

RETURN TO MECCA:
A BRIEF SUMMARY OF THE 71ST ANNUAL SOCIETY OF RHEOLOGY MEETING

MONONA TERRACE, MADISON, WI
OCTOBER 17-21, 1999

The titled meeting was held in the recently built Monona Conference Center overlooking beautiful Lake Monona in downtown Madison, Wisconsin. This building is a breathtaking design of the famous Frank Lloyd Wright. Most of you know that the main campus of the University of Wisconsin is located in this city and is thought of by many in our field as the Mecca of Rheology. This is because so many legends in our field did their work here and some of these (like Bird, Ferry and Lodge) were in attendance, though emeritus status as faculty. I will summarize the meeting in terms of several general topics which seemed to have been emphasized: colloids & dispersions; non-Newtonian fluid mechanics; polymer blends & block copolymers; polymer melts, solutions & gels; shear-free flows; solids. Three plenary lectures plus a poster session were used in conjunction with the regular sessions to cover these topics. Two 'Industrial Rheology' sessions were organized to bring to light industrial applications.

The rheology of colloidal and dispersed systems dominated the conference by sheer number of papers. The subject was excellently reviewed by Bill Russell, the Bingham award winner, showing the breadth and depth of his work finding the physical and chemical sources of the rheological behavior of this class of materials. Jan Mewis limited his plenary lecture to explaining how different types and geometries of polymeric coatings applied to suspended particles affect the flow properties of dispersions. Several sessions dealt with the related subjects: polymer particle mixtures and heterogeneous systems. Supporting work dealt with single drop deformation in the Non-Newtonian Fluid Mechanics session. Several papers in the Industrial Rheology sessions also dealt with dispersions and suspensions including studying elongational flow properties. Quite a few papers dealt with the subcategory of electrorheological fluids.

For a journal like Applied Rheology, the readers probably would have the most interest in the Industrial Rheology sessions and related topics. A large number of these papers dealt with modeling industrially important processes. Crystallization during spinning was the focus of two papers. Modelling of film casting was used to analyze the edge effects of 'necking in' and 'edge beading'. The causes of 'bowing' in biaxially oriented polypropylene film were identified. Paper

coating was generally analyzed in one paper looking at practical issues affecting high speed operations. Another paper extended and improved on work studying the control of film thickness. Interfacial slip and 'cross channel layer rearrangement' for multilayer coextrusions was also covered. An interesting paper by Prud'homme ('Shear-Free Flows' session) analyzed atomization during spraying and the control of drop size. A few papers dealt with the effects of slip and other variables on melt fracture.

Molecular weight distribution (MWD) and long chain branching (LCB) effects were also covered by several papers. The plenary lecture and another paper talked about predicting MWD from linear viscoelastic properties. An interesting model was proposed by Janzen and Colby for relating branched and/or linear structures to the combination of zero shear viscosity and weight average MW. This model was applied to many polyethylenes. As MWD/LCB relates to polyethylene rheology was discussed in several other papers dealing with combinations of extensional and shear flow as well as pressure. Application of the Rheometric Scientific software for MWD determination was discussed in the plenary lecture and in a paper by Gupta in the 'Industrial Rheology' session.

Polymer rheology was covered extensively, as always. Biological polymer solutions and gels were reported on in several papers and posters as was water soluble polymers. Studies of polymer solutions in dilute, semi-dilute and concentrated regimes were also reported. Melts were covered which included liquid crystalline systems and many papers on multiphase melts. The latter subject was extensively covered in three sessions on 'Blends and Block Copolymers'. Two sessions on the 'Rheology of Solids' covered: glassy polymers; new and improved measurement techniques; crosslinked plastics and rubber; biological materials; and a single paper on metal alloys.

Two sessions on 'Shear-Free Flows' demonstrated the increasing concentration of effort in this important field. Several papers dealt with the emerging field of surface rheology (micro-, thin-film rheology). A good number of papers were presented in the four 'Non-Newtonian Fluid Mechanics' sessions. Turbulent and many

other types of complex flows or flows in and around complex geometries were talked about. Also covered were single particle fluid mechanics.

The typical congenial atmosphere pervaded as evidenced by many rousing discussions during the formal presentations as well as in the common areas. An enjoyable banquet was heavily attended, in which Bill Russel's Bigham medal was awarded along with the seldom given Distinguished Service Award to the richly deserving Albert Co.

Co was awarded for his creation of the very useful Society of Rheology web page and the related application for organizing the conference.

Bob Armstrong and Dan Klingenberg, the program cochairs, and Jeff Giacomini, the local arrangements chair, should be congratulated on a well-organized, educational and delightful conference.

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Seminar Rheologische Charakterisierung disperser Systeme

Leitung: Prof. Dr. rer. nat. H. Buggisch, Dr.-Ing. W. Gleißle
Institut für Mechanische Verfahrenstechnik und Mechanik (MVM)
der Universität Karlsruhe

Termin: 20. bis 22. März 2000

Seminarprogramm:

- § Begriffe, Modelle, Gleichungen der Rheologie
- § Meßgeräte und Meßverhalten zur Ermittlung von Fließeigenschaften
- § Fließverhalten von Suspensionen, feuchter und trockener Schüttgüte
- § Schwingungsrheometrie an Suspensionen
- § Rheologische Charakterisierung des Extrusionsverhaltens keramischer Massen
- § Polymerdispersionen – Struktur und Rheologie
- § Rheologische Charakterisierung keramischer Preßgranulate
- § Rheologie bei der Entwicklung von Verfahren und Apparaten der Lebensmitteltechnik
- § Rheologie und Rheometrie im Lebensmittelbereich
- § Rheologie von kosmetischen Emulsionen in der Industrie
- § Praktikum, Vorführung von Rheometern und Prüfgeräten

Vortragende: J. Graczyk, Dr.-Ing. B. Hochstein, Dipl.-Phys. R. Brummer (Beiersdorf-Hamburg), Dr. H. M. Laun (BASF-Ludwigshafen), Prof. Dr.-Ing. J. Schwedes (Braunschweig), Prof. Dr.-Ing. K. Sommer (München), Prof. Dr.-Ing. E. Windhab (Zürich)

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