

CHRONICLES

SIXTH ALL-UNION CONFERENCE ON THERMOPHYSICAL PARAMETERS OF MATERIALS

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This conference was held Nov. 27-29, 1978, in Minsk.

There were 176 communications from 98 organizations. The participants represented basic research organizations, technical colleges, and design and industrial organizations in Moscow, Leningrad, Kiev, Minsk, Odessa, Novosibirsk, Baku, Tashkent, Kharkov, Groznii, etc.

There were five papers at the plenary session on the major lines of thermophysical research, which were presented by Associated Member I. I. Novikov ("New researches on polymorphic transitions"), Dr. G. N. Dul'nev ("Transport coefficients in heterogeneous systems"), Dr. L. P. Fillippov ("Property forecasting for liquids and gases"), Dr. V. E. Fortov ("Dynamic methods in the physics of dense low-temperature plasmas"), and Dr. É. É. Shpil'rain ("Thermophysical aspects of hydrogen power").

The following sections operated: Thermophysical parameters of solids, Thermophysical parameters of liquids, Thermophysical parameters of gas mixtures, and Thermophysical parameters of low-temperature plasma.

Since the fifth conference there has been a considerable increase in the scale of research on the thermophysical parameters of solids and liquids, while there had been extensive publication of theoretical researches on the properties of alkali metals in various states of aggregation. Parameters of liquids have been calculated and forecast by scale transformation, methods from molecular dynamics, thermodynamic techniques, and similarity theory. Much attention was also given to the parameters of gas mixtures, including chemically reacting ones; substantial advances have been made also in research on dense and nonideal plasmas.

Traditional experimental methods have been increasingly supplemented in this area by techniques based on the use of lasers, particularly applied to the parameters of metals, polymers, and dispersed systems, and also pulse techniques, light-bearing methods, nuclear magnetic resonance applied to liquids, etc. There have also been extensions in the temperature ranges and types of materials, particularly on account of the use of refractory metals and oxides in the liquid state as well as polymers.

Some advances have also been made in computer assistance, data acquisition, data analysis, and general data processing.

However, the progress attained in the latter area is presently inadequate, as relatively little use is made of computer assistance in automating research and in novel methods, in particular inadequate use of laser and holographic techniques. There are only a few studies on the properties of gas mixtures at high pressures and temperatures and on the thermophysical aspects of nonequilibrium plasma.

Industry requires an increasing volume of data on the thermophysical parameters of substances, and there is a general need for an improved scientific level in this area, so the following decisions were formulated by the conference:

1. To perform combined researches on the properties of substances over wider state-parameter ranges, particularly to support theoretical research on thermophysical parameters in the solution of current problems.
2. To direct attention to the importance of research on nonequilibrium states.
3. To make wider use of computer assistance in data acquisition and processing during thermophysical research, including the definition of new thermophysical research methods employing the latest equipment.

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