

NORDIC RHEOLOGY CONFERENCE 2023

SOFT MATTER SCIENCE MEETS FOOD

Aarhus 12-14th of April 2023



© Lars Kruse, AU Photo



AARHUS UNIVERSITY



NORDIC
RHEOLOGY
SOCIETY

TABLE OF CONTENTS

04

**WELCOME TO
THE NRC2023**

07

ORGANISERS

11

**CONFERENCE
SPONSORS**

15

**CONFERENCE
LOCATIONS**

23

**GETTING TO &
AROUND IN AARHUS**

29

**KEYNOTE
SPEAKERS**

33

PROGRAM

45

LIST OF POSTERS

51

**INFORMATION FROM
OUR SPONSORS**

**WELCOME TO
THE NRC2023**

The Nordic Rheology Conference (NRC) is an annual event taking place at changing locations in Norway, Sweden, Finland, Denmark, and Iceland, and features international keynote speakers as well as exhibitions of leading companies in the fields of rheology and material science.

In 2023, the conference is – for the first time ever – being held in Aarhus. Denmark's second largest city is not only known as the city of smiles, but also home to one of the most highly ranked universities as well as several globally operating companies.

While generally covering all aspects of rheology, the Nordic Rheology Conferences have traditionally a particular main theme, which has often been “Food Rheology” for NRCs organised in Denmark. However, many other conferences in this area were already announced for 2023, which is why we decided to aim deliberately for a more multidisciplinary concept for the conference.

Under the theme “Soft Matter Science meets Food”, we wanted to facilitate knowledge exchange across the disciplines and push the boundaries of food rheology. The NRC2023 therefore offers 14 cross-disciplinary sessions covering both food and non-food materials.

We are extremely happy that we could win Anwasha Sarkar (UK), Anna Stradner (SE), Florian Nettesheim (DK), and Michael Beyrer (CH) as keynote speakers for the NRC2023, who are all great experts in the fields of tribology, microrheology, rheometry, processing and beyond. The support of eleven exhibiting and eight sponsoring companies allowed us moreover to arrange some unique and memorable social activities with support from VisitAarhus. Additionally, student prizes for best poster and best oral presentation were sponsored by the MDPI journals *Foods* and *Colloids & Interfaces*.

It was a great honour to have been invited by the Nordic Rheology Society to organise the NRC2023, as the very first international conference that I ever attended was the NRC2014 in Reykjavik, Iceland, and it was a pleasure to organise this event together with my great colleagues from the Department of Food Science as well as Aamir Shabbir from Coloplast and Niall Young from IFF.

We hope you will remember Aarhus as the City of Smiles and Rheology.

Norbert Raak
Chair of the Nordic Rheology Conference 2023

ORGANISERS

LOCAL ORGANISING COMMITTEE



Conference Chair

Norbert Raak

Department of Food Science,
Aarhus University, Denmark



Conference Co-Chair

Aamir Shabbir

Coloplast A/S, Denmark



Sandra Beyer Gregersen

Department of Food Science,
Aarhus University, Denmark



Niall Young

International Flavors and
Fragrances, Denmark



Marianne Hammershøj

Department of Food Science,
Aarhus University, Denmark



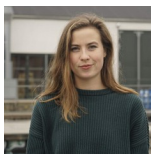
Julie Frost Dahl

Department of Food Science,
Aarhus University, Denmark



Milena Corredig

Department of Food Science,
Aarhus University, Denmark



Katherine Grasberger

Department of Food Science,
Aarhus University, Denmark

CONFERENCE HELPERS

Signe Nørretranders, Aarhus University, Denmark
Helle Vestrup, Aarhus University, Denmark
Emilie Gadeberg Skovdal, VisitAarhus, Denmark
Winnie Salling, Aarhus University Conference Center, Denmark
Jeppe Borck Beck, Aarhus University, Denmark
Aleksandra Sinik, Aarhus University, Denmark
Oriane Bouché, Aarhus University, Denmark
Laura Kristiane Lemvig, Aarhus University, Denmark
Kathrine Cecilie Thorsøe, Aarhus University, Denmark

NRS BOARD MEMBERS

Roland Kádár (President), Chalmers University of Technology, Sweden
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Mats Stading (ICR Representative), RISE, Sweden
Andrianifaliana Herimonja Rabenjafimanantsoa (ATNRS Editor), University of Stavanger, Norway
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CONFERENCE SPONSORS

GOLD SPONSOR



SILVER SPONSORS

REOKONSA

We help your company get the right flow



Anton Paar



Coloplast

CPKelco

A HUBER COMPANY

iff

AAK

SPONSORS OF BEST POSTER PRIZE AND BEST ORAL PRESENTATION PRIZE



foods

an Open Access Journal by MDPI



*colloids
and interfaces*

an Open Access Journal by MDPI

AWARD COMMITTEE

Aamir Shabbir, Coloplast A/S, Denmark

Anna Ström, Chalmers University of Technology, Sweden

Florian Nettesheim, International Flavors and Fragrances, Denmark

Gustaf Mårtensson, Mycronic, Sweden

Kirsten Gade Malmos, Arla Foods amba, Denmark

Kurt Ingar Draget, Norwegian University of Science and Technology, Norway

Lars Wiking, Aarhus University, Denmark

Michael Beyrer, HES-SO Valais-Wallis, Switzerland

Olli-Ville Laukkanen, VTT, Finland

Peter Fischer, ETH Zurich, Switzerland

CONFERENCE LOCATIONS



CONFERENCE LOCATIONS

- | | |
|---|------------------------------|
| 01 – Aarhus University Conference Center | Conference Venue |
| 02 – Nobelparken | Rheology Short Course |
| 03 – DGI Huset | Welcome Reception |
| 04 – Aarhus Internationale Sejlsportcenter | Conference Dinner |
| 05 – Den Gamle By | Guided Tour on Friday |

HOTELS

- 06** – Hotel Atlantic
- 07** – Wake Up
- 08** – Book1

PUBLIC TRANSPORTATION

- 09** – Train Station (Aarhus H)
- 10** – Letbane Stop (Aarhus Universitet/Ringgade)

