Meetings

Society of Rheology

The Society of Rheology held its 1954 annual meeting in Washington, D. C., November 3–5. Over 150 members and guests attended the technical sessions, which were held at the National Bureau of Standards.

A high light of the meeting was an address by Alan T. Waterman, director of the National Science Foundation, presented at a dinner at the Sheraton Park Hotel on Thursday evening, November 4.

Dr. Waterman's remarks were on the general subject of the relationship of government to research. He spoke of the varied interests of the several departments of the government in research, and the fields in which they are presently carrying out or supporting work. He also discussed the present shortage of trained personnel in comparison with our requirements, and the even greater shortage which we can anticipate in the future. Because of this need for scientific and technical personnel both for normal peacetime progress and for our defense requirements this anticipated shortage is one of the country's most serious long-range problems. We must attract more qualified individuals to this field of study, and one of the most vital steps towards solving this problem is to increase the number of qualified science teachers in the nation's high schools, Dr. Waterman commented.

Following Dr. Waterman's address the Bingham Medal of the Society was presented to Turner Alfrey, Jr., of the Dow Chemical Company, by Herman Mark of the Polytechnic Institute of Brooklyn. Dr. Alfrey was recognized for his contributions to the study of the mechanical properties of polymeric systems through his teaching and writing as well as his original research in the field.

The well-rounded technical sessions of the meeting were opened on Wednesday afternoon, November 3, by A. V. Astin, director of the National Bureau of Standards. In welcoming the Society to the Bureau of Standards, where the technical sessions were held, Dr. Astin noted that the first meeting of the Society was held at the Bureau 25 years ago.

Current advances in the field of dynamic measurements were reported in a number of papers. Important developments in the application of these methods to both solids and liquids were discussed. Dynamic properties of filled polystyrene were shown to yield important information regarding the effect of the filler and the adhesion between filler particles and the polymer. Some preliminary results on dynamic compressibilities indicated this new line of attack will open another interesting approach in dynamic measurements. For high-polymer solutions dynamic data from different laboratories using different types of instruments can be reduced to a single curve showing that real properties of the material, independent of the instrument used, are being measured. Concentration dependence of the polyisobutylene-decalin system, which has been studied in considerable detail, was reported. Advances in the analysis of dynamic tests on viscoelastic materials were also discussed. The importance of a generalized relation, which does not make any assumptions about the unknown behavior of the material under test was emphasized.

The derivation of a new statistical mechanical formula for viscosity was discussed. At present this can be evaluated only for gases but the possibilities of extending it to liquids will be explored. Recent researches on the transport phenomenon of gases, which may clarify these properties in different states of material were presented. In an interesting and timely paper, on acoustics and the liquid state, the role of acoustical measurements in the study of liquid structure was reviewed.

Several papers on the rheology of solid polymers were presented. Stress-strain relationships at impact velocities, elastic moduli as a measure of anisotropy and diffusion controlled stress relaxation were discussed in a series of three papers on fibers. The performance of solid polymers under various types of mechanical loading was considered and the practical implications discussed.

Papers on plastic systems included contributions to the flow behavior of bitumens and heat effects in the flow of molten polymers. In two papers a theory of non-Newtonian flow, based on Eyring's simple relaxation theory, was advanced and supporting results given.

The most notable feature of the meeting was the wide range of subjects which concern the rheologist. Matters varying from "Determination of the Baking Value of Bread Doughs" to "Visco-Elastic Density Changes in Glass" are indicative of the diverse fields connected through the science of rheology.

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Photoconductivity Conference

The first scientific meeting devoted entirely to the subject of photoconductivity was held November 4–6 at the Senator Hotel in Atlantic City. The sponsoring agencies were the Office of Naval Research, the University of Pennsylvania, and the Radio Corporation of America. Limited space, and the desire to promote discussion among those active in the field, made it necessary to restrict attendance to about one hundred and forty persons.

The program included thirty invited and contributed papers, covering nearly all aspects of photoconductivity.

The topics receiving the greatest emphasis were photon absorption processes, electron processes, the phenomenological theory of photoconductivity, and photoconductive materials. The final session was devoted to current research on photoconductivity in indium antimonide, germanium, tellurium, lead sulfide films and single crystals, and lead telluride films.

The conference was substantially enriched by the participation of several European scientists, including P. Aigrain, R. P. Chasmar, E. Mollwo, T. S. Moss, and J. Pincherle. Regrettably G. A. Busch was prevented by illness from attending.

Papers presented at this conference, together with significant comments from the floor, will be published. This volume, which is being prepared by John Wiley and Sons under the auspices of the American Institute of Physics, is expected to appear next summer.

Solid State Conference

Graduate students should occasionally have the opportunity to meet with fellow students of their geographic region and discuss the state of physics and their own particular problems. That is the motive prompting the holding of the Annual Mid-West Solid State Conferences. The third of these one-day meetings took place on October 23rd, 1954, on the campus of the University of Minnesota with an attendance of 73 persons from seven universities and eight companies and research institutions, the majority coming from that part of the country flexibly termed the Middle West.

The formal program consisted of fourteen papers: five by graduate students on work connected with thesis problems, five by university faculty members, and four by research workers from nonacademic laboratories. Of the first group, work in progress was described on the electrical properties of thin metallic films, semiconducting metallic compounds and high-temperature thermal conductivity measurements on uranium by D. G. Worden, C. R. Whitsett, and G. J. Pearson, all of Iowa State College.

From the University of Missouri: work on infrared absorption of thin films deposited on magnesium oxide was described by W. Brouillette and a second paper by E. B. Hensley attempted a synthesis of the band model for BaO from these and other data on this material. Work done at the University of Illinois on an extended series of diffusion measurements in pure silver of elements closely associated in atomic number was described by L. Slifkin, now of the University of Minnesota.

Vivian Johnson, Purdue University, discussed the present approaches to the theory of thermoelectric power in semiconductors and H. T. Minden of Chicago Midway Laboratories described some properties of evaporated PbS films when exposed to an oxygen atmosphere. Work being undertaken at the host University on critical single domain size in ferrite granules was described by A. H. Morrish.

Other papers contributed included a discussion of