

From the Editors

This issue is devoted to the work of the All-Russian Seminar of the Russian Academy of Sciences for the study of the structure of liquids and solutions conducted at the Kurnakov Institute of General and Inorganic Chemistry of the Russian Academy of Sciences

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A Brief History of the All-Russian Seminar of RAS on the Study of the Structure of Liquids and Solutions

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Abstract. The main milestones of the existence of one of the unique phenomena in the life of Russian science are presented - the All-Russian (All-Union) seminar of the Russian Academy of Sciences on the study of the structure of liquids and solutions, which has been continuously working for 58 years. The seminar is attended by scientists from Russia and many countries of the world. The seminar is held once a month at the Kurnakov Institute of General and Inorganic Chemistry of Russian Academy of Sciences, Moscow 119991, Leninsky prospekt, 31.

Keywords: structure of liquids and solutions, reports, discussion, testing of research results, information about scientific congresses and conferences of Russia and the world

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The All-Russian (All-Union) Workshop of the Russian Academy of Sciences did not even grow from the colloquium of the laboratory, but of a group for studying the structure of liquid and solutions at the Kurnakov Institute of General and Inorganic Chemistry (IGIC) of RAS. In 1965, he became a seminar at the laboratory of the structure of water and aqueous solutions of IGIC and very quickly grew into an All-Union seminar because its organizer, inspirer and leader until his death in 1980 was the outstanding Russian scientist Professor Oleg Yakovlevich Samoilov, the author of the well-known translated into Japanese, German and English, the book "The

structure of aqueous solutions of electrolytes and ion hydration" (Moscow, Nauka Publ., 1957). O.Ya. Samoilov, the author of the discovery of the phenomenon of negative hydration, proposed a new molecular kinetic approach to solutions based on liquid physics, and managed to make the seminar a center of attraction and consolidation of research on the theory and experiment of liquids and solutions, not only in the Soviet Union, but and in many countries of the world. The works of a large army of scientists, both continuing to develop the work of O.Ya. Samoilov, and offering original ideas on the theory and physicochemical experiment of

liquids and solutions were widely discussed at seminar meetings.

After the death of O.Ya. Samoilov, the seminar continued to work and in 1982 celebrated its 100th meeting. At this 100th meeting, the requirements for the speakers were formulated – professionalism, the current level of the problem being discussed, clarity of presentation and theses of the report provided in advance. Requirements for the leaders of the seminar – a clear organization and friendly scientific atmosphere at the seminar.

In 1986, the Presidium of the Russian Academy of Sciences approved the status of the seminar as a permanent All-Union seminar of the USSR Academy of Sciences on the structure of liquid solutions, working at the Department of Rare Elements of the IGIC of the USSR Academy of Sciences, and appointed it Chairman M.N. Rodnikova, first employee of O.Ya. Samoilov and secretary of his seminar [1]. From then until now, our seminar has been working: reports of leading scientists in the field of the science of liquids and solutions of not only Russia, but also other countries of the world are listened and discussed.

Among the speakers at our seminar – prof. I.Z. Fisher, academicians: K.A. Valiev, A.I. Rusanov, L.B. Boynovich, Corresponding Members: I.L. Fabelinsky, G.A. Krestov, N.A. Smirnova, P.L. Privalov, A.B. Yaroslavl'tsev, I.V. Melikhov; professors: N.D. Sokolov, G.A. Martynov, Yu.K. Tovbin, Yu.M. Kessler, G.G. Malenkov, Yu.I. Naberukhin, V.L. Voeykov and other leading scientists of our country.

Among the foreign scientists who lectured at our seminar were: prof. S.A. Angel (USA), prof. H. Herz, prof. A. Geiger, prof. J. Barthel, prof. V. Look, prof. K. Heisenger, prof. G. Zundel (Germany), prof. E. Yamaguchi (Japan), prof. I. Ben-Naim, prof. I. Marcus, prof. Y. Feldman (Israel); prof. L. Sobchik, prof. Z. Kentsky, prof. I. Sadley (Poland); J. Gill, prof. A. Kornyshev (England); prof. A. Kalinichev (France) and others who came to Russia at the invitation of the IGIC RAS (Moscow) or the Institute of Solution Chemistry RAS (Ivanovo), leading scientists in the field of fundamental and applied science of liquids and solutions.

The work of the seminar is usually one meeting – one hour report. In our century of tremendous differentiation, review works are very important in all areas of science. They



Fig. 1. Kurnakov IGIC RAS, seminar meeting March 03, 2020, report L.O. Kononov (Zelinsky IOC RAS). Photo A.A. Kharchevsky [2].



Fig. 2. Kurnakov IGIC RAS, seminar meeting March 3, 2020, questions for the speaker. Photo A.A. Kharchevsky [2].

are reported at our seminar. New views, new ideas, new scientific directions. Sometimes meeting topics are asked by the organizers of the seminar. The department of our seminar saw dozens of prominent specialists in the field of physical chemistry of liquids and solutions. We will name only a few of them.

Liquid State Physics: I.Z. Fisher and his school (Odessa), G.A. Martynov, G.N. Sarkisov (Pushchino-on-Oka), Yu.K. Tovbin; R.R. Dogonadze, A.M. Kuznetsov, Yu.P. Syrnikov, V.A. Soloviev (Leningrad State University), V.P. Voloshin (Novosibirsk).