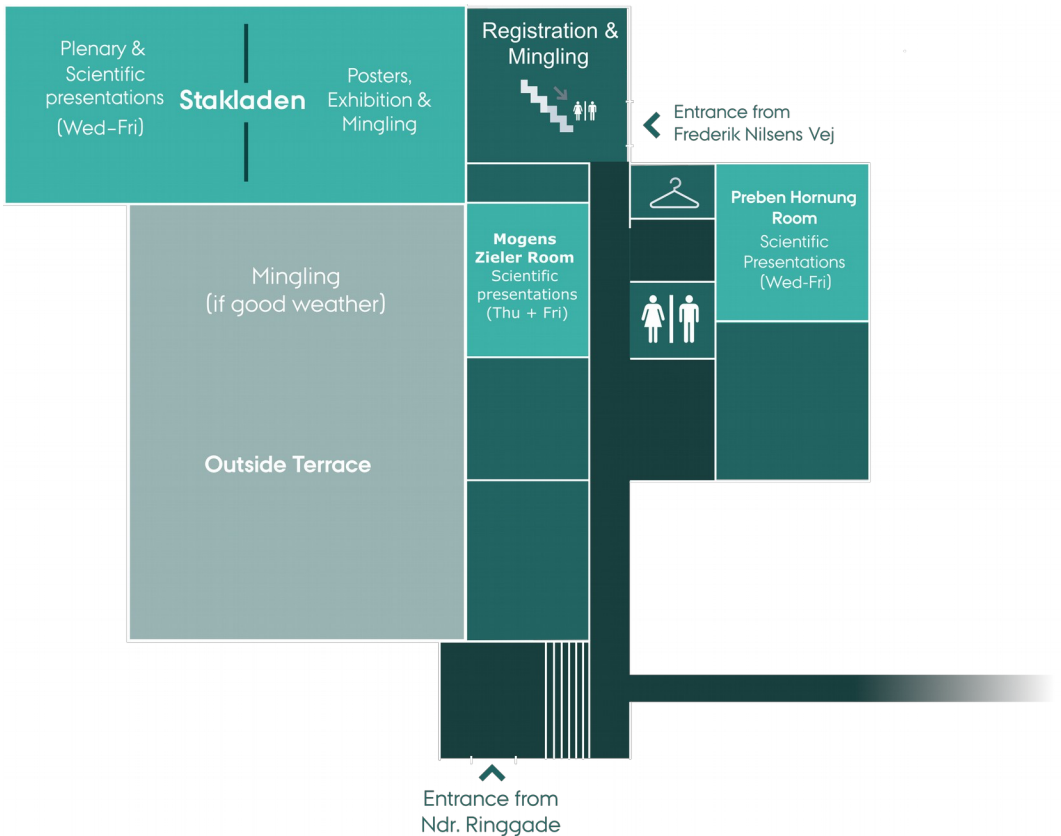
MORE SIGHTSEEING

- | | |
|----------------------------------|-----------------------------|
| 11 – ARoS | 13 – Salling Rooftop |
| 12 – The Botanical Garden | 14 – Moesgård Museum |
-

Aarhus University Conference Center

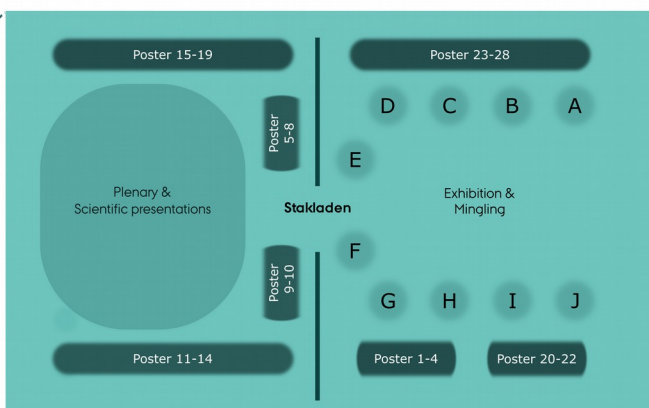
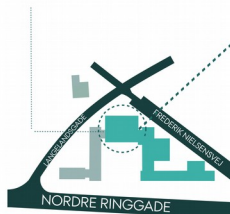
Frederik Nielsens Vej 2-4, 8000 Aarhus C

Building 1422-1423



Stakladen

Frederik Niensens Vej 2-4, 8000 Aarhus C
Building 1423



Posters

- Poster 1-4: Process Rheology
- Poster 5-8: Suspensions, Emulsions, and Foams
- Poster 9-10: Interfacial Rheology
- Poster 11-14: Fluid Mechanics
- Poster 14-19: Gels
- Poster 20-22: Multi-Component Systems
- Poster 23-28: Methodologies

Exhibition

- | | |
|-------------------------|------------------------|
| A Buch & Holm | F TA Instruments |
| B Gammatdata | G Incipientus |
| C Bergmann Labora | H Biolab |
| D Netzsch | I Anton Paar |
| E Formulætion & Nordlab | J Stable Micro Systems |

WIFI CONNECTIONS

Eduroam

Eduroam is available in at Aarhus University Conference Center as well as in Nobelparken.

AU-Guest

1. Connect to AU-Guest
 2. Follow the instructions on your computer
- For further information on Wi-Fi, please contact the IT-Support at +45 87 15 09 33 or bss.it@au.dk.
-

EXHIBITORS

Anton Paar
BergmanLabora
Biolab
Buch & Holm
Formulation
Gammadata Instrument

Incipientus
Netzsch
Norlab
Stable Micro Systems
TA Instruments

Make sure to join our Stamp Card Lottery!

Rules:

Find the stamp card in your conference bag.
Talk to at least six exhibitor at the conference about their products or services and ask them to stamp your card.

Completed stamp cards can be handed in at the registration desk until April 14, 8:30.

The winners will be drawn at the Conference Closing Ceremony on April 14, 12:10.

**GETTING TO &
AROUND IN
AARHUS**

WELCOME TO AARHUS

Aarhus is the world's 3rd most sustainable tourist destination according to the Global Destination Sustainability Index, which ranks 70+ destinations from around the world according to their performance on various parameters within sustainability with special focus on events and conferences.



City | © Kim Wyon

In Denmark's second largest city, international high-quality metropolitan experiences await you, regardless of whether you are visiting attractions, looking for modern architecture, delicious gastronomy or wonderful activities such as shopping, cozy events or fun and action.



