Rheologentagung 2007

Berlin, Germany
March 22 and 23, 2007

In this year, the annual conference of the German Rheological Society (DRG) was a joint event of the DRG and the subgroup "Rheologie" of the VDI-Society "Verfahrenstechnik und Chemieingenieurwesen" (GVC). This joint meeting took place on March 22 and 23 at the "Bundesanstalt für Materialforschung und -prüfung (BAM)" in Berlin. The chairmen of the conference were Prof. Norbert Willenbacher (DRG) and Prof. Christian Friedrich (VDI-GVC). Prof. Werner Mielke (BAM) was responsible for the organization of the conference and the comfortable hospitality.

The objective of this year's event was to bring together scientists working in the different fields of rheology in order to exchange and to discuss new results and ideas. In particular, young scientists were encouraged to present the status of their ongoing research projects. Around 50 participants from academia and industry attended a stimulating meeting with many lively discussions. All lectures were presented in front of the plenum. In addition, the poster contributions were introduced with short lectures. The topics of the oral and poster presentations covered a large spectrum of rheological problems, ranging from rheology of complex fluids, food science to life and earth science.

The laureates of the "Rheologie-Preis 2007" Dr. Jens Stange (left) and Dr. Saeid Kheirandish (Photo provided by Kristin Pawlowski).

Christian Wagner opened the first session with an overview on elongation experiments of polyelectrolyte solutions using the capillary break up extensional rheometer. The linear and nonlinear rheological properties of networks of dibenzylidene sorbitol fibres which were dissolved in poly(propylene oxide) were analyzed by Martin Kühne. He compared his experimental findings with a model for densely entangled networks. Michael Schopferer presented first results on the rheological characterization of disease-causing mutations of desmin, an intermediate filament which plays an important role in stabilizing muscle cells. His project finally aims at an understanding of how mutations alter the mechanical properties of these protein filaments. Peter Fischer discussed results of neutron and light scattering studies of wormlike micellar solutions which form vorticity bands and of the rheology of emulsions which were stabilized by proteins. The rheological properties of filled systems were addressed by the presentations of Patrick Degen, who studied the influence of magnetic particles on the rheology of two-dimensional networks, and Nikolaos Katsikis who correlated rheological and electrical measurements of carbon black filled polymers. The relevance of rheology to earth science was revealed by Achim Kopf who discussed the flow properties of clay suspensions in the context of mud volcanos. After the presentations of the poster contributions, Helmut Münstedt gave an enlightening overview about the characterisation of long-chain-branched polymers using rheological and analytical methods. In particular, he showed that the analysis of the activation energy can give much insight on the degree of longchain-branching. He exemplified these results using data of metallocence catalyzed polyolefins.

The German Rheological Society announced an award for an outstanding Ph.D. dissertation which was completed before December 31, 2006. In this year, the award was given to Dr. Saeid Kheirandish and Dr. Jens Stange for excellent Ph.D. dissertations. In his work, Dr. Kheirandish proposed constitutive equations for linear and longchain-branched polymer melts. In particular, he derived theoretical predictions for the transient extensional viscosity which were in excellent agreement with various sets of experimental data. The topic of the Ph.D. dissertation of Dr. Stange was the influence of the rheological prop-

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erties on the foaming behaviour of polypropylenes with different molecular architectures. Dr. Stange correlated results of shear and melt elongation experiments with data of foaming processes prepared on the laboratory and the pilot plant scale. Both laureates presented the main results of their works in two lectures.

In the beginning of the second day of the "Rheologentagung 2007", an inspiring lecture on the rheology of complex materials in the vicinity of the gel point was given by Henning Winter. Claus Wrana discussed a new method in order to determine the distribution of the molar mass by analysis of the complex modulus using the Cole-Cole function. Kurt Mattes discussed edge fracture of polymers during shear oscillations, and modelling elongation and birefringence of monodisperse polystyrene melts was the topic of the lecture of Victor Hugo Rolón-Garrido.

Christian Sailer reported on the influence of reactive compatibilization on the rheology of blends of polyamide 6 and styrene-acrylonitrile. The lecture of Claus Gabriel was devoted to the development of a double-gap shear cell for the characterisation of magnetorheological fluids. In an illustrative lecture, Dick Dijkstra introduced into the rheology of polyurethane dispersions which are, e.g., relevant for the production of sports shoes. Finally, Jörg Läuger explained that the combination of scattering and microscopic techniques with rheological methods allows one to give insight into the rheological properties of complex fluids.

In summary, a very lively and scientifically stimulating meeting took place in Berlin. The next annual conference of the German Rheological Society will presumably be in February 2008 in Berlin. Because of the positive resonance of the symposium "Disperse polymer systems" which was organized in a joint event with the German Physical Society (DPG) in 2006, it is planned to have again a joint DRG-DPG event in 2008. The tentative title is "Rheology, structure and dynamics of complex fluids".

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