

# **Institute of Macromolecular Compounds of Russian Academy of Sciences (IMC RAS) To the 60th Anniversary**

Institute of Macromolecular Compounds of Russian Academy of Sciences (IMC RAS) is the leading scientific center in polymer science in Russia. Basic researches in chemistry, physical chemistry, and physics of macromolecular compounds are carried out in IMC RAS. The Institute was created in 1948. Its activity is focused on investigations of formation, structure, properties and possible applications of polymers.

The founder and the first director of the Institute was an outstanding Russian scientist a corresponding member of Academy of Sciences of the USSR professor S. N. Ushakov. The prominent Leningrad scientists S.N. Danilov, M.M. Koton, P.P. Kobeko, E.V. Kuvshinskii, G.P. Mikhailov, A.A. Korotkov, B.A. Dolgoplosk, N.I. Nikitin, A.A. Vansheidt, B.L. Erusalimskii, S.E. Bresler, M.V. Volkenstein, V.N. Tsvetkov, S.Ya. Frenkel, G.V. Samsonov participated enthusiastically in the process of the organizing. Joint efforts of this outstanding group of scientists resulted in formulating and realization of an extensive program of investigations covering all the key problems of polymer science. Later, the post of Director of IMC RAS was held by corresponding members of Academy of Sciences of the USSR S.N. Danilov and M.M. Koton.

Nowadays IMC RAS is headed by corresponding member of Russian Academy of Sciences, E.F. Panarin. The Institute consolidates more than 20 laboratories and groups, including chemical, physico-chemical, and physical laboratories, analytical centre and theoretical laboratory. Their activity covers polymer synthesis, chemical modification of polymers and biologically active compounds as well as experimental investigations of structure, mobility and supermolecular organization

of macromolecules by different methods, namely, molecular hydrodynamics and optics, polarized luminescence, dielectric spectroscopy, electronic microscopy, light scattering and X-ray, NMR, IR and UV spectroscopy and others.

List of the objects of synthesis and investigation is extensive and includes:

- Self-assembling polymers (liquid crystalline in particular);
- Biologically active polymers based on polypeptides, polysaccharides and synthetic polymers with functional groups;
- Polyimides and other polyheteroarylenes and their composites with high thermostability and resistance;
- Water-soluble polymers, polymer complexes and hydrogels;
- Polymers with nonlinear optical and electro-conductive properties;
- Fullerene - containing polymers;
- Polymeric systems with complicated architecture;
- Polymeric sorptional systems including microporous and gas-separating membranes.

The laboratory of theory and modeling of polymer systems is occupied by theoretical investigations of statistical properties and nano-structural self-organization of polymer systems, relaxation phenomena in polymers, computer modeling of structure and dynamics of polymer system.

During the 60 years of the Institute history scientists of IMC RAS have published 60 monographs and more than 8000 scientific papers. The most important practical applications of the polymer systems designed following the results of

fundamental researches should be mentioned:

- Development of the method of synthesis that allows obtaining of highly effective flocculants (for example LC ACROMIDAN) and intensifiers of cooling processes;
- Design, synthesis and investigation of antiseptic drugs, CATAPOL and POVIARGOL, and of a growth stimulating agent, DOXANE, are resulted in industrial producing in pilot-plant scale. Clinical tests of an antitumoral drug, POGLUCAR, are already completed.
- An original technology for obtaining highly purified INSULIN was developed and realized in industry.
- A plasma substitute POLYOXYDINE and an oxygen transporting blood substitute GELENPOL were worked out on the basis of synthetic water-soluble polymers and modified proteins.

All the details about Institute of Macromolecular Compounds of RAS can be found at the web site of the Institute: <http://www.macro.ru>.

## Institute of Macromolecular Compounds



*St. Petersburg, Vasilievsky Island:*

*Two buildings of the Institute of Macromolecular Compounds of RAS are shown by arrows.*