ARoS | © Robin Skjoldborg



The Infinity Bridge | © Roar Paaske



The Latin Quarter | © Photopop

WELCOME TO AARHUS

Download app

You can download the [Visit Aarhus](#) app, which covers everything you need to know when you visit Aarhus.

Here is information and inspiration for experiences, attractions, activities, events, accommodation, shopping, restaurants, transport and much more.

Access the tourist information centre

Dokk1
Hack Kampmanns Plads 2
8000 Aarhus C
+45 89 40 92 00

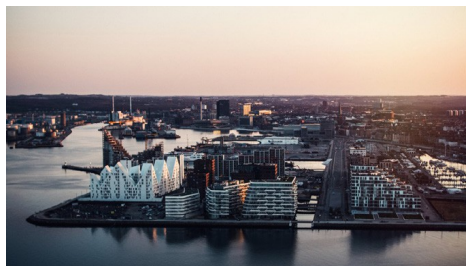
Monday to Friday: 08:00 - 22:00
Saturday and Sunday: 10:00 - 16:00



Aarhus Central | © Frame&Work



The Botanical Gardens | © Science Museerne



Aarhus Ø | © Photopop



Moeagaard Beach | © Photopop

GETTING TO AARHUS

AIRPORTS

[Aarhus Airport](#) is located 40 km north of Aarhus. There is an airport shuttle bus with frequent departures (every 20 min after each flight arrival with departures from just outside the main entrance).

[Billund Airport](#) is located 100 km south of Aarhus. There is an airport shuttle bus between Aarhus and Billund Airport with several daily departures. The travel time from Billund Airport to Aarhus Train Station is approx. 1.5 h.

[Copenhagen Airport](#) is connected to Aarhus Airport with many daily departures on weekdays and some departures on Saturdays and Sundays. The flight takes 35 min. In Copenhagen a free transit bus links the International and Domestic airport terminals. Copenhagen Airport has direct flight connections to a large number of international destinations.

TRAIN

Aarhus lies at one of the most important railway junctions in Denmark. There are hourly departures to the north, south and west. From Southern and Central Europe, the connections are via Hamburg/Flensburg. Travel time from Hamburg to Aarhus is approx. 5 h. From Eastern European countries train connections to Aarhus go via Poland and Copenhagen.

Aarhus has hourly services to and from Copenhagen. The opening of the Tunnel under the Great Belt has shortened the journey by 1 h, so now the trip takes 3.5 h. There are several daily connections to Sweden, Germany and the rest of Europe.

Please visit www.dsb.dk/en or [DSB Journey Planner](#) to find all your connections.

GETTING TO AARHUS

PUBLIC TRANSPORT

Bus

Aarhus Sporveje, the municipal bus company, runs the yellow buses in the city. The bus route number is indicated at the front and the back of the bus and the destination is displayed at the front and above the rear door. Every bus is equipped with a ticket machine in the middle of the bus (coins and self service only).

Bus tickets for travel within the city limits (Municipality of Aarhus limits) cost 22 DKK. Please check the Midttrafik website for more information on buses and city links.

Letbane

Getting around in Aarhus is also easy with Letbanen. Stops are located throughout Aarhus, making it easy to experience the city. The area around the Central Station and Dokk1 is the main junction point. Tickets for travel within the city limits (Municipality of Aarhus limits) cost 22 DKK. Remember

to buy your ticket before entering Letbanen because you cannot buy tickets in the light rail train.

TAXI

Dantaxi: +45 70 25 25 25

Aarhus Taxi: +45 89 48 48 48

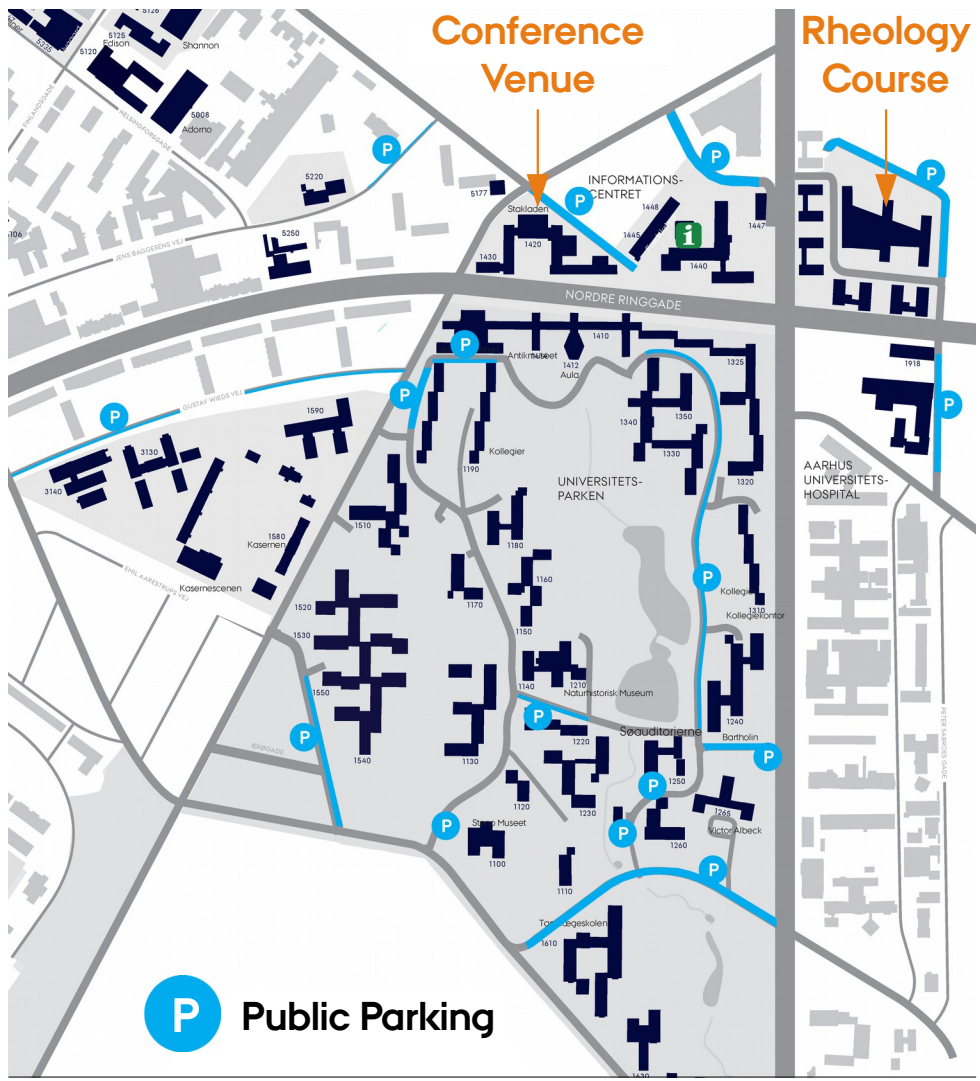
CAR

Aarhus has direct connections to the great European network of motorways, making it easy to get to most European cities. Hamburg can be reached within roughly 4 h. There are also excellent roads to most places in Denmark.

