

BOOK OF ABSTRACTS

Annual European
Rheology
Conference 2022



Seville

April, 26th - 28th (2022)

Transdisciplinary Rheology,
a bridge to sustainable progress and welfare



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THE EUROPEAN SOCIETY
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AERC 2022 – IBEREO 2022

15th Annual European Rheology Conference VIII Iberian Meeting on Rheology

Seville, Spain
April 26-28, 2022

BOOK OF ABSTRACTS



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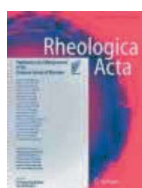
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Welcome to AERC 2022 in Seville

Dear participants of the joint Annual European Rheology Conference (AERC 2022) and the VIII Iberian Meeting on Rheology (IBEREO 2022), welcome to Spain and welcome to Seville. This is the second European Rheology Conference held in the city of Seville. The first one, the IVth European Rheology Conference, was held in 1994 and was an important step towards the foundation of the European Rheology Society in 1996.

As you know, the pandemic forced us to postpone the conference which was previously scheduled for April 2021. In addition, the threat of an uncontrolled expansion of the outbreak of COVID 19 infections has been present all this time. This has largely conditioned efforts to organize the conference.

We had to make a key decision about the format of the congress, at the height of the highest incidence of the virus in the last outbreak. We were committed to carrying out oral communications entirely in person, although conditioned by possible health restrictions. As for the poster communications, we opted for an asynchronous virtual format, with the aim of minimizing overcrowding, which has led us to cope with changes with respect to the AERCs prior to the pandemic.

We want to thank all the attendees for the enthusiasm shown in the conference and, especially, for the patience and effort made to adapt to all the constraints that have arisen.

The scientific program consists of 3 plenary lectures, 11 symposia for oral communications and more than 150 poster communications. Professor Jeffrey Morris, as the 2022 Weissenberg Awardee, will present the opening plenary lecture. The other two plenary lectures will be given by Professor Gareth McKinley and Professor Annie Colin. The 267 oral presentations, 14 of which are keynote lectures, have been distributed in 6 parallel sessions. Poster communications can be viewed asynchronously before or during the conference.

On behalf of the AERC2022 Organizing Committee, we would like to pay a special tribute to one of our colleagues and dear friends, Professor Lionel Choplin, who passed away unexpectedly in November 2021. In addition to his significant contributions to the field of rheology, Lionel actively contributed to the 4th ERC held in Seville in 1994, organizing the symposium on Industrial Rheology. Therefore, we would like to dedicate the symposium on rheology and industrial processing to honor the memory of Professor Lionel Choplin.

The AERC 2022 aims to cover all the fields where rheology is relevant for the advancement of scientific knowledge and technology. Ranging from the topics of more academic interest to a variety of industrial applications, it also seeks to contribute to tackling the issues of sustainable development and societal welfare, in consonance with the motto of the congress: Transdisciplinary Rheology, a bridge to sustainable progress and welfare.

We would like to express our gratitude to all the conference sponsors for helping us make this conference an outstanding event. In addition, we would like to pay special thanks to the organizers of the symposia, for their generous and relevant work, as well as to all the participants who are undoubtedly contributing to make the AERC2022 a conference of great scientific success.

Welcome, enjoy the AERC 2022 Conference and your stay in Seville!

Antonio Guerrero and Teresa Cidade
for the AERC 2022 Organizing Committee

ESR President Address

Dear Members of the European Society of Rheology,

with a great emotion I welcome you back to an in-person conference of the European Society of Rheology. The last years were characterized by the Covid-19 pandemic that first forced the rheology international community to postpone the International Congress on Rheology (ICR2020) for a few months and then to run it online.

As European Society of Rheology we also had to face the pandemic and indeed the 14th Annual Rheology Conference, first scheduled in Seville, became a virtual Conference in cyberspace (AERC2021). I am personally very grateful to the organizers of AERC 2021 (Roland Kadar and Mats Stading) for having made possible to keep the frequency of our annual meetings unchanged. The same gratitude is deserved to the organizers of the 15th Annual Rheology Conference for their prompt reaction to all the difficulties we faced and for their flexibility to modify the plans already organized so to meet the new requirements imposed by the Covid-19 pandemic in a way to allow us to meet again in-person.

Difficulties never come alone and indeed while I am writing this welcome letter, we are living a horrible war within Europe. We are not insensitive to this, and all our thoughts are addressed to people who are suffering, without distinction of nationality. We believe that the European community, whatever it may be, political or scientific, is founded on peace and so the European Society of Rheology firmly condemns war.

However, science is free, it makes people free, and freedom promotes peace. So,

welcome to Seville and to the Annual European Rheology Conference 2022 (AERC 2022)!

We are looking forward to an exciting scientific program, which will certainly keep us busy for the next days. We are eager of sharing ideas, of discussing of scientific topics and of networking among us. I am sure that AERC 2022 in Seville will be the best place where to do all these things in a quiet, friendly, and peaceful environment.

All this would not be possible without the enthusiastic and professional commitment of the local organizing committee, chaired by Antonio Guerrero and Teresa Cidade and composed of Jose Munoz Garcia, Jose María Franco, Pedro Partal, Felipe Cordobés, Anabela Raymundo, Carlos Bengoechea, Alberto Romero, Manuel Felix, and Luis Alfonso Trujillo. The session chairs, the exhibitors, the sponsors, and those who are working ‘behind the scenes’ were equally fundamental for the success of the conference.

