

Rheology seminar at Aalto University

Date: Thursday, January 23, 2020

Venue: Lecture hall L1, Vuorimiehentie 1 (Puu1 building), Otaniemi, Espoo

The seminar is free of charge, no registration required

Program:

13:30-	coffee & refreshments	
13:50- 14:00	Olli-Ville Laukkanen & Michael Hummel	opening words
14:00- 14:30	Antti Koponen	The effect of consistency on the shear rheology of aqueous suspensions of cellulose micro- and nanofibrils
14:30- 15:00	Katarina Dimic-Misic	Role of Rheology in studying Dewatering and Formation of Paper-Making Suspensions: insight into effects arising from the presence of micro-nanofibrillated cellulose (MNFC)
15:00- 15:30	Antti Puisto	Rheological modeling of complex fluid flows

The abstracts of the seminar talks can be found below.

The effect of consistency on the shear rheology of aqueous suspensions of cellulose micro- and nanofibrils

Antti Koponen, VTT

While the raw material type and the production method of cellulose micro- and nanofibrils strongly affect the absolute values of the rheological parameters (e.g. consistency index and yield stress) of their aqueous suspensions, the dependence of these parameters on consistency is shown to be uniform. The variability of reported scaling exponents of the rheological parameters of these materials is shown to be mainly due to experimental uncertainties such as slip flow and not so much due to fundamentally different rheology.

Role of rheology in studying dewatering and formation of paper-making suspensions: insight into effects arising from the presence of micro-nanofibrillated cellulose

Katarina Dimic-Misic, Aalto University

The observation that micro nanofibrillated cellulose (MNFC) could possibly be used in paper furnish and coating formulations as a binder opens questions related to porosity, pore size distribution and barrier properties of novel paper based products and coatings.

This presentation will address the impact of introducing nanocellulose in (i) paper furnish formulations and (ii) coating colours as a co-binder on the derived complex suspension network strength, water retention and structure of the final product.

Rheological modeling of complex fluid flows

Antti Puisto, Aalto University

Over the recent years, we have been studying the flow of complex fluids using the tools of computational rheology. The studies have revealed a rich set of interesting phenomena influencing the global flow curves of time-dependent fluids. In this talk, I will review these studies and discuss their implications to the data obtained in standard rheological measurements.