Parking

Public parking is available at Frederik Nielsens Vej at your own expense. The parking spots are limited and we cannot guarantee free space. More areas with public parking can be found on the next page.

PUBLIC PARKING



**KEYNOTE
SPEAKERS**



PROF. MICHAEL BEYRER
HES-SO Valais-Wallis,
Switzerland

Dr.-Ing. Michael Beyrer is a full professor at the School of Engineering of the Hes-so in Sion/Switzerland, where he heads the "Sustainable Food Systems" group. His research focuses on food process engineering, equipment design and interplay with food structure. The modulation of systems in twin-screw extrusion, high-voltage electric field, or cold atmospheric plasma treatments allowed to improve food properties and inactivation of microorganisms. Reaction kinetics and mechanisms were elucidated with combined experimental work and computation of flow dynamics, heat, and mass transfer. Muscle, dairy, and recently plant-based or microalgae proteins are essential materials in his

research. The binding and release of flavour from multi-phase food systems were selected as a central theme of several projects. Most projects conducted by Michael attract implementation partners from the food industry. Michael studied food technology at the Humboldt-University Berlin and obtained his PhD from the Technical University Berlin. He published more than 30 peer-reviewed articles and co-authored several book chapters.



PROF. ANWESHA SARKAR
University of Leeds, UK

Prof. Anwasha Sarkar is a full Professor of Colloids and Surfaces at the University of Leeds, UK. She also serves as the Director of Research and Innovation for the School of Food Science and Nutrition and Management Board Member of the Bragg Centre for Materials

Research at the University of Leeds. Prof. Sarkar received her PhD from Massey University, New Zealand in 2010 and worked in Nestle Research Centre and Nestle Global Headquarters in Switzerland before establishing her group at Leeds in 2014. Sarkar's group focuses on multi-scale understanding of dynamics of food colloidal structure and other orally ingested soft materials during oral processing to pave the way for design of advanced functional materials in food, healthcare, biomedical and allied soft matter sectors. To date, Prof. Sarkar has published more than 100 international research articles and 10 edited book chapters and is the co-inventor of 7 worldwide patents. Prof. Sarkar has been the recipient of several awards and honorary fellowships, including Leeds Women of Achievement Award 2021, Royal Society of Chemistry (RSC) Food Junior medal (2019), ERC Starting Grant (2017). She serves as an Editorial Board Member of journals Food Hydrocolloids, Food Hydrocolloids for Health, Food Structure, Biotribology, Journal of Texture Studies, Sustainable Food Proteins and Tribology Letters. She is a regular keynote speaker in major national and international conferences.



PROF. ANNA STRADNER
Lund University, Sweden

Anna Stradner is a Professor at the Division of Physical Chemistry at Lund University in Sweden specializing on biocolloids studied by scattering techniques. Her current research focuses on the structure, dynamics and flow behaviour of concentrated protein solutions and mixtures with a particular interest in protein dynamics under crowded conditions, phase separation and dynamical arrest. Anna studied at the University of Graz/Austria where she obtained her PhD in Physical Chemistry. She then worked as a Senior Scientist in the Soft Condensed Matter Group in Fribourg/Switzerland focusing on the properties of synthetic colloids as well as proteins in solution using neutron, X-ray and light scattering techniques. In 2008 she obtained the 'Venia Legendi' in Experimental Physics at the University of Fribourg. From 2008 to 2011 she headed the Food and Bioscience Group at the Adolphe Merkle Institute in Switzerland. In 2011 she transferred her activities to the Division of Physical Chemistry

at Lund University.



DR. FLORIAN NETTESHEIM
International Flavors and Fragrances, Denmark

Florian Nettesheim is a Lead Scientist at International Flavors and Fragrances Inc., based at their R&D campus in Brabrand, Denmark, since 2017. His area of focus is ingredient functionality in foods, with a current emphasis on plant proteins and hydrocolloids for use in meat alternatives and other plant-based applications. Throughout his career, he has been interested in the relationship between colloidal structure and material properties, and how these factors interact with processing and impact our perception of the material. He has a particular interest in rheology and small angle scattering methods and is currently advancing filament stretching extensional rheometry as a technology in food ingredient research. Florian received his PhD in Physical Chemistry from the Christian-Albrechts University in Kiel in 2004, where he studied shear-induced structures in lyotropic lamellar phases. During his graduate

work he spent time at the Institute Laue-Langevin in Grenoble, France, and at Lund University, Sweden, building a broad network in the field. After completing his PhD, he pursued a postdoc as a Feodor-Lynen-Select scholar of the Alexander von Humboldt foundation at the Biomolecular and Chemical Engineering Department of the University of Delaware, Newark, DE, USA (2004-2007). Instead of returning home after his postdoc, he took on a position as R&D scientist in Central Research and Development at the DuPont Experimental Station in Wilmington, working there for 10 years on novel non-woven nanofiber melt-spinning technologies and leading the corporate rheology laboratory. This position allowed him to be involved in a wide range of projects, from engineering materials and conductive pastes for photovoltaic inks, to biopolymers and food hydrocolloids. It also allowed him to stay connected to academia, where he supported young academics through collaboration and serving as an external committee member. When it was time to shift focus in 2017, he moved to Denmark into his current position. In addition to his work at IFF, Florian also serves as an advisory board member to the Danish Technology Institute, where he contributes to strategies to enable industry access to ESS. In his personal life, Florian enjoys spending time outdoors with his wife and 11-year-old son. He also has a hidden talent, juggling, which he picked up during his youth and still keeps it alive.