I really thank you all very much!

Enjoy a very successful Annual European Rheology Conference 2022.

Mario Minale



President of the European Society of Rheology

Members of the Local Organizing Committee



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Symposia Organizers/Chairpersons

Emulsions, Foams and Interfacial Rheology:	Jan Vermant, Mario Minale and Teresa Sanz
Suspensions:	F. Galindo-Rosales, Francisco Rubio and Octavio Manero
Experimental Methods and New Advances in Rheometry:	Dimitris Vlassopoulos, Loic Hillou and Paula Moldenaers
Food Rheology:	Bettina Wolff, Isabel Sousa and M ^a Jesús Hernández
Industrial Rheology and Processing:	Francisco Martínez-Boza, María Graça Rasteiro and Patrick Anderson
Bio-rheology and Medicine:	Catarina R. Leal, Crispulo Gallegos and Mats Stading
Micro-, Nanofluidics and Microrheology:	Amy Shen, Anke Lidner and Juan Francisco Vega
Non-Newtonian Fluid Mechanics and Computational Rheology:	Baltasar Mena, Corneliu Balan and Miguel Nóbrega
Gels and Self Assembling Structures:	Domenico Gabriele, Joao Maia and Juan de Vicente
Polymer Solutions and Melts:	Antxon Santamaría, Evelyne Van Ruymbecke and Moshe Gottlieb
Solids, Glasses and Composites:	Alexandra Aulova, Nadia El-Kissi and Joamin Gonzalez-Gutierrez

Overview of the AERC 2022 Program

Abbr.	Symposium	Room	Day
PL	Plenary Lectures	Giralda 1-2	26, 27, 28
NF	Non-Newtonian Fluid Mechanics and Computational Rheology	Giralda 1-2	26, 27, 28
GS	Gels and Self Assembling Structures	Santa Cruz, Giralda 1-2	26, 27, 28
SP	Suspensions	Nervión	26, 28
BM	Bio-rheology and Medicine	Prado, Giralda 6-7	26, 27
EI	Emulsions, Foams and Interfacial Rheology	Arenal	26, 28
MN	Micro-, Nanofluidics and Microrheology	Giralda 6-7	26, 28
IP	Industrial Rheology and Processing	Prado, Giralda 1-2	27, 28
SM	Polymer Solutions and Melts	Nervión, Santa Cruz	27, 28
SG	Solids, Glasses and Composites	Prado	28
EM	Experimental Methods and New Advances in Rheometry	Arenal	27, 28
FR	Food Rheology	Giralda 6-7	27, 28