Methods for studying the mobility of particles in a liquid: K.A. Valiev (theory and Kazan school of NMR spectroscopy, spin echo), M.I. Shakhparonov, Gaiduk, Yu.D. Feldman, A.K. Lyashchenko (dielectric spectroscopy).

H. Herz, R.K. Mazitov, V.I. Chizhik, O.A. Bezrukov (Leningrad State University), V.A. Shcherbakov (Radium Institute) (NMR spectroscopy, relaxation).

A.Geiger, A.G. Grivtsov, N.K. Balabaev (Pushchino-on-Oka), V.P. Voloshin (Novosibirsk), G.G. Malenkov, M.M. Frank-Kamenetsky, M.A. Maso (molecular dynamics method).

Hydrogen bonding – the nature of the hydrogen bonding: N.D. Sokolov, I. Goldstein, L. Sobchik, I. Sadley, Yu.V. Novakovskaya.

IR and Raman spectroscopy of H-bond – Yu.I. Naberukhin, G.V. Yukhnevich, G. Zundel, N.A. Chumakovsky.

Hydrophobic effects – Yu.M. Kessler, Yu.I. Naberukhin, G.G. Malenkov, G.N. Zatsepina, M.N. Rodnikova, D.P. Kharakoz, A. Ben-Naim, I. Markus, L.V. Abaturon, P.L. Privalov, A. Geiger.

Molecular dynamics – a computer experiment – a necessary experiment to study the structure and mobility of particles in a liquid – a condensed but mobile phase – A.G. Grivtsov, E.E. Shnol (Pushchino-on-Oka), P.N. Vorontsov-Vel'yaminov (Leningrad State University), A. Geiger, N.K. Balabaev, D.K. Belashchenko, G.G. Malenkov, Yu.I. Naberukhin.

Unfortunately, a number of the scientists listed above have already left this world. In memory of them, seminars were held at which their achievements and contributions to the development of SCIENCE on liquids and solutions were presented. These were seminars in memory of:

about prof. O.Ya. Samoilov, who proposed a new molecular kinetic approach to liquid



Fig. 3. Kurnakov IGIC RAS, seminar meeting March 3, 2020, questions for the speaker. Photo A.A. Kharchevsky [2].



Fig. 4. Seminar meeting on March 03, 2020, the chairman of seminar, DrSci Chem, prof., Honored Scientist of the Russian Federation Margarita Nikolaevna Rodnikova. Photo A.A. Kharchevsky.

solutions, the author of the discovery of the phenomenon of negative hydration; the founder of our workshop;

about prof. I.Z. Fisher – a great scientist in the field of liquid state physics;

about Alan Georgievich Grivtsov – who developed and applied the method of molecular dynamics to the study of various aspects of the physical chemistry of liquid, especially heterogeneous, systems, which created an entire school of molecular dynamists in Russia;

about prof. A.M. Kuznetsov – academician of the Danish Academy of Sciences, a brilliant representative of the theoretical school of electrochemists of Russia;

about prof. N.A. Chumaevsky, the brightest experimenter in the field of vibrational spectroscopy, whose work on H-bonds in water and in aqueous systems made it possible to understand the mechanism of mobility of water molecules on a network of hydrogen bonds;

about prof. Josef Bartole (Regensburg, Germany) – a major specialist in microwave research of liquid systems, a great friend of our seminar – the editor-in-chief of *Journal of Molecular Liquids*, who suggested that we issue two times a special issue of this journal: the first V.82, No. 1, 1999, dedicated to our seminar, and the second V.106, No. 2-3 of 2003, dedicated to the founder and mastermind of our workshop, prof. O.Ya. Samoilov. The content of these two issues is attached to this article.

At our seminar, works of a wide scientific profile are presented, for example, on the history of science (S.E. Shnol, G.G. Malenkov) or on the methodology of scientific research (Yu.V. Chaikovsky). The works of international and Russian scientific congresses and conferences are highlighted.

We always tried to keep the seminar participants up to date with new world scientific discoveries and achievements.

Great organizational assistance is provided by the secretaries of the seminar: K.T. Dudnikova, T.M. Val'kovskaya, N.V. Bryushkova (Kalacheva), I.A. Solonina, D.A. Sirotkin.

Our workshop is 58 years old. He managed to go through and survive in the difficult years of perestroika, FANO, unscrupulous competition, hostility and envy.

Thanks to everyone who supported us and did not let the fundamental science of liquids and solutions die. Thanks to the theoretical group of the Frumkin Institute of Physical Chemistry and Electrochemistry of the Russian Academy of Sciences, the Institute of Solution Chemistry of the Russian Academy of Sciences and its director, Corresponding Member of the Russian Academy of Sciences G.A. Krestov, academician I.I. Moiseev, academician A.I. Rusanov.

Special thanks to the Russian Foundation for Basic Research.

Thanks to the Editor-in-chief of the RENSIT journal V.I. Grachev for the opportunity to present our seminar by publishing in this issue the works of its participants that have been heard at it in recent years.

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APPENDIX

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edited by Margarita N. Rodnikova and Boris Veytsman

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