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Publisher *Taylor & Francis*

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International Journal of Polymeric Materials

Publication details, including instructions for authors and subscription information:

<http://www.informaworld.com/smpp/title~content=t713647664>

International Perspectives. All-Union Conference: Fundamental Problems of Modern Science on Polymers

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To cite this Article Zaikov, G. E.(1991) 'International Perspectives. All-Union Conference: Fundamental Problems of Modern Science on Polymers', *International Journal of Polymeric Materials*, 15: 2, 135 – 137

To link to this Article: DOI: 10.1080/00914039108031530

URL: <http://dx.doi.org/10.1080/00914039108031530>

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INTERNATIONAL PERSPECTIVES

One of the goals of this journal is to facilitate communication in the international community of polymer scientists and technologists. To this end the *International Journal of Polymeric Materials* will periodically include reports of the Regional Editors covering important activities and developments in their respective regions.

The following report of activities in the U.S.S.R. and EASTERN EUROPE was prepared by G. E. Zaikov.

All-union Conference: Fundamental Problems of Modern Science on Polymers

An All-Union Conference: Fundamental Problems of Modern Science on Polymers was held in Leningrad, the U.S.S.R., November 27–30, 1990. Conference organizers were: the Academy of Sciences of the U.S.S.R. (Moscow); the Scientific Council on High-Molecular Compounds, Department of General and Technical Chemistry, Presidium of Academy of Sciences (Moscow); the Institute of High-Molecular Compounds of the Leningrad Academy of Sciences; the Research-and-Production Association—Plastpolymer (Leningrad); and the Inter-Regional State Association—Technochim (Leningrad).

V. A. Kabanov (Moscow State University) was Chairman of the Organizing Committee, and A. M. Eljashevich (Leningrad, Physical-Technical Institute)—his deputy. V. A. Izumrudov and Ju. N. Sazanov acted as Conference Academic Secretaries, and the Organizing Committee included well-known U.S.S.R. scientists in the field of polymer chemistry and physics: B. A. Dolgoplosk, N. S. Enikolopov, N. A. Platé, N. F. Bakeev, V. A. Ponomorenko,* S. A. Arzhakov (all from Moscow), M. M. Koton, V. N. Zvetkov, E. F. Panarin, S. V. Sokolov, S. S. Ivanchev, S. Ja. Frenkel, G. V. Samsonov, S. S. Skorokhodov (all from Leningrad), P. A. Kirpichnikov (Kazan), and Ju. S. Lipatov (Kiev).

* An expert in the field of synthesis and study of heat-resistant and special-purpose polymers, Dr. Ponomorenko died November 25, 1990, on the eve of the Conference.

In all, 500 scientists from seventy-five research centers in the U.S.S.R. participated.

The All-Union Conference included four symposiums. The first symposium—on polymer synthesis—was led by V. A. Vasnev (Institute of Elemento-Organic Compounds of the Academy of Sciences of the U.S.S.R., Moscow). Here, seven plenary reports were presented and forty poster communications were discussed.

In their reports, S. S. Ivanchev and K. S. Kazansky discussed the problems of macromolecular design and polymerization with the use of polyfunctional components and macromolecules. V. S. Byrikhin (with K. L. Makovetzky) covered designing macromolecules through methods of breakage-free cation and coordination-ion polymerization. M. B. Lachinov, Ju. D. Semchikov and E. N. Teleshov addressed macromolecular effects in polymerization.

New approaches in designing macromolecules in the process of linear polycondensation were presented by A. Ju. Bilibin, V. A. Vasnev, R. D. Kozarava, and S. S. Skorokhodov. Particular interest was attracted by information from Ja. S. Vygodsky and V. A. Pankratov on formation of linear and cross-linked macromolecules through polycycling of polyfunctional monomers. Formation of oriented polymer systems through polyreactions of organized monomers was discussed by V. P. Zubov, V. A. Egorov, and S. Ju. Zaitzev, while P. M. Valetzky and A. D. Pomogailo reported on the possibility of macromolecule design through the use of metal-organic compounds.