Tuesday 26th						
	Giralda 1-2	Santa Cruz	Nervión	Prado	Arenal	Giralda 6-7
8:30	Opening (Giralda 1-2)					8:30
9:00	J. Morris (PL1) - Giralda 1-2 Rheology and fluid mechanics of concentrated suspensions					9:00
10:00	Coffee Break					10:00
10:30	NF1 - D. Nieto Simavilla Learning of constitutive equations for multiscale simulation of dilute polymeric solutions using a GENERIC-guided approach	GS1* - S. Jamali Keynote Lecture Network physics and emergence of elasticity in colloidal gels: Mechanical perspective	SP1 - L. Kool Oscillatory compression of soft particles	BM1* - M. Rodriguez Hakim Keynote Lecture The influence of saliva rheology on sheet formation and aerosolization	E1 - E. Chatzigiannakis Studying droplet coalescence at different length-scales: from films to droplets	MN1 - A. Darras In vivo and in silico red blood cell lingering and partitioning in the microcirculation
10:50	NF2 - N. Moreno Complex flow simulations of microstructured-fluids using a Lagrangian Heterogeneous Multiscale Method		SP2 - J. Majesté Modelling extensional rheology of polyolefin based suspensions		E2 - L. Torres Interfacial viscoelastic properties and stability of emulsions	MN2 - J. Vega Tears for micro-rheology: Experimental study of artificial eyedrops
11:10	NF3 - C. Balan Is any logic behind the principles of the constitutive relations?	GS3 - F. Müller Influence of surface topography on the yielding of thermo-reversible colloidal gels	SP3 - F. Blanc Measurement of suspensions transient viscosity upon any change of shear direction thanks to a novel Cross-Rheometer apparatus	BM3 - C. Giacomini Hagfish slime behavior in particle-laden environments	E3 - A. Majhi Coupling flow directions in emulsions with wall roughness	MN3 - V. Calabrese Alignment of colloidal rods in crowded environments
11:30	NF4 - M. De Micco Machine-learning-based measurement of the relaxation time of viscoelastic fluids via particle ordering	GS4 - G. Valeria Tuning local microstructure of colloidal gels by ultrasound-activated deformable inclusions	SP4 - J. Carneiro Novel PDMS particle transparent suspensions suitable for visualization and velocimetry experiments	BM4 - C. Wagner Viscosity of the intercellular liquid in Red Blood Cells	E4 - L. Trujillo-Cayado Rheological characterization and processing optimization of lemon oil nanoemulsions for the encapsulation of vitamin E	MN4 - Z. Li Dynamics of flexible Brownian filaments in 2D porous media
11:50	NF5 - G. Giusteri Flow-type dependent rheologies and multiscale simulations	GS5 - T. Gibaud Interpenetration of fractal clusters drives elasticity in colloidal gels formed upon flow cessation	SP5 - E. Masghouni Shear and elongation rheology of filled polymers and their nano-structured multicomponent systems for ultra-high absorbance of EMR (electromagnetic radiation)	BM5 - U. Windberger Blood rheology in contact to biological surfaces	E5 - P. Capobianchi Shear rheology of a dilute ferrofluid emulsion: modelling and numerical simulation	MN5* - L. Casanellas Keynote Lecture Microfluidic flow of vesicle probiotics as a model for cellular tissues
12:10	NF6 - A. Colly Understanding instabilities for additive manufacturing in partially ordered system	GS6 - P. Lehećicy Probing plastic rearrangements in colloidal gels	SP6 - X. Chateau Contact and macroscopic ageing in colloidal suspensions	BM6 - C. Pseudos A monophasic blood flow model with slip for precise and accessible prediction of wall shear stresses in the microcirculation	E6 - C. Delgado-Sánchez Novel heat transfer fluid obtained by non-aqueous phase change emulsion	
12:30	Lunch					12:30
13:50	NF7* - M. Graham Keynote Lecture	GS7 - A. Poulesquen The gel/glass duality of weak colloidal gels	SP7 - J. Ruiz-López Simulations of concentrated suspensions of rough particles under boundary, mixed and full-film lubrication regimes	BM7 - M. Grassi Effect of cystic fibrosis sputum rheology on lungs drug delivery by inhalation	E7 - O. Milet Interfacial characterization and stability study of bituminous emulsions	MN7 - F. Bonacci Dynamics of semiflexible filaments in oscillatory shear flows
14:10	Elastoinertial turbulence via Tollmien-Schlichting instability	GS8 - G. Camacho Villar Influence of particle size and magnetic field strength in the directed self-assembly under bogged fields	SP8 - M. Orsi Influence of coupled friction and adhesion on the rheology of non-Brownian suspensions	BM8 - M. Braunreuther In situ magnetic micro-rheology of airway mucus	E8 - E. Gilbert Controlling rheology of a solid emulsion with phase-changing droplets	MN8 - A. Jeyasuntharan Microfluidic device to reduce multi-particle string formation and self-assembly particles in microfluidic flow
14:30	NF9 - R. Ghanbari Taylor-Couette stability modes of cellulose nanocrystal suspensions directly from birefringence patterns	GS9 - R. Kádár How do birefringence patterns relate to shear stress nonlinearities in optically active suspensions?	SP9 - F. Balboa-Usabiaga Rheology of suspensions of star colloids	BM9 - R. Ferraro Cancer viscoelasticity: A dynamic compression assay for tumor spheroids characterization	E9 - B. Medronho Micro-rheology of novel cellulose stabilized oil-in-water emulsions	MN9 - N. Burshstein Transport dynamics of microparticles in inertio-elastic vortex flows
14:50	NF10 - K. Zinelis The fluid dynamics of dripping onto a substrate	GS10 - L. Hilliou Nonlinear elastic properties of gels made of different types of gelling carrageenan and their blends	SP10* - O. Volkova Keynote Lecture Capillary and rotational flow of a suspension of magnetic particles in the presence of discontinuous shear thickening	BM10 - A. Wierschem Studying the impact of microtubule polymerization affecting anti-cancer drugs on the cell mechanics with a monolayer rheometer	E10 - C. Guidolin Controlling foam ageing in viscoelastic media	MN10 - F. Del Giudice Controlled viscoelastic particle encapsulations in microfluidic devices
15:10	NF11 - O. Manero Constitutive modeling for flowing micellar solutions: the structure factor	GS11 - F. Dutertre Chitosan-based hydrogels: Influence of crosslinking strategy on rheological properties		BM11 - M. Hertaeg Jamming transition in biological tissues	E11 - F. Lavergne Hallmarks of intermittent rearrangements in creep of liquid foams	MN11 - M. Villone Numerical study of the competitive effects of inertial and elastic forces on particle deformation and cross-streamline migration in microfluidic flows
15:30	Technical Exhibition & Coffee Break					
16:30	NF12 - R. Poole Generalised Newtonian fluid models in complex flows	GS12 - M. Jiménez-Rosado Thermoresistant collagen/chitosan hydrogels for regenerative applications: Rheological and microstructural characterization	SP12 - M. Trofa Numerical simulation of dogging in a microchannel with planar contraction	BM12* - S. Rektenwald Keynote Lecture AI-based microfluidic assessment of pathological red blood cell flow properties	E12 - T. Lenavetier Dissipative processes in an elementary foam	MN12 - T. Burghleba Dynamics of a single Newtonian droplet in a turbulent microscopic cross-slot flow of a shear thinning fluid
16:50	NF13 - R. Hill The Oldroyd-A model	GS13 - T. De Maeseneer The effect of temperature and particle size on the mechanical properties of particulate crosslinked gelatin-methacryloyl gels	SP13 - J. Maia Microstructure and rheology of confined semi-dense and dense suspensions: Effect of confinement, flow rate and particle rigidity		E13 - P. Anderson Constitutive framework for rheologically complex interfaces with an application to elastoviscoplasticity	MN13 - J. Baué Role of the interfacial rheology on droplet dynamics in micro Hele-Shaw cell
17:10	NF14 - S. Varchanis Shear-thinning and shear-thickening effects in the Oldroyd-B model	GS14 - L. Alves Controlling the gelation of cellulose-based systems: Macro- and micro-rheology studies	SP14 - E. Lemaire Impact of particle stiffness on non-Brownian suspension rheology	BM14 - C. Leal Rheology of bacterial cellulose wound dressing membranes	E14 - M. De Corato Retraction of thin films coated by insoluble surfactants	MN14 - A. Cirillo Characterization of the elongational behavior of a viscoelastic fluid through a microfluidic approach
17:30	NF15 - E. Southern Koopman with control for constitutive law identification	GS15 - S. Russo Spina Relations between rheology and processing properties in the 3D-printing of κ -Carrageenan physical hydrogels	SP15 - M. Minale Frequency dependent threshold for irreversibility in non-Brownian suspensions	BM15 - S. Giesel Experimental challenges in characterizing the bulk rheology of bacterial biofilms	E15 - J. Vermant Drainage of films with model stress-carrying surfaces	MN15 - M. Smith Machine learning boosts rapid micro-rheology with optical tweezer measurements
17:50	NF16 - D. Amoroso Numerical simulations of the stretching and leveling flows of freestanding axisymmetric viscoelastic liquid films	GS16 - A. Borrero-López Lignin as effective filler for enhancing cushioning properties of castor oil-based elastomers: Rheological and mechanical properties	SP16 - A. Fall Viscous dissipation in sheared unsaturated wet granular materials	BM16 - A. Ryl New criterion for assessing the potential of in situ gelling systems as injectable scaffolds	E16 - N. Di Spirito Bubble breaking dynamics in complex fluids	MN16 - R. Gupta Capillary flow of wormlike micellar gels
18:10	End					18:10