PROGRAM

WEDNESDAY, APRIL 12

Rheology Short Course
(Registered participants only)

WEDNESDAY, APRIL 12

7:45-
8:15 **Welcome and Registration**
Nobelparken
Jens Chr. Skous Vej, 8200 Aarhus N
Building 1483, Room 244

8:15-
9:15 **Out of the Frying Pan into the Fire: From Rheology to LAOS**
Prof. Roland Kádár
*Chalmers University of Technology,
Department of Industrial and Material Science*

9:15-
9:30 **Refreshment Break**

9:30-
10:30 **Sticky or Slippery, Rough or Smooth: Marrying Rheology and Tribology to Decode Sensory Perception**
Prof. Anwesha Sarkar
*University of Leeds,
School of Food Science and Nutrition*

10:30-
10:45 **Refreshment Break**

10:45-
11:45 **Extensional Rheometry**
Prof. Ole Hassager
*Professor Emeritus at Technical University Denmark,
Department of Chemical and Biochemical Engineering*

11:45-
12:30 **Lunch**

ca.
12:30 **Walk to Conference Venue**
Frederik Nielsens Vej 2-4, 8000 Aarhus C
Building 1422, Foyer to Stakladen

WEDNESDAY, APRIL 12

WEDNESDAY, APRIL 12

12:00-
13:00 **Registration for conference**
Aarhus University Conference Center
Frederik Nielsens Vej 2-4, 8000 Aarhus C
Building 1422, Foyer to Stakladen

13:00-
13:30 **CONFERENCE OPENING**
Stakladen

Welcome by

Roland Kádár, President of the Nordic Rheology Society
Brian Vinter, Vice Dean of the Faculty of Technical Sciences, Aarhus University
Norbert Raak, Chair of the Nordic Rheology Conference 2023

13:30-
14:10 **KEYNOTE SPEAKER**
Stakladen
Chair: Norbert Raak

Michael Beyrer, HES-SO Valais-Wallis, Switzerland
Current Understanding of Flow Dynamics of Protein Melts and Alignment of Aggregates in Extruder Cooling Dyes

14:15-
15:15 **PROCESS RHEOLOGY (1)**
Preben Hornungstuen
Chair: Michael Beyrer

Mats Stading, RISE, SE
Rheology in Fibre Formation during Extrusion of Plant-Based Proteins

Alexandra Aulova, Chalmers University of Technology, SE
Orientation of Graphene Nanoplatelets in the Extrusion Flow of Polyethylene: Effect of Polymer Topology and Molecular Weight on Rheological and Antibacterial Properties

Miek Schlangen, Wageningen University and Research, NL
A Soft Matter Approach to Understanding Meat Analogue Structures from Soy Protein Isolate

INTERFACIAL RHEOLOGY
Stakladen
Chair: Olli-Ville Laukkanen

Heidi Livia Pedersen, CPKelco, DK
The Impact of Use Level and Activation on the Interfacial Rheological Properties of NUTRAVA® Citrus Fibre at the Water-Oil Interface

Penghui Shen, Wageningen University and Research, NL
Cruciferin versus Napin – Air-Water Interface and Foam Stabilizing Properties of Rapeseed Storage Proteins

Peter Fischer, ETH Zürich, CH
Role of the Hydrophobic Phase on Interfacial Phenomena of Surfactants, Proteins, and Particles at Fluid Interfaces

WEDNESDAY, APRIL 12

15:15-
15:45 **Refreshment break**
Stakladen and foyer

15:45-
17:05 **PROCESS**
RHEOLOGY (2)
Preben Hornungstuen
Chair: Niall Young

Mari Niemelä, Tampere University, FI
***Modeling and Verification of Molten
Compound with Barium Sulfate
Particles***

Gustaf Mårtensson, KTH Royal Institute
of Technology, SE
***Rheological Modification of Liquid
Metal Alloys (LMA) for Non-Contact
Dispensing***

Denis Schütz, Anton Paar, AT
***New Parameters for Casting: The
Rheology and Density of Metal Alloys***

**SUSPENSIONS, EMULSIONS,
AND FOAMS**

Stakladen
Chair: Marianne Hammershøj

Olli-Ville Laukkanen, VTT Technical
Research Centre of Finland, FI
***Flow Rheology of Polyvinyl Alcohol-
Based Wet Aqueous Foams***

Pawel Ptaszek, Agriculture University in
Krakow, PL
***Modeling of Nonlinear Rheological
Properties of Food Foams***

Elizabeth Tenorio Garcia, University of
Leeds, UK
***W/O Emulsions Stabilized Solely by
Cocoa Butter-Based Oleogels: Effect
of Crystal-Crystal Interactions on
Rheological Performance***

Inger Lise Alsvik, Saferock AS, NO
***Rheological Properties of Rock-Based
Geopolymer Slurries With Different
Dispersant and Counterion
Combinations***

18:15-
19:45 **WELCOME RECEPTION**
DGI Huset, Værkmestergade 17, 8000 Aarhus C
Lokomotivhallen

THURSDAY, APRIL 13

8:00-
8:30 **Registration for conference**
Aarhus University Conference Center
Frederik Nielsens Vej 2-4, 8000 Aarhus C
Building 1422, Foyer to Stakladen

8:30-
9:10 **KEYNOTE SPEAKER**
Stakladen
Chair: Mats Stading

Anwasha Sarkar, University of Leeds, UK
Soft Tribology of Soft Matter

9:15-
10:15 **TRIBOLOGY**
Preben Hornungstuen
Chair: Anwasha Sarkar

Hongji Yan, Karolinska Institutet, SE
Rheological, Tribological and Viscous Properties of the Formulation of Mucins as Gels and Extended Macromolecules or Nanoparticles in Solutions

Florian Rummel, NETZSCH-Gerätebau GmbH, DE
Tribological Characterization of Cocoa Masses with Different Rheological Properties and Particle Size Distributions

Narguess Nemat, Aarhus University, DK
Wear and Tear: A Journey across Scales

FLUID MECHANICS (1)
Mogens Zielerstuen
Chair: Milena Corredig

Kesavan Sekar, Chalmers University of Technology, SE
Revealing Nanostructure Dynamics by Means of Complex Flow Patterns