The second symposium, led by A. A. Berlin (Institute of Chemical Physics of the Academy of Sciences of the U.S.S.R., Moscow), concerned polymer structure and properties. Here, eleven plenary reports were heard and forty poster presentations were discussed.

The report of N. F. Bakeev and V. A. Marikhin was devoted to the modern state and trends in production of high-strength and high-modulus materials on the basis of flexible-chain polymers. Liquid-crystal polymers in the capacity of construction materials was discussed by V. G. Kulichikhin. The mesomorphic state of flexible chain polymers was reported on by Ju. K. Godovsky, V. S. Papkov, and D. Ja. Zvankin, while Ju. P. Yampolsky addressed the search of new polymer materials for gas-separating membranes (connection of structure and properties). The nature of selective transfer of components in polymer membranes was treated by S. F. Timashev; and the synthesis and properties of polymer Langmuir-Blodgett film were covered by V. V. Shilov.

Of great interest, was information given by V. I. Gerasimov devoted to the mechanism of plastic deformation in crystalline and glass-like polymers, as well as in polymer mixtures. The report by A. L. Volynski and N. F. Bakeev was devoted to the polymers abrasion mechanism, while the communications of Ju. K. Godovsky, A. E. Chalykh, and S. Ja. Frenkel touched on the phase and microphase conversions in polymer mixtures. The theory of diblock-copolymers and mixtures thereof was covered by T. M. Birshtein, E. B. Zhulina, and Ju. B. Ljazky; and the report of T. I. Borisova, L. L. Burshtein, Ju. Ya. Gotlib, and A. A. Garinsky touched on the relaxation properties of external-field ordered polymers, including liquid-crystalline polymers.

The third symposium—Polymer Electrophysics, Optics and Magnetism led by

A. L. Buchachenko (Institute of Chemical Physics) was smaller (six plenary reports and thirty poster communications).

The report made by E. L. Frankevich was devoted to the electrical conduction of organic polymers and ways of producing organic polymer metals. Polymer photosensitivity and photoactive polymer materials were discussed by A. V. Vannikov. V. P. Shibaev presented the latest works on electrical and photographic optics phenomena in the anisotropic media; and V. A. Bendersky addressed the electrodynamics of polymer composite ferrites. Great interest was generated by A. A. Ovchinnikov's report on ferromagnetism of organic polymers, while the problems of superconductivity in organic polymers were related by L. N. Grigorjev.

The Science on Polymers and General Problems of Chemistry, Physics and Biology were the themes of the fourth symposium—led by A. P. Khokhlov. Seven plenary reports and forty poster presentations were made.

G. P. Vlasov made a report devoted to the interdependence and interinfluence of the science on polymers, organic chemistry and physical-chemical biology. S. I. Kuchanov reported on statistical chemistry and physics of polymers. Computer simulation and the science on polymers was the theme covered by P. G. Khaltur, and A. Ju. Grosberg addressed polymer physics ideas in the modern development of the evolution theory. The report by A. B. Zezin touched on interpolyelectrolyte reactions accompanied by polyion transfer, while A. B. Kabanov related the results in supermolecular engineering of biopolymers in inverted micelles. The report by the team of: A. B. Vologodsky, K. V. Klenin, V. V. Anshelevich, A. M. Dykhne, and M. D. Franc-Kamenetzky, devoted to computer simulation of DNA (deoxyribonucleic acid) superhelixation, generated considerable interest.

This Conference stimulated a great deal of interest in the scientific community of the U.S.S.R. It indicated the progress made during recent years in the field of chemistry and physics of polymers. A large number of the poster presentations dealt with the application of polymers in medicine and agriculture.

This was a traditional All-Union Conference. Such conferences have been held every five years since 1950, and, as a rule, attract a considerable portion of the scientific community. Usually, about 1,000 scientists participate; but, to our regret, the themes of this conference were limited; and many segments of the polymer science community were simply not included.