the atomic project in the USSR, was produced. Professor V. M. Polyakov discovered heterogeneous–homogeneous catalysis, which lies at the basis of many industrial catalytic processes, and Prof. I. E. Neimark first obtained synthetic zeolites in the USSR. The investigations of Academician V. A. Roiter on the macrokinetics of heterogeneous catalysis, of Academician K. B. Yatsimirskii on physical inorganic chemistry, of Prof. B. Ya. Dain on the mechanism of electron phototransfer, and also the works of many other leading scientists of the Institute, which have opened up a series of new effects and phenomena of important significance in various fields of physical chemistry, have entered the treasury of world science.

Many developments at the Institute have been widely used and continue to be used in various fields: the chemical, petrochemical, aviation, cosmic, and ship building industries, mechanical engineering, agriculture, medicine, etc. Among them, in particular, are new effective catalysts and technologies for the production of various important substances, the purification of the gaseous emissions of industrial plants, new generations of light-sensitive materials and data recording methods, effective sorbents, original chemical current sources, methods and procedures for non-destructive control of large-scale industrial components, technologies of radiation-chemical modification of polymers, and many others.

Over the 80 years of the Institute's activity more than 9000 printed papers and 120 monographs were published, and more than 500 inventor's certificates and patents were granted. The Institute has trained a large number of highly qualified scientific personnel and, in particular, about 100 doctors and 400 candidates of science.

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Workers at the Institute took an active part in the elimination of the consequences of the disaster at the Chernobyl' atomic power station. A series of effective materials and methods for protection against radioactive contamination were developed and were used during 1986.

The Institute has published the scientific journal "Theoretical and Experimental Chemistry" regularly for more than 40 years. A full translation into English is published by the Springer publishing house and is propagated by subscription in many countries throughout the world.

The works of the Institute in various fields of physical chemistry have received wide international recognition, as witnessed by the close and fruitful collaboration with the leading scientific centers of many countries – Russia, USA, the countries of Western Europe, and also Japan, China, and others. Joint investigations have been carried out with projects and grants from international programs and with contracts with foreign corporations and firms.

After the successes in the development of chemical science, the widespread assimilation of its achievements by industry, and the training of highly specialized scientific personnel in 1969 the Institute was awarded the Order of Labor Red Banner and in 1977 and 1987 Honorary Diplomas of the Presidium of the Supreme Soviet of the Ukrainian SSR. Many workers at the Institute have been awarded State Awards, and A. I. Brodskii was made Hero of Socialist Labor. Series of scientific researches at the Institute have been awarded State Prizes of the USSR and Ukrainian SSR, State Prizes of Ukraine, prizes in the name of outstanding scientists of the Academy of Sciences of the USSR and the Academy of Sciences of Ukraine, and prizes and medals of foreign academies. The National Academy of Sciences of Ukraine established prizes in the name of prominent scientists of the Institute – L. V. Pisarzhevskii (from 1965) and A. I. Brodskii (from 1998) – for outstanding achievements in chemistry.

The Institute is approaching its eightieth anniversary against the background of realization of the great and responsible tasks facing the staff and, primarily, the preservation and development of the honourable traditions of the Institute, constant improvement of the subject matter and standard of researches in the light of trends in the development of contemporary science, the training of young scientific workers, the extension of scientific and technological links, and reinforcement of the authority of the Institute in world science society.

This issue of "Theoretical and Experimental Chemistry," which consists entirely of papers prepared by workers at the Institute and represents the series of scientific trends being developed by it, is dedicated to the eightieth anniversary of the L. V. Pisarzhevskii Institute of Physical Chemistry, National Academy of Sciences of Ukraine.