The Annual European Rheology Conference (AERC 2017) and the Nordic Rheology Conference (NRC 2017)

Copenhagen, Denmark
April 3 – 6, 2017

The combined 11th Annual European Rheology Conference and the 26th Nordic Rheology Conference was held April 3 – 6, 2017, at the Scandic Copenhagen Hotel, Copenhagen, Denmark. The official organizer of the meeting was the Nordic Rheology Society (NRS). The actual organization of the combined meeting was excellently executed by the Organizing Committee, chaired by Ole Hassager (Technical University of Denmark, DTU), Johanna Aho and Stefania Baldursdottir (both at the University of Copenhagen). The meeting is regarded as one of the most important meeting platforms for rheologists from all over the world, which was reflected in the number of participants being more than 460 from 35 nations. The conference was preceded by a rheology course coordinated by Peter Szabo, DTU, bringing out subjects like extensional rheology and the combination of rheological and scattering methods. The course was fully booked with 70 participants and can be regarded as a success. Focused courses of this kind constitute a valuable addition to the rheology meetings and perhaps other conferences could take inspiration from the AERC/NRS in this regard.

The delegates were welcomed by Ole Hassager, Johanna Aho and the chairman of the European Society

of Rheology, Mats Stading from RISE and Chalmers University of Technology. The actual conference program was opened by the presentation of the Weissenberg Awardee, Philippe Coussot, from Université Paris-Est, France, who was recognized for his vast contributions to fundamental and engineering aspects of rheology, for example within thixotropy and yielding of dense suspensions. Professor Coussot then gave a talk on "How much paint is left on your brush – A journey in the world of yield stress fluids". The three conference days were divided into nine scientific sessions, organized by the appointed chairpersons. The sessions were: Suspensions and colloids, Non-Newtonian fluid mechanics and fluid instabilities, Solids, glasses, and composites, Food and biorheology, Micro and nanorheology, microfluidics, Polymer solutions and melts, Rheology of powders and granular material, Gels and self-assembled systems and Interfacial rheology. Altogether about 230 contributions were presented orally and the two poster sessions included about 180 papers.

Three plenary lectures were given at the meeting by three distinguished scientists; Jason Stokes from University of Queensland, Evelyne van Ruymbeke from Université Catholique de Louvain and Sandra Lerouge from Université Paris-Diderot. Wednesday morning opened by a very energetic lecture by Jason Stokes on soft matter rheology, tribology and biointerface science. He raised among other things the important question. "How does the food feel in your mouth?" and what is the physical basis for this. He furthermore pointed to new approaches for improving the assessment of relevant relations between structure-properties-processing for soft materials. In a very thorough and pedagogical lecture, Evelyne van Ruymbeke showed how one, based on the tube model, could describe and predict the viscoelastic properties of complex, entangled polymer architectures. In a continuation of their approach, she exemplified the work by showing how it could be used for describing the complex rheology of entangled self-assembled structures containing "sticky" polymers. In a visually appealing lecture, Sandra Lerouge illustrated and discussed flow instabilities of different types and origins, especially progress on shear banding in wormlike micelles and the coupling between flow and structure. She pointed to the importance of two-dimensional analysis and visualization of the flow and furthermore to that the coupling between the flow and the induced structures adds to the complexity of the flow dynamics. Studies of this type are very likely to be of great direct importance for processing of soft materials in many kinds of applications.

In total, there were twelve key-note lectures, distributed over the scientific sessions, presented at the meeting by a number of distinguished scientists. To-

gether they covered almost the entire field of rheology. For example, in the session on Suspensions and colloids, Norbert Willenbacher lectured on the phase behaviour, the structure, and the dynamics of aqueous polymer dispersions with short range repulsive interactions and how these were affected by weak attractive interactions (achieved by adding a non-adsorbing polymer). Using rotational rheology and Multiple Particle Tracking, they pointed to correlations between microstructures, particle mobility and other features with the flow behaviour of the dispersions. In his key note lecture, Dimitris Vlassopoulos presented the complex rheological behaviour of blends of linear and ring polymers in the linear as well as in the non-linear range. Andrea Sekulovic pointed to necessity to meet the needs of the patient in the product development of pharmaceuticals, exemplified by an ocular product performance. In their interesting study, they used rheology as a critical quality attribute and noted that the patient needs could be met with the tailored rheological products characteristics. In the session on Gels and self-assembled systems, Walter Richtering discussed the connection between the structure of three different microgels and their behaviour at interfaces, e. g. their spreading. The cross-link density was indicated as an important characteristic in this context.

An international rheology conference is expected to cover all aspects on the flow behaviour of matter and this expectation was certainly met also in Copenhagen with the breadth and quality of the oral presentations being matched in the poster sessions. It is a more or less an impossible task to review even a fraction of the presentations given and this is not the aim of this short summary. More details of the conference can however be found in the Abstract book and in the Transactions of the Nordic Rheology Society (Volume 25). Topics covered were for instance relations between molecular architecture and rheological properties, non-linear rheology developments, responsive gels, flow instabilities, extensional properties in conjunction with swallowing, nanocomposites and many others.

The social events were well received by the participants. The City Council of Copenhagen hosted an appreciated reception in the evening of the first day (April 3) in the City Hall of Copenhagen. The conference dinner took place at the Langelinie Pavillonen located at the waterfront, where the delegates also could meet the well-known "Little Mermaid". During the dinner, the guests were entertained by HC Andersen and his fairy-tales. The organizers deserve all credits for an excellently organized conference (and dinner).

Next year's Annual European Rheology Conference will take place in April 17 – 20, 2018, in Sorrento, Italy. Further information can be found by visiting the website www.rheology-est.org.

Catherine Taylor Nordgård
Norwegian University of Science and Technology
Trondheim, Norway

Mikael Rigdahl
Chalmers University of Technology
Gothenburg, Sweden

Figure 1: Philippe Coussot is congratulated to the Weissenberg Award by Mats Stading, the President of the European Rheology Society. (Photo by Roland Kádár)

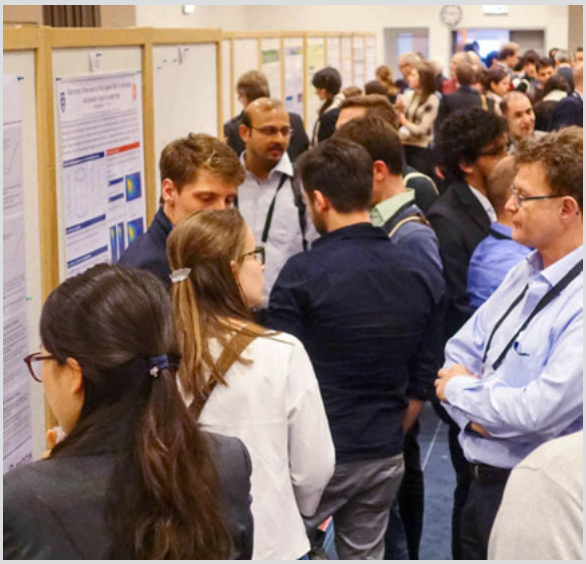

Figure 2: The poster sessions were very popular and crowded. (Photo by Mats Stading)