Adilson Samba, Université de Lorraine-CNRS, FR
Modelling of Rheologically Evolving Fluids

Milan Kracalik, Johannes Kepler University Linz, AT
Rheology of Cerebrospinal Fluid under Different Temperature Conditions

10:15-
10:45 **Refreshment break**
Stakladen and foyer

 THURSDAY, APRIL 13

 10:45-
11:45
GELS (1)
 Preben Hornungstuen
Chair: Kirsten Gade Malmos
Anna Ström, Chalmers University of
Technology, SE
***Effect of Solvent Quality on Calcium-
Alginate Networks***
Kurt Draget, Norwegian University of
Science and Technology, NO
***Complex Gelatin Matrices: Exploiting
Diversity in Functional Properties***
Izumi Sone, Nofima, NO
***Effect of Hybrid Combination
Technology on Milk Acid Gelation***
FLUID MECHANICS (2)
 Mogens Zielerstuen
Chair: Gustaf Mårtensson
Joachim Mossige, University of Oslo,
NO
***Culinary Fluid Mechanics and Its
Connections to Food Science***
Kaare Jensen, Technical University of
Denmark, DK
***Elastohydrodynamic Interactions
Enable Passive Fluid Flow Control in
Real and Biomimetic Plants***
Shahriar Habibi, KTH Royal Institute of
Technology, SE
***Effect of Yield Stress on Migration of
Particles in Elastoviscoplastic Poiseuille
Flows***

 11:45-
13:00
Lunch break

Stakladen and Foyer

ANNUAL MEETING OF THE NORDIC RHEOLOGY SOCIETY (12:00-13:00)
 Preben Hornungstuen

 13:00-
14:00
POSTER FLASH PRESENTATIONS 1
 Preben Hornungstuen
Chair: Julie Frost Dahl
POSTER FLASH PRESENTATIONS 2
 Mogens Zielerstuen
Chair: Kathrine Esager Ørskov

 14:00-
15:00
POSTER SESSION, EXHIBITION, AND MINGLING
 Stakladen and foyer

THURSDAY, APRIL 13

15:00-
15:40

KEYNOTE SPEAKER

Stakladen
Chair: Roland Kádár

Anna Stradner, Lund University, Sweden
Arrest Transitions in Protein Solutions

15:45-
16:45

MICRORHEOLOGY

Preben Hornungstuen
Chair: Roland Kádár

Roland Ramsch, Formulation SAS, FR
Studying Viscoelastic Properties of Polymers Used in (Enhanced) Oil Recovery (EOR)

Coline Bretz, LS Instruments, CH
Early Detection of Instability in Emulsions via DWS

Thorbjørn Vincent Sønderby, Arla Foods aamba, DK
Fine-Tuning the Textural Properties and Water-Holding Capacity of Acid-Induced Gels Formed from Milk Protein Concentrate

POLYMERS & COMPOSITES

Mogens Zielerstuen
Chair: Johanna Andersson

Lukas Brandfellner, University of Vienna, AT
Mass Screening: Connecting Molecular Weight Distribution and Drag Reduction

Milan Kracalik, Johannes Kepler University Linz, AT
Material Development of PET-Organoclay Nanocomposites Using Novel Rheological Analysis Approach

Marko Bak, Chalmers University of Technology, SE
Comparing Mechanical Performance of Neat and Recycled Polypropylene Matrix of Wood Plastic Composites with Untreated Wood Fibers

17:10

Shuttle bus to Sejlsportcentret via Hotel Atlantic

17:10 AU Conference Center, Frederik Nielsens Vej 2-4, 8000 Aarhus C
17:30 Hotel Atlantic, Europaplads 10, 8000 Aarhus C

18:00-
19:50

PRE-DINNER ACTIVITY - Boat trip or Cocktail class

Aarhus Internationale Sejlsportcenter
Esther Aggebos Gade 80A, 8000 Aarhus C

20:00-
23:00

CONFERENCE DINNER

Aarhus Internationale Sejlsportcenter
Esther Aggebos Gade 80A, 8000 Aarhus C

23:00

Shuttle bus to Hotel Atlantic

Aarhus Internationale Sejlsportcenter
Esther Aggebos Gade 80A, 8000 Aarhus C

FRIDAY, APRIL 14

8:30-
9:10

KEYNOTE SPEAKER

Stakladen
Chair: Aamir Shabbir

Florian Nettesheim, International Flavors and Fragrances, Denmark
Extensional Rheology of Food Systems

9:15-
10:15

INNOVATIONS IN RHEOMETRY

Preben Hornungstuen
Chair: Peter Fischer

Ases Akas Mishra, Chalmers University of Technology, SE
Near-Wall Velocimetry of Thixo-Elasto-Viscoplastic Fluids with D-OCT

Jörg Läger, Anton Paar, AT
New Tools for Accessing Powder Rheology of Food Systems

Janni Mortensen, University of Copenhagen, DK
Rheology as A Tool to Investigate Alterations in Porcine Gastric and Intestinal Mucus induced by Lipid-based Permeation Enhancers

GELS (2)

Mogens Zielerstuen
Chair: Ruiifen Li

Maria Julia Spotti, Aarhus University, DK
Influence of Molecular Structure of Wheat Varieties in Hydrogel Thermal and Rheological Properties during Storage

Simona Bianco, University of Glasgow, UK
Tuning the Mechanical Properties of Transient Hydrogel Systems Using Oscillatory Shear Rheology

Johanna Andersson, RISE, SE
Optimizing Protein Gelation for Improved Meat Alternatives

10:15-
10:45

Refreshment break

Stakladen and foyer

 FRIDAY, APRIL 14

 10:45-
12:05

NOVEL RHEOLOGICAL APPROACHES

 Preben Hornungstuen
Chair: Florian Nettesheim

Julie Frost Dahl, Aarhus University, DK
Novel Visual Exploration of Large Amplitude Oscillatory Shear (LAOS) Rheology on Soft Food Materials

Georg Surber, Technische Universität Dresden, DE
Yield Stress of Semisolid Dairy Products: Effects of Particle Size Distribution, Thickeners and in situ Produced Exopolysaccharides

Roland Kádár, Chalmers University of Technology, SE
A New Double-Hyphenated Technique for the Study of Optically-Active Suspensions: Rheo-PLI-SAXS

