

THE 6TH INTERNATIONAL SYMPOSIUM ON FOOD RHEOLOGY
AND STRUCTURE (ISFRS 2012)

ZURICH, SWITZERLAND
APRIL 10 – 13, 2012

The sixth edition of the International Symposium on Food Rheology and Structure took place at ETH Zurich during April 10 – 13, 2012. During three and a half days, four plenary lectures, six keynote lectures, 90 oral talks and 110 posters were presented. One of the conference's goals is to provide the participants an overview of the state of the art in food rheology, food morphology, and food processing. In recent years the area is enrich with nutritional aspects and how food is digested. The later aspects are becoming more and more important since food science has to address worldwide problems in malnutrition (deficiencies), weight management problems (obesity or anorexia), and changing nutritional patterns. It is of course not the task of a rheologist to directly tackle nutritional problems but humans' evaluation of food properties, e.g. healthy food versus non-healthy food, is tremendously influenced by the food's texture and rheology. So food structures with e.g. tailored breakdown, lubrication between tongue and palate, swallowing behavior – properties, which can be measured by rheology – are considered a contribution to nutritional aspects. Of course, rheological properties are not only of importance while eating and digestion but also during food processing and manufacturing where the structure we will later associated with good and tasty food is generated. Besides reflecting recent developments and trends in food science, ISFRS also aims to expose the food rheologist to new research areas and new techniques that can be of importance to their research.



Within this framework the first day of the meeting saw a grant opening lecture by Robert Prud'homme speaking on "Polysaccharide biopolymers: Lessons from nature on tuning molecular interaction". Two parallel sessions on Emulsions and Foams and on Rheological Methods completed the morning program. Highlights were the structuring of oils and interfacial rheology as well as online rheometry and advanced analytical methods (FT-Rheology, DLS). Two keynote lectures on "The effect of rheology on the dispensing of complex fluids" by Christian Clasen and "The fluid mechanics of mastication, swallowing and digestion" by Jan Engmann started the afternoon session, which were devoted to Semi-Solid foods with focus on protein structures in cheese and bread and Rheological Modelling & Numerical Methods.

The second day started with a plenary lecture on "Mucus microstructure and barrier properties" delivered by Justin Hanes from The John Hopkins University in Baltimore/USA. The topic, more known in the medical community, links directly into recent food-related discussions on digestion and food uptake in the intestine. Sessions on Biopolymer Solutions and Gels and Col-

loidal Systems followed the plenary talk and focused on protein fiber systems, acid gelation, and diffusion in complex structures. After the lunch break, Raffaele Mezzenga reported on "Bridging length scales and properties in food protein fibrils", while Hans Tromp opened the Rheo-SALS, SANS, SAXS session with his contribution entitled "Neutron scattering on food ingredients". This session was dominated by scattering method development and structural investigation on ice crème and protein adsorption layers. The third main ingredient of ISFRS, the half-day poster session in conjunction with the exhibition of scientific equipment took place during the entire afternoon and was, beside scientific interest, fueled by beer and brezles with Peter Bigler being the barman.

The third day started with Gareth McKinley's plenary lecture "Rheological fingerprinting of complex fluids and soft solids" focusing on large amplitude oscillatory shear (LAOS) and its detailed analysis; techniques also recognized and utilized in food rheology. After the plenary lecture the largest session of the entire conference, Influence of Processing on Structure & Rheology with 22 oral contributions started in parallel with

*Figure 1–4 (page 348 above):
A few snapshots during the
discussions.*

*Figure 5 (page 348 below):
Main lecturing theater.*

*Figure 6–9 (below):
Poster session, exhibition,
and relaxation.*





Figure 10:
Conference banquet.

the Encapsulation session. Main focus of the session, which continued in the afternoon and on Friday morning was on processing of cheese, heat-induced food structuring, membrane technology, fibers for food structuring, and advanced milling techniques and dough rheology. In the encapsulation session, the properties protein and biopolymer capsules and well as manufacturing techniques were discussed. The keynote lectures starting the afternoon sessions were delivery by Anne-Marie Hermansson reporting on "Structure design of soft biomaterials" and by Serafim Bakalis focusing on "Model eating". The later contribution also opened the Sessions on Macromolecular Assemblies and Structure, Nutrition and Health focusing on the relationship between food structure, perception, and digestion. Friday morning saw the plenary lecture by Erich Windhab on "Rheology and functional structure processing in a reverse gastrointestinal engineering approach for personalized food" and the continuation of the Influence of Processing on Structure & Rheology session before the conference was closed at around midday.

ISFRS 2012 attached more than 320 participants from academia and industry and was sponsored by Anton Paar, Emmi, Felchlin, Jowa, Lindt & Sprüngli, Nestlé, TA Instruments, and ThermoFisher. Scientific equipment was presented by Anton Paar, Brookfield, Chopin, Fritsch, Kinematica, LUM, Malvern, Perten, Stable Micro Systems, TA Instruments, and ThermoFisher.

The Book of Abstracts (ISFRS 2012) as well as all proceeding contributions of the previous conferences (ISFRS 2000, 2003, 2006, and 2006) are available for free at www.isfrs.ethz.ch.

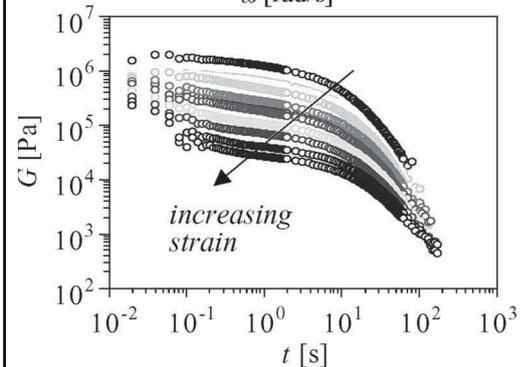
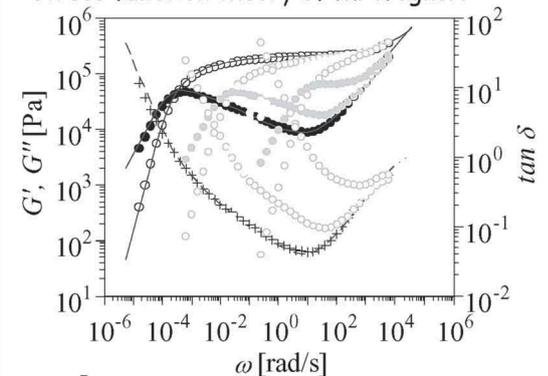
pf for AR



IRIS drives innovation in rheology: interactive graphics for data analysis, seamless communication of data, comparison with models and more. Import data from any source, shift, calculate spectra, compare, store, retrieve, and plot within minutes.

IRIS allows the rheologist to pursue his/her real mission: explore new materials, discover relaxation patterns, apply to processes, be quantitative and reliable, communicate results, explain and teach.

IRIS (new) predicts from molecular theory: (a) tube dilation theory of T. McLeish and coworkers and (b) molecular stress function theory of M. Wagner.



E-mail: IRISrheo@yahoo.com
<http://rheology.tripod.com/>