Wednesday 27th							
	Giralda 1-2	Santa Cruz	Nervión	Prado	Arenal	Giralda 6-7	
8:30	G. McKinley (PL2) - Giralda 1-2 Compact and accurate descriptions of complex fluids and soft solids using fractional calculus						8:30
9:30	NF17 - E. Rossi Simulations of thixo-viscoplastic flows around a cylinder using the Smoothed Particle Hydrodynamics method	GS17 - A. Leon-Cecilia Mechanical and microscopic characterization of alginate hydrogels dehydrated under controlled stresses	SM1* - S. Costanzo Keynote Lecture	IP1 - S. De Rosa Experiments and numerical simulations of the die swell phenomenon of viscoelastic materials in 3D printing processes	EM1 - J. Sanders Rimming flow for measuring the complex viscosity $\eta^*(\omega)$	FR1 - A. Ahlinder Utilising rheology in food 3D printing to achieve attractive meals for dysphagia patients	9:30
9:50	NF18 - S. Snejders Simulating collisions of viscoelastic inhomogeneous droplets with smoothed particle hydrodynamics	GS18 - E. Guilbert Gelation of protein aggregate suspensions by salt diffusion	Strain hardening of unentangled polymer solutions in fast shear flows	IP2 - M. Spanjaards Numerical study of the effect of thixotropy on extrudate swell	EM2 - F. Del Giudice Rapid temperature-dependent rheological measurements of non-Newtonian solutions using a machine-learning aided microfluidic rheometer	FR2 - J. Santos Shear flow and microstructure of microfluidized pea fiber suspensions	9:50
10:10	Coffee Break						10:10
10:40	NF19 - C. Oishi Simulations of viscoelastic droplet-droplet collision	GS19 - S. Wojno Effect of sulfate content and counterion on phase transition of cellulose nanocrystal suspensions	SM3 - M. Zatloukal Measurement and modeling of uniaxial and planar extensional viscosities for various polymer melts in very fast flows	IP3 - M. Zare Entrainment of a viscoplastic fluid into a Newtonian fluid by a bubble crossing the interface between liquid layers	EM3 - T. R�ther A novel correction method for the shear rate in a Couette rheometer	FR3* - A. Raymundo Keynote Lecture	10:40
11:00	NF20 - S. Bindgen Yielding mechanisms in capillary suspensions	GS20 - M. Tassieri What caging forces feel in 3D hydrogels: A rheological perspective	SM4 - O. Hassager Small-angle neutron scattering study of the structural relaxation of elongationally oriented, moderately stretched three-arm star polymers	IP4 - S. Varchanis Torsional instability of constant viscosity elastic liquid bridges	EM4 - K. Lennon A data-driven method for automated superposition of rheological data	Influence of rheology in 3D printing of protein based doughs	11:00
11:20	NF21 - A. Pereira Maximum spreading of impacting Newtonian and viscoplastic drops: Highlighting controversial scaling laws through numerical simulations	GS21 - C. Wobill Influence of substrate composition and viscoelasticity on growth of filamentous fungi	SM5 - G. Ianniruberto Modeling unentangled polymer melts in fast flows	IP5 - C. Georgantopoulos Understanding the sharkskin instability of filled rubber compounds: Investigating the influence of die geometry and filler dispersion	EM5 - J. L�euger Polarized imaging: An essential tool for rheological investigations on complex fluids	FR5 - J. Zink Pre- and post-process evaluation of meat analogue texturability using high-pressure shear rheology and dynamic mechanical analysis	11:20
11:40	NF22 - K. Zografos The closed form Adaptive Length Scale model: Properties and performance for simple and complex flows	GS22 - M. Lopez-Lopez Rheological behavior of alginate-based magnet-polymer composites	SM6 - E. Gkoffi Investigating the structure-dynamics relation of star-shaped polymers in melts through atomistic molecular dynamics simulations	IP6 - M. Di Martino CFD characterization of the hollow-cone spray process: Newtonian and non-Newtonian fluids comparison	EM6 - M. Wilhelm Advanced combined rheometer setups to in-situ correlate molecular insights with mechanical properties	FR6 - N. Grizzuti Rheology-driven design of pizza gas foaming	11:40
12:00	NF23 - M. Krapez Soft blade coating of complex fluids	GS23 - S. Perez Robles Multiscale rheological tests to study thermogelation of HydroxyPropyl MethylCellulose (HPMC) aqueous solutions	SM7 - V. Hirschberg Molecular origin of rheological properties of well-defined Polystyrene POM-POM model systems and comparison with well-defined PS combs and stars	IP7 - C. Gracia Fern�andez Rheological characterization of composites used in 3D printing	EM7 - K. Armini High resolution Doppler Optical Coherence Tomographic (D-OCT) measurements of near-wall velocity profiles in duct flows of viscoelastic fluids	FR7 - I. Sousa Lupin and chickpea yoghurts: the importance of rheology measurements on product development	12:00
12:20	Lunch						12:20
13:40	NF24 - S. Sinha Disorder and non-linearly in immiscible two-phase flow in porous media	GS24 - S. Nardecchia Synthesis and rheological Properties of 3D structured, injectable & self-healing magnetic hydrogels	SM8 - C. Hannecart Tube-based modeling of stress relaxation of bidisperse linear polymer blends in the linear regime of deformation	IP8 - I. Calafel Flexible PVC foams by 3D-printing: Rheological aspects	EM8* - D. Curtis Keynote Lecture	FR8 - P. Mouraka Jamming of non-colloidal plant cell-wall particles: the role of packing, mechanical properties, and surface interactions	13:40
