

CHRONICLE

NINTH ALL-UNION RHEOLOGY SYMPOSIUM

(YAROSLAVL', JUNE 8-11, 1976)

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The Ninth All-Union Rheology Symposium was organized by the Academy of Sciences of the USSR, the D. I. Mendeleev All-Union Chemical Society, and the Ministry of Higher and Intermediate Special Education of the Russian SFSR. It was held in the Yaroslavl' Polytechnic Institute.

About 40 papers and 100 reports were read at the symposium and 200 people took part in it: workers from the Academy of Sciences of the USSR and the Union Republics, sectoral and educational institutes, and industrial concerns, including more than 40 doctors of science and more than 100 candidates, as well as a group of scientists from socialist countries (the German Democratic Republic, the Czechoslovak Socialist Republic, the Polish People's Republic, and the People's Republic of Bulgaria).

Papers of theoretical, applied, and instrumental rheology and rheological physics were presented and discussed from all angles, covering the experimental study and theoretical description of the properties of viscoelastic, elastoviscous, and viscoelastoplastic polymer systems, the investigation of the different characteristics of rheologically complex media using dynamic methods, aspects of the critical deformation and failure of polymers, the rheology of high- and low-concentration solutions of polymers of oligomers and polymers, the interaction of polymers with fillers and plasticizers, the rheology and thermal physics of rubbers and rubber mixtures, the flow and heat exchange in the channels of processing machines and shaping rolls, the use of vibrations in polymer-processing techniques, the rheology of polymerizing masses, thermosetting plastics and mixtures being vulcanized, the rheology of petroleum, emulsions, colloidal structures, and disperse systems subject to the action of electric and magnetic fields, and the application of rheology methods in the food and textile industries.

A marked rise in the scientific standard of the papers produced in the USSR is noted in the resolution passed at the symposium. Progress has been made in improving methods of processing polymeric materials as a whole and in the use of vibrational effects in particular. The use of rheological methods to monitor and control polymerization and condensation polymerization processes and the further development of methods of processing mixtures of polymers with specific fiber formation are promising trends.

The need to develop work on using the rheological characteristics of roadway bitumens and asphalts was noted, as was the need to intensify the study of the influence of electric and magnetic fields on the transfer processes and mechanical properties of disperse systems. Great importance was attached to the development of theoretical methods of describing the properties of rheologically complex media using a low number of constants and also to the first investigations made in the USSR into the strength of fluid polymer systems.

In addition to confirming the appreciable progress made in the field of the development and use of rheological investigations, the resolution of the symposium again drew the attention of a number of ministries to the difficult situation as regards the instrumental basis of rheology. The development of investigative work is being retarded, the automation of continuous production processes is being impeded, and the provision for the required quality of semimanufactured articles and finished goods is being hindered by the lack of industrial output of modern apparatuses for complex investigations and for highly specialized purposes.

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The symposium also noted the unsatisfactory situation as regards the training of theoretical scientists and specialists in the different branches of the physics and mechanics of rheologically complex media. The implementation of a number of organizational measures to coordinate rheological investigations in the USSR and to provide information on this problem was also envisaged.

In its resolution, the symposium especially noted the great importance in the development and strengthening of Soviet rheological investigations of the journals "Inzhenerno-Fizicheskii Zhurnal" and "Mekhanika Polimerov." Gratitude was expressed to the editorial boards of these journals for the attention they pay to the subject matter of papers concerned with the problems of rheology. A wish was expressed that in the future these journals might play the important role of centers actively promoting the development of Soviet rheology.

In conclusion, those attending the symposium were informed of the forthcoming rheology school which is planned for 1977 based at the Thermal Physics Institute of the Siberian Branch of the Academy of Sciences of the USSR.