Denis Schütz, Anton Paar, AT
Mohr, Bingham and Coulomb: Powder Mechanics, Granular Rheology and Its Complicated Relation

MULTI-COMPONENT SYSTEMS

 Mogens Zielerstuen
Chair: Sandra Beyer Gregersen

Laura Román Rivas, Aarhus University, DK
Amylose Determines the Phase Behavior of Plant Protein-Starch Systems during High Moisture Processing

Kathrine Ørskov, Aarhus University, DK
A Study of Semi-Hard Plant-Based Imitation Cheese

Mathias Johansson, Swedish University of Agricultural Sciences, SE
Texture and Microstructure of Mixed Gels from Faba Bean Protein, Starch and Fibre

Arild Saasen, University of Stavanger, NO
Assessment of Yield Stress in Oil-Based Drilling Fluids

 12:10-
12:40

CONFERENCE CLOSING

Stakladen

 12:40-
13:30

Lunch and Farewell

Stakladen and Foyer

 14:45-
16:00

GUIDED TOUR THROUGH DEN GAMLE BY (Registered participants only)

 Viborgvej 2, 8000 Aarhus C

LIST OF POSTERS

PROCESS RHEOLOGY

- 01 **Luise Juul**, Aarhus University, Denmark
Properties of Sea Lettuce Protein in High Moisture Extrudates
- 02 **Arvindh Seshadri Suresh**, Chalmers University of Technology, Sweden
Effect of Fibre Aspect Ratio on the Extrusion Instabilities in Wood Polymer Biocomposites
- 03 **Sabīne Briede**, Riga Technical University, Latvia
Rheological Behavior of Photoactive Vegetable Oil for Extrusion-Based UV-Assisted 3D Printing
- 04 **Anda Barkāne**, Riga Technical University, Latvia
Photo Crosslinking Kinetics for Bio-Based 3D Printing Resins: FTIR vs. Photorheology
-

SUSPENSIONS, EMULSIONS, AND FOAMS

- 05 **Heidi Livia Pedersen**, CPKelco, Denmark
NUTRAVA® Citrus Fiber Can Stabilize Oil-in-Water Emulsions Even in the Presence of Up to 4% Salt and in the Presence of Calcium
- 06 **Gilles Kouassi**, International University of Grand Bassam, Côte d'Ivoire
A Study of Syneresis in Relation to Stiffness in Biopolymer-Stabilized Emulsion Systems
- 07 **Viney Ghai**, Chalmers University of Technology, Sweden
Insights on Cellulose Nanocrystal Dispersions and Iridescent Colors
- 08 **Wenwen Fang**, Aalto University, Finland
Rheological Study of Cellulose Dissolved in Ionic Liquids
-

INTERFACIAL RHEOLOGY

- 09 **Xingfa Ma**, Wageningen University and Research, The Netherlands
The Stability of Plant Protein-Polysaccharide Emulsions: The Link to Their Interfacial Properties
- 10 **Katherine Grasberger**, Aarhus University, Denmark
Colloidal States of Adsorbed Pea Proteins Determined by Interfacial Shear Rheology
-

FLUID MECHANICS

- 11 **Johanna Andersson**, RISE, Sweden
Investigating Swallowing Sounds of Viscous Fluids for Optimized Food for Dysphagia Patients
- 12 **Lea Brander**, University of Copenhagen, Denmark
Structural Differences of Medium-Chain Fatty Acids and How This Affects the Viscoelastic Properties of ex vivo Porcine Intestinal Mucus
- 13 **Even Gausemel**, TINE SA, Norway
Rheological Characterizations of Honey and Syrup From Different Sources
- 14 **Karoline Sele**, University of Stavanger, Norway
The Effect of Lost Circulation Material on Herschel-Bulkley Parameters
-

GELS

- 15 **Roland Ramsch**, Formulacion SAS, France
Multispeckle-Diffusing Wave Spectroscopy – A Powerful Tool For Milk Gel Characterization
- 16 **Davor Daniloski**, Teagasc, Ireland
Can β -Casein Phenotype Alter the Properties of Rennet-Induced Skim Milk Gels?
- 17 **Naaman Silva**, Technical University of Denmark, Denmark
Colloidal and Acid Gelling Properties of Mixed Milk and Pea Protein Suspensions
- 18 **Mari-Liis Tammik**, Center of Food and Fermentation Technology, Estonia
Gelling Ability of Five Commercial Protein Powders, and Their Functionality in Meat Analogues
- 19 **Marianne Hammershøj**, Aarhus University, Denmark
*Gelling Properties of Pea Protein Isolate in Combination with Protein from Wild Harvested *Ulva* sp.*
-

MULTI-COMPONENT SYSTEMS

- 20 **Sana Ben Othman**, Estonian University of Life Sciences, Estonia
Use of Different Oil-Seed Proteins for the Microencapsulation of Chokeberry Press Residue Extract
- 21 **María Franco**, University of Valladolid, Spain
Understanding the Anti-Staling Mechanism of the Hemicellulose Mucilage from Plantago ovata Seeds (Psyllium)
- 22 **Mansurali Mithani**, Aarhus University, Denmark
Bio-Based Stereocomplex Poly(Lactic Acid) Composites: Exploring the Role of Graphene on Rheological Behavior

METHODOLOGIES

- 23 **Cristiana Cunha**, University of Copenhagen, Denmark
One Step Closer to Reality? Ex vivo Rheology as a Novel Approach to Investigate Mucoadhesion
- 24 **Sif Fink Arnbjerg-Nielsen**, Technical University of Denmark, Denmark
Physics of Paper Cuts
- 25 **Klaus Oldörp**, Thermo Fisher Scientific, Germany
Cheese or Vegan Cheese? - How to Investigate the Texture of Foods with a Rheometer
- 26 **Even Gausemel**, TINE SA, Norway
Warren-Spring Cohesion and Particle Size Distribution Measurements of Dry Whey Protein Concentrate (WPC)
- 27 **Jan Skov Pedersen**, Aarhus University, Denmark
Modelling Scattering Data from Casein Micelles on Absolute Scale
- 28 **Sara Parkin**, Oleinotec Nordic AB, Sweden
Nanoparticle Distribution in Concentrated Transparent and Opaque Dispersions
-

POSTER FLASH PRESENTATIONS

What to expect?