14:00	NF25 - V. Niggel Imaging dense suspensions under shear	GS25 - Q. Sun Polymer induced liquid crystal phase behaviour of cellulose nanocrystal (CNC)	SM9 - S. Coombs Complex viscosity of star-branched macromolecules from analytical general rigid bead-rod theory	IP9 - P. Laure Identification of foaming parameters for polyurethane with the FOAMAT� device	Interconversion of parallel and orthogonal superposition rheometry data	FR9 - R. Cardinaels Extensional stress-relaxation measurements on wheat flour dough – The key to finalizing the Fractional K-BKZ framework?	14:00
14:20	NF26 - F. van Berlo Torsional fracture of viscoelastic liquid bridges	GS26 - D. Kogan Small and large amplitude oscillatory shear behavior of crosslinked polymeric system at the vicinity of the gel point	SM10 - V. Ianniello Determination of molecular weight distribution of UHMWPE via solution rheology	IP10 - E. Peuvrel-Disdier Foamability of linear and branched polypropylenes by physical extrusion foaming - Input of the thermomechanical analysis of pressure drop in the die	EM10 - M. Hoffmann Coupled Rho-Dielectric: In-situ investigation of the alignment of lamellar block copolymers	FR10 - M. Nunes Improving dough rheology using partially purified algae biomass	14:20
14:40	NF27 - M. Villalba Chehab Visualizing plug formation in cavities and apertures with a yield stress fluid	GS27 - R. Aguirreabe Rheological implications of chemically dynamic polymer networks	SM11* - C. Ligoure Keynote Lecture	IP11 - T. Gibaud Mechanics and structure of carbon black gels under high-power ultrasound	EM11 - C. Misra Dichotomous behavior of swollen and dielectric relaxations in dense suspensions of stress thermoreversible hydrogel microparticles	FR11 - G. Della Valle Rheological properties of artificial boluses of cereal foods enriched with legume proteins to quantify food-saliva interactions	14:40
15:00	NF28 - E. Missi Drag reduction assisted emulsification in cross-slot microchannel	GS28 - R. Pasquino Hardening phenomenon in wormlike micelles	Competition between shear and biaxial extensional viscous dissipation in the expansion dynamics of polymeric liquid sheets	IP12 - M. Staropoli Nanoscale investigation of the Payne effect in silica-filled rubbers through in-situ SAXS-rheological tests	EM12 - C. Marraffa Characterization of flow-induced soft particle glasses with a plane-plane rheometer and small-angle light scattering	FR12 - P. Avallone Inverse quenching on gelatin solutions	15:00
15:20	Technical Exhibition & Coffee Break						15:20
16:20	NF29 - J. Cochran Slow fatigue and delayed sudden failure of amorphous and soft glassy materials in large amplitude oscillatory shear strain	GS29 - D. Vassopoulos How to tailor the nonlinear rheology of supramolecular assemblies by changing their environment	SM13 - M. Sattari Melt rupture and wall slip of metallocene-catalyzed bimodal molecular weight distribution polyethylene under simple shear	IP13* - P. de Souza Mendes Keynote Lecture	EM13 - A. Geffrault Shapes of 3D printed filaments of yield stress fluids	BM17 - M. Cidade Injectable composite systems of ALG-GG microparticles in pluronic hydrogels for bioactive cargo controlled delivery: Optimization of hydrogel composition based on rheological behavior	16:20
16:40	NF30 - P. Edera Tuning internal stress distributions in soft particle glasses	GS30 - A. Huysecom Unravelling the network topology and elasticity of hydrophobically associating multiblock copolymers in aqueous solutions using a novel mechano-statistical transient network model	SM14 - S. Vervoort Assessment of a melt rheology approach to estimate composition in binary blends of linear low-density polyethylene (LLDPE) and low-density polyethylene (LDPE)	Displacement of a yield strength material in a radial Hele-Shaw cell	EM14 - M. Daneshi Flow onset mechanics of bubbles in yield stress fluids	BM18 - J. Ferreira Shear-induced crystallization of a therapeutic protein	16:40
17:00	NF31 - A. Pourzahedi Flow onset for a single bubble in a yield-stress fluid	GS31 - G. Legrand Phase diagram and rheology of polymer-carbon black aqueous suspensions	SM15 - S. Magalh�es Intrinsic viscosity as a tool to study the effect of the extraction conditions on the molecular weight of lignin	IP15 - N. Jaouadi Rheological and morphological investigation of poly (lactic acid)/polyamide 11 biosourced multiphase systems going from polymer blends to multi-micro-nanolayers	EM15 - M. Coppens Measuring the stress ratio and the corresponding wall friction coefficient in powders	BM19 - V. Perez-Puyana Rheology as a key tool for the characterization of protein-based scaffolds for tissue engineering	17:00
17:20	NF32 - E. Chapiroian Rising cloud of bubbles in a yield-stress fluid	GS32 - S. Guido Effect of temperature and concentration on the rheological and phase behavior of Carbopol in water	SM16 - L. Hawke Tube model predictions accounting for flow induced disentanglement and tumbling	IP16 - E. Cort�s-Trivi�o Rheological behaviour of green thickened matrices obtained from natural deep eutectic solvents (NADES) and lignocellulose	EM16 - N. Germann Impact of CaCl2 concentration and in situ rheometric setup configuration on fast alginate-Ca2+ reaction	BM20 - M. Abrami Designing of polymeric gels mimicking the normal and fibrotic liver tissues: Effect of viscoelasticity on cells adhesion and survival	17:20
17:40	End						17:40

