27th Nordic Rheology Conference and Course (NRC 2018)

TRONDHEIM, NORWAY

JUNE 13 – 15, 2018

The 27th Nordic Rheology Conference welcomed 65 delegates from 14 countries, and offered 5 invited plenary lectures, 15 poster presentations and 24 oral presentations. The conference was jointly organised by the Norwegian University of Science and Technology (NTNU) and SINTEF and hosted by NTNU. The theme of the conference was ‘Rheology for a better world’, which was borrowed from our host, NTNU’s motto ‘knowledge for a better world’ and proved to be eminently suitable for an event showcasing the multifaceted discipline of rheology.

The rheology course took place on Wednesday June 13, 2018 with 20 participants representing both academia and industry from 7 countries. The morning session consisted of a classroom introduction to rheology, lectured engagingly by Jeff Morris, CUNY City College of New York. The afternoon session involved laboratory demonstrations of soft viscoelastic gel materials in the rheology laboratory of NTNU’s department of biotechnology and food science followed by examples of problems and pitfalls working with such materials and an optional visit to the SINTEF laboratories.

The main conference programme started on Wednesday evening with a welcome reception and organ concert in Trondheim’s cathedral, the Nidarosdomen, followed by a buffet and drinks reception. The organ concert was a gift to the conference delegates from the municipality of Trondheim and it was a great honour to be able to experience the organ playing at such close quarters in the magnificent surroundings of the cathedral. I’m sure I’m not the one who was minded to think of frequency dependent behaviour as I listened to the reverberations of the masonry with the deep bass tones, a perhaps unintentional but very fitting link for a rheology conference! Summer weather in Trondheim is not always reliable but weather gods were smiling on us and the city and cathedral showed their best side in the summer sunshine, while conference delegates both old and new took the opportunity to become acquainted or reacquainted in relaxed surroundings.

The conference was officially opened on Thursday by Øyvind Gregersen, Dean of NTNU’s Faculty of Natural Sciences. This was followed by the first plenary lecture, by Arild Saasen (University of Stavanger), who addressed the contribution of rheology to industry through the use of rheological measurements in industrial standards, particularly in relation to the oil industry. He highlighted

instances where articles published in the Annual Transactions of the Nordic Rheology Society have contributed directly in the writing of standards and also discussed challenges with the use of limited rheological descriptors in standards particularly when replacing on type of material with another, such as the move towards water based viscosifiers. His lecture was followed by a session with contributed papers on rheological methods, which covered both instrumentation and techniques.

After coffee, the programme continued with a plenary lecture by Jeff Morris entitled ‘Extreme transitions of flow properties: Discontinuous shear thickening and hydrate jamming’ which provided an engaging journey into the world of flows and particulate suspensions, something that would prove to be a significant theme throughout the conference. There followed sessions with contributed papers on the themes of complex fluids in drilling applications and food rheology, highlighting the breadth of rheological applications. After lunch, an engaging poster session and the annual meeting of the Nordic rheology society, the final plenary lecture of the first day was given by Tonje Eide Helle and Inger-Lise Solberg (Norwegian Road Authority and the Geological Survey of Norway). Their lecture dealt with the subject of quick clays and landslides and covered not only the scientific basis of quick clay stability and instability but also detection, monitoring and stabilisation strategies and societal implications of instability and landslides both historically and today. The relevance of their lecture is perhaps highlighted in the fact that a week after the conference there was a landslide where quick clay was implicated just across the fjord from Trondheim at Leksvik in Indre Fosen municipality. The scientific program for the day was rounded off with contributed papers covering electrorheological, magnetorheological and composite systems. The conference dinner was held at Banksalen in downtown Trondheim and gave the opportunity to see both a little of the archaeological excavations of historic Trondheim and a contemporary art installation whilst enjoying an aperitif followed by a 3 course dinner showcasing local ingredients. The dinner was characterised by lively and engaged conversation among the conference delegates, some of whom chose to continue to socialise, making the best of the long light summer night, after the dinner wrapped up.

■ CONFERENCE REPORT ■

On Friday morning Randy Ewold (University of Illinois at Urbana-Champaign) took to the podium to present his plenary lecture 'Engineering yield stress fluids for a better world'. Here he presented exciting application areas of yield stress fluids including firefighting, and challenged the conference delegates to be inspired by engineering disciplines and explore the design space when working with applied rheology. This was followed by a session of contributed papers on polymer rheology. Before the last session of the conference Johanna Aho presented the Nordic Rheology Society Poster prize of 100 to Alondra Renteria Ruiz of the University of British Columbia for her poster 'Rheological and geometric effects in cementing of irregularly shaped wells'. The final plenary lecture was given by Rolf Walstad (St. Olav hospital and NTNU) who talked about rheology, airway mucus and disease, providing sobering examples of the health consequences of ab-

normal mucus rheology and underscoring how rheological understanding can drive advances in medicine. The remaining contributed papers of the conference were presented in two sessions, one covering pharmaceutical rheology and one covering rheological modelling, a demonstration of the breadth of subject matter touched upon within the conference.

Finally, and most importantly, I would like to take this opportunity to thank our sponsors, The Research Council of Norway and the Department of Biotechnology and Food Science NTNU, and the conference delegates who travelled to Trondheim from the Nordic countries and beyond to present their work, to learn, to network, to explore new possibilities and to contribute to 'rheology for a better world'.

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