All poster presenters were invited to prepare a short oral presentation to raise interest for their posters and encourage discussions in the subsequent poster session.

The rules:

- (1) Maximum 3 slides
- (2) Maximum 3 minutes
- (3) No Q&A

The poster flash presentation sessions are chaired by PhD students Julie Frost Dahl and Kathrine Esager Ørskov.

SESSION 1, Preben Hornungstuen, April 13, 13:00–14:00

Process Rheology Posters 1, 2, 3, 4

Fluid Mechanics Posters 11, 12, 13

Break until ~13:30

Methodologies Posters 23, 24, 26, 27, 28

SESSION 2, Mogens Zielerstuen, April 13, 13:00–14:00

Gels Posters 15, 16, 17, 19

Multi-Component Systems Posters 20, 21, 22

Break until ~13:30

Suspensions, Emulsions, and Foams Posters 5, 6, 7

Interfacial Rheology Posters 9, 10

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www.reokonsa.se

ABOUT REOKONSA

Reokonsa was started in 1993 by Annika Sahlström as a response to the demand for effective rheological consultation and education. Annika has a Master of Science in Chemical Engineering and has throughout her working life worked with rheological issues in instrumentation, measurement techniques, product development, application and quality assurance. Annika has experience of rheological applications in all branches of industry. Annika received the 1997 Nordic Rheology Society Award for "outstanding contributions to the progress of rheology in the Nordic countries"

OUR SERVICES

- Basic and advanced rheology training courses
- Customer specific rheology training courses
- Customer specific rheological support

Reokonsa AB has more than 30 years of practical and theoretical rheological knowledge

The logo for REOKONSA features the company name in a bold, blue, sans-serif font. To the right of the text is a vertical line with an upward-pointing arrowhead, and a horizontal line with a rightward-pointing arrowhead, intersecting at the top of the vertical line. Below the horizontal line, there is a decorative, dark, textured horizontal bar that tapers to the right.

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COMPANY REFERENCES

"Becker Industrial Coatings AB develops and produces paint for many different applications. We decided that we needed to improve our rheological knowledge and found Reokonsa. Since we were a group of 10 wanting to learn more, we asked Annika to come to us and have a rheology course tailor made for paint. It was for us a big benefit being able to do practical work on our own rheometer with our own products and with our own rheological questions.

Annika is really good in making the subject less confusing and helped us understand how we can use the rheometer in a better way, both during development and production issues."

Ida Emilsson
Becker Industrial Coatings AB

"With production in Denmark, Saudi Arabia, Malaysia and China, CO-RO A / S is among the largest producers of fruit-based soft-drink concentrates globally. The physical stability of the products depends on their rheological properties, which must be adjusted in relation to the natural variation in fruit concentrates. It is therefore essential that CO-RO's R&D personnel are well trained in Rheology. Over the past few years we have sent all our academics to rheology training courses held by Annika, who is always described as dedicated, academically well-founded and experienced, as well as with a great educational talent. In recent years, we have also used Annika to teach us at our labs. Annika creates a fine program tailored to the target group and timeframe, she is flexible and creates enthusiasm for the participants through a live and relevant teaching method. We highly recommend Annika as a rheology teacher and rheology consultant. "

Christian Vestergaard, Manager R&D Projects, CO-RO A/S

"I met Annika for the first time in 2002, when she held a basic course in rheology. Annika is an incredibly talented and engaging educator. She has an excellent ability to make a complex subject understandable and to awaken an interest in wanting to know more. I have also had the privilege of working with Annika in a part of my thesis on the characterization of the rheological properties of saliva. Annika's immense knowledge and great commitment is an important factor in the success of this work. Her energy and positive encouragement have made it a joy to work on difficult and complex issues. Thanks to her unique professional and social qualities and her high level of ambition, she is a person I would definitely like to work with again."

Christina Diogo Löfgren,

Övertandläkare, Department of Materials Science and Technology and Department of Periodontology
Faculty of Odontology, Malmö University

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"Cementa Research AB is a company that works with method and product development and knowledge transfer. The areas are mineral materials such as cement, concrete and lime. We have, on a number of occasions, hired Annika Sahlström for help in the field of rheology with education, theoretical questions and practical problem solving. On the one hand, we have attended training courses that we have sought and received through information channels, the internet and mail, and on the other hand Annika tailor made courses for us and our customers in dialogue with us, always with satisfied customers and a good result. Courses etc. are a great way to learn new things, but questions arise that you are looking for answers to, and then we have turned to Annika with great confidence. Measuring rheological properties is often complicated and then Annika's tips have been valuable to us. The fact that we have turned to Annika is because she enthusiastically and seriously takes on tasks and delivers good results; we will continue to consult Annika".

Pentti Koski, Cementa Research AB

TRAINING COURSE PARTICIPANT REFERENCES

"It is much easier to grasp new knowledge when the teacher is both very knowledgeable and also really shows how much she enjoys the subject"

"I really appreciated the mix between theoretical rheology and practical examples, familiar to all, to illustrate this theory. This really for the first time made me understand what rheology is all about and how I can use it to study my products"

"I appreciated that Annika during the training covered the fields of rheology related to all applications of the participants and also took the time to answer all our specific questions"

"This training provided me with a full and detailed dive into rheology"

"Nice teacher and good inspiration. Good with summary sessions too"

"Nice atmosphere, good size of the group"

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


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Our aim is to encourage scientists, researchers, and other food professionals to publish experimental and theoretical results as much detail as possible, in order to share important research findings with the global food science community.

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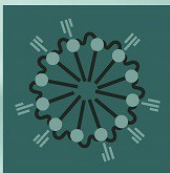


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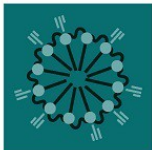
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Message from the Editorial Board

We would like to introduce you to a new international open-access journal, *Colloids and Interfaces*, covering all aspects of colloid and interface science. This journal aims to efficiently publish peer-reviewed articles over the internet free of charge to the worldwide community. Original as well as review papers are encouraged. We will also publish Special Issues as proceedings of scientific conferences and workshops as well as those dedicated to particular contemporary themes. On behalf of our distinguished editorial board, we welcome your contributions.

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