Thursday 28th							
	Giralda 1-2	Santa Cruz	Nervión	Prado	Arenal	Giralda 6-7	
9:00	A. Colin (PL3) - Giralda 1-2 Rheological behavior of non-Brownian suspensions: towards a quantitative modeling						9:00
10:00	IP17 - N. Baldino SAOS and LAOS tests response of modified bitumens with SBS supported by morphological characterization	SM17 - L. Brandfellner Interplay of molecular weight distribution, drag reduction and degradation in shear for polyacrylamide	SP17 - L. Gonzalez-Garcia Concentrated suspensions of conductive particles as electronic flowing leads	SG1 - H. Winter Relaxation processes in partially arrested soft matter	EM17 - A. Rodriguez-Barroso Modeling and optimization of magnetic tweezers design	MN17* - G. D'Avino Keynote Lecture	10:00
10:20	IP18 - A. Neveu How does the rheology of lactose powders influence the pharmaceutical tablets weight consistency?	SM18 - A. André Linear viscoelasticity of unentangled and entangled linear supramolecular chains with sticky side groups	SP18 - J. López-Aguilar Effects of confinement-induced non-Newtonian lubrication forces on the rheology of a dense suspension	SG2 - S. Aime The yielding transition of soft glasses	EM18 - D. Tammaro Rheological characterization of microtiter sized olefin block copolymers	Numerical simulations of viscoelastic particle ordering in a microfluidic channel	10:20
10:40	Coffee Break						10:40
11:10	IP19 - F. Galindo-Rosales Influence of rheology and microscale on graphene-based inks in the gravure printing process	SM19* - F. Christakopoulos Keynote Lecture *Tying the knot, enhanced recycling through ultra-fast entangling across ultra-high molecular weight polyethylene interfaces	SP19 - O. Ranquet Rheology of artists' paints: Study of oil-based mock-up paints containing egg yolk proteins	SG3 - A. Izzet Probing the mechanical properties of a weakly jammed granular packing through acoustic wave propagation in weightlessness	EM19 - P. Heyer Measurement and visualization of slip in rubber flow	MN19 - F. Garcia Daza Micro-rheology in anisotropic colloidal suspensions by dynamic Monte Carlo simulations	11:10
11:30	IP20 - A. Tenorio-Alfonso Phototriggered curing of polyurethane adhesives based on o-nitrobenzyl-protected pentanediol and cadaverine precursors		SP20 - C. Carotenuto Alteration of the water-soluble organic carbon induced by a simulated rainfall and its effect on natural slurries' rheology	SG4 - H. Weingrill Powder rheological investigations of powder coatings in the fluidized state	EM20 - R. Hudson Stress-controlled optimally windowed chirp rheometry (c-OWCh)	MN20 - A. Oseli Understanding carbon-nanotube network formation in polymer-based nanocomposites	11:30
11:50	IP21 - J. Rodríguez Agudo Characterization of the frequency and temperature dependency of the complex Poisson's ratio by combining axial and torsional measurements in a single rheometer	SM21 - D. Parisi Associative properties of poly(vinyl alcohol) solutions	SP21 - R. Andrade The influence of hexagonal boron nitride nanostructures on the xanthan gum rheological behavior	SG5 - K. Cerdan Magnetorheological self-healing elastomers based on thermoreversible Diels-Alder networks	EM21 - T. Athanasiou Measurement of both normal stress differences using two partitions and piezoelectric sensor	MN21 - C. Oelschlaeger Imaging of the microstructure of Carbopol dispersions and correlation with their macroelasticity: a micro- and macro-rheological study	11:50
12:10	IP22 - M. Rasteiro Effects of poly(vinyl chloride) morphological properties on the rheology/aging of plastisols formulated using nonconventional plasticizers	SM22 - S. Coppola Rheology of associating and non-associating Ethylene-Propylene copolymers in lubricating hydrocarbon oils	SP22 - M. Zakhari Slip in soft permeable particles near a rigid wall	SG6 - D. Fauser Rheological characterization of humidity influences on thermoresponsive Shape Memory Polymers	EM22 - M. Khabazian Esfahani Quantifying simultaneous first normal stress and shear viscosity at high shear rates via capillary rheology for different LDPEs	MN22 - R. Biswas Investigating the micro-rheology of an aging colloidal clay suspension using an optical tweezer	12:10
12:30	Lunch						12:30
13:50	GS33 - C. Boulet Ageing study of Bentonite, Atapulgite clays and their mixture	SM23 - R. Lyons On the synthesis and dynamics of polymer networks formed by dynamic covalent bonds and moving in a sticky polymer matrix	SP23* - L. Botto Keynote Lecture Suspensions of plate-like particles with slip can display negative intrinsic viscosity	SG7 - M. Alonso-González Influence of biopolymeric fractions on rheological, mechanical and functional properties of rice bran-based bioplastics	E17 - K. Schwarzenberger Response of a surfactant- and particle-laden bubble surface to asymmetric shear flow	MN23 - L. Noirez Identification of the thermal response of confined fluids to mechanical shear deformation	13:50
