

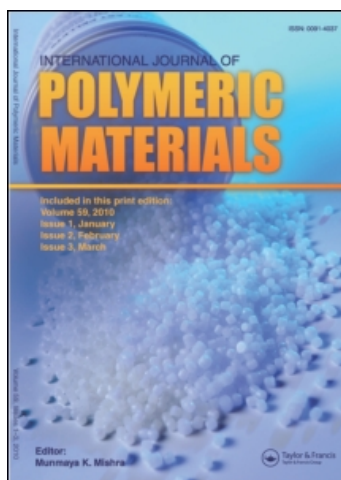
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Sixth Semenov's Readings

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Sixth Semenov's Readings

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The Sixth Semenov's† Readings were held on April 15, 1993, in Moscow, at the Institute of Chemical Physics (ICP) of the Russian Academy of Sciences. They were organized by the Scientific Council of Moscow Semenov Institute of Chemical Physics, the Scientific Council of Chernogolovka Institute of Chemical Physics‡ and by the Scientific Council on Chemical Kinetics and Structure of Compound of the Division of General and Technical Chemistry of the Russian Academy of Sciences. Following annual tradition the Readings were held on the Birthday of Professor Nikolai N. Semenov.

The Institute of Chemical Physics remains the main scientific centre of Russia in the area of Chemical Kinetics and Chain Reactions, particularly, in the fields of Kinetic of Biological Processes, and Development and Transformation of Polymers.

This year two themes were considered. They are the informative-energetic model of cerebation and the computer simulation of ensembles of elliptical particles, i.e. liquids, glasses, crystals and liquid crystals.

The opening remarks of Professor Vitalii I. Gol'danskii contain examples from the biography of Professor Nikolai N. Semenov, which regard to the aforesaid problems. Particularly, Professor Semenov made essential contribution in the exposure of the false theory of Professor Trofim Lysenko in biology. That "professor" affirmed that ". . . genetics is the sold girl of capitalism, and socialism does not need this pseudoscience." Such theory was favourable for J. V. Stalin and even for N. S. Krutchev, because Soviet leaders never had got more than primary school education.

The main speaker for the first problem was Professor Leon M. Chailakhyan, the Associated Member of the Russian Academy of Sciences. He described his approach to the Cerebation from the point of view of Chemical Physics. Professor

†Nikolai Nikolaevich Semenov (1896–1986), the Nobel Prize Winner of 1956 (together with Sir Cyril Hinshelwood) for the branching chain reactions, was the Founder (1931) and the life Director of the Institute of Chemical Physics.

‡In 1992 the Institute of Chemical Physics was shared by two Institutes of the same name. They are Moscow Institute (Director, Professor Vitalii I. Gol'danskii) of 2,500 Stuffs and the Institute in Chernogolovka (District of Moscow) of 3500 Stuffs (Director, Professor Sergei M. Baturin).

Chailakhyan showed the common features of brain and computer as well as their differences. The major principle of the self-organization of animals of any level is the huge amount of chemical and biochemical processes, which are governed by organism. Some of quantitative criteria of these processes were cited. It was shown that in contrast with usual chemistry, the biology could be described by so-called algorithmic chemistry, the main feature of which is the highest level of selectivity. This level is defined by two factors. The first is geometric (the "key-lock" mechanism of interaction between molecules), while the second is energetic (among different reactions, the reaction of the minimum of free energy is realized).

The second lecture dealt with the computer simulation of the ensembles of elliptic particles. Professor Alexandre A. Berlin gave new definitions of liquid and amorphous solid states. The criterion of the transition of substance from liquid state to the solid state and back is the equality between the number of freedom degree of the movement of particles and the number of limitations for this movement. The number of limitations depends either on physical (touch of particles) and chemical (chemical bonds) factors. The critical number of contacts depends on the shape of particles, their symmetry, rough, etc. Namely, the number of contacts defines the state of the substance (liquid or solid).

The well known experts from the Institute of Chemical Physics were involved in the discussion of the lectures. These scientists were Profs. A. L. Buchachenko, A. E. Shilov, F. M. Dubovitskii, S. M. Dubovitskii, S. M. Baturin, G. A. Alexanyan, G. N. Bogdanov, P. Yu. Butyaghin and others.

The current Readings showed, that ideas of Professor Semenov are so far alive and his School succeeds in solution of corresponding problems in the areas of Physics and Chemistry as well as in Biology and Medicine.

The next Semenov's Readings will be held on April, 1994.