14:10	GS34 - T. Bhattacharyya Ascertaining universal scaling behavior in a thermoresponsive polymeric system	SM24 - A. Gaillard What determines the drop size in sprays of polymer solutions?		SG8 - G. Della Valle Processing and mechanical behavior of extruded starch-protein composites	E18 - D. Ashkenazi The effect of polymer chain flexibility on the interfacial viscoelasticity at the Air/Water Interface	MN24 - S. Fernández-Silva Electrorheological characterization of vegetable oil and nanoparticles based ecolubricants	14:10
14:30	GS35 - J. Ramirez Self-diffusion, rheology and network topology of star-shaped associative polymer gels studied by Molecular Dynamics simulations	SM25 - R. Miriyala A study on the thixotropic response of a filled polymer melt system	SP25 - M. Neukötter Instability analysis of suspensions with a polymer solution matrix	SG9 - S. Pashazadeh Extrusion instabilities in highly-filled wood fiber biocomposites	E19 - P. Sánchez-Puga Nonlinear interfacial strain profiles and constant strain operation modes in the magnetic needle ISR	FR13 - L. Ramos Model gluten as near-critical gels	14:30
14:50	GS36 - D. Schmidt Carbon-black assemblies in highly concentrated suspensions: Influence of the solvent polarity and solvent mixtures on the structure	SM26 - H. Fatahi Rheological study and phase change behavior of adipic acid as a PCM for thermal energy storage at 150 °C	SP26 - J. Lallieu Rheology of a particle-laden soap film	SG10 - G. Baeza Topology and dynamics: The two faces of the mechanical reinforcement in crystallizable polymers	E20 - D. Renggli Interfacial rheology of crowded phospholipid monolayers shows a fluid behaviour	FR14 - C. Leverrier Creation of plant particles weak gels through High Pressure Homogenization (HPH) to limit sedimentation in juices	14:50
15:10	GS37 - Y. Stergiou Viscous fingering in a non-Newtonian liquid radial displacement by oppositely-charged surfactant-polymer interaction	SM27 - E. van Ruymbeke Dynamics and structure of melano-supramolecular polymers based on telechelic precursors	SP27 - T. Voigtmann Yielding and history dependence in fluidity models for glassy suspensions	SG11 - P. Bacova Dynamics and rheology in the vicinity of rough silica surfaces: Insight from the atomic simulations	E21 - O. Laukkanen Shear and dilatational rheology of microgel monolayers at the oil-water interface: a comparison between ultra-low crosslinked and regularly crosslinked pNIPAM microgels	FR15 - D. Gabriele Functional bigels for food uses	15:10
15:30	Coffee Break						15:30
16:00	NF33 - K. Isukwem Stretching and breakup of falling viscoplastic sheets	SM28 - C. Coutouly ABA triblock copolymers as precursors for transient double networks with multiscale viscoelastic response	SP28 - L. Hildebrand Pires da Cunha Settling dynamics of Brownian colloidal chains	SG12 - D. Truzzolillo A cusp catastrophe model with disorder for the yielding transition of soft glasses	E22 - L. Gala Fingers formation and oscillatory Kelvin-Helmholtz instability in miscible fluids	FR16 - S. Simões Clean Label emulsions based on vegetable proteins	16:00
16:20	NF34 - P. Moschopoulos Filament-stretching dynamics of elastoviscoplastic materials	SM29 - H. Müller Polymer degradation and ageing of the poly(ethylene oxide) drag reduction reference system in long-distance turbulent pipe flow	SP29 - M. Naccache Rheology of Amino-Functionalized Graphene Oxide Suspensions on Yield Stress Fluid	SG13 - G. Arnold From stiff to soft: glass characterization with dynamic mechanical analysis (DMA) up to 950 °C	E23 - P. Palak Emergent patterns and stable interfaces during radial displacement of a viscoelastic fluid	FR17 - F. Martin Heat treatment of concentrated milk protein system affects viscosity and enzymatic coagulation properties	16:20
16:40	NF35 - A. Ghazal Density unstable displacement of a Newtonian fluid by a viscoplastic fluid: Effect of buoyancy	SM30 - A. Foroozani Behbahani Dynamics and rheology of polymer melts via hierarchical atomistic and coarse-grained simulations	SP30 - A. Aubeil Effects of a non ionic surfactant on the rheology of colloidal suspensions	SG14 - A. Aulova Modelling creep behavior of PEEK at different temperatures using artificial neural networks	E24 - Y. El Omari Probing the elongational behaviour at interfaces of immiscible polymer systems using the dilatational tensiometry: Effect of viscosity and temperature on the interfacial rheological properties	FR18 - M. Campos Assumpcao de Amarante Effect of acid precipitation on the gelation properties of quinoa protein isolate	16:40
17:00	NF36 - S. Habibi Numerical study of particle suspensions in elastoviscoplastic (EVP) duct flows		SP31 - M. Marchand Stress relaxations upon flow cessation in dense soft sphere packings	SG15 - D. Stugova Linear viscoelasticity of PPPS/MWCNTs composites: investigating of co-continuous morphology evolution and filler network stability during steady shear	E25 - L. Esteban Heterogeneous viscoelastic fluids in porous media	FR19 - H. Hernández Rheology, texture, and chemical characterization of Haloumi cheese enriched with algae biomass	17:00
17:20	Closing - Giralda 1-2						17:20
17:40	End						17:40

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Symposium BM

Bio-rheology and Medicine

Organizers: Crispulo Gallegos, Mats Stading and Catarina R. Leal

Tuesday 13:50 Prado / Track 4

BM7

Effect of cystic fibrosis sputum rheology on lungs drug delivery by inhalation

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Cystic Fibrosis (CF), one of the most common lethal genetic diseases in people of Caucasian origin, causes a severe increase of mucus viscosity (due to water loss) in many organs, mainly the airways. As a consequence, increased viscosity impairs muco-ciliary clearance determining sputum (pathological mucus) stagnation, thus promoting bacterial lung infections. In the case of drugs administered by inhalation (usually, mucolytics, anti-inflammatory and antibiotics), the structure of the Airway Surface Liquid (ASL) lining the walls of the bronchial tree requires an in-depth understanding in order to improve the efficacy of the drugs. Indeed, ASL is composed by a thin inner water-like serous fluid named periciliary layer, where cells cilia beat, and by a thicker outer non-Newtonian viscoelastic fluid representing the Mucus Layer (ML). In particular, ML, is a heterogeneous medium made up of mainly physical cross-linked polymeric regions, embedded in a less viscous water-like fluid. Although drug transport inside ASL can depend on different factors, drug diffusion is one of the most important. Thus, the estimation of the drug diffusion coefficient (D) is a key factor: at this purpose the Lustig-Peppas model for not swelling systems represents an effective tool. Indeed, this model refers to both the network mesh size and the volume fraction of the solid (polymeric) network permeating the ML. Interestingly, based on the Flory, Chui and Schurz theories, it is possible to express D directly as a function of the ML shear modulus (G). Thus, assuming that ASL rheological properties are similar to those of sputum, it is possible evaluating D and the kinetics of drug penetration inside ASL. Therefore, this work provided to measure CF sputum G by fitting the generalized Maxwell model to frequency sweep data, to evaluate D and to simulate drug diffusion through the ASL layer by means of Fick's equation

Tuesday 14:10 Prado / Track 4

BM8

In situ magnetic microrheology of airway mucus

Margaret Braunreuther and Gerald G. Fuller

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Effective mucociliary clearance is vital for healthy airway function, as mucus acts as a primary defense against foreign particles and infectious agents. Cystic Fibrosis (CF) is a genetic disease that is characterized by hindered ion transport in airway epithelial cells. As a result, the mucus secreted by these cells becomes dehydrated, forming thick stratified layers. This change in mucus properties can severely impair mucociliary clearance, leading to airway obstruction, chronic infection, and inflammatory lung damage. Recent studies have found evidence that cilia function in the presence of secreted mucus is dependent on the genotype of the cell layer. It is well known that CF mucus exhibits viscosities orders of magnitude greater than those of healthy mucus. However, thus far it has not been feasible to measure mucus properties on live cells as it is produced by the epithelial cell layer. A new instrument, the "Magnetic Live Cell Rheometer", recently developed by the Fuller group has been adapted to examine mucus rheology *in situ* via magnetic microrheology. Human airway epithelial cells (HAECs) are grown in 2D air-liquid interface (ALI) cultures. During rheological experiments, we maintain cells at ALI, using micron scale magnetic microwires to probe the properties of the mucus as a function of distance from the cell layer. We apply and remove a magnetic force and track microwire displacement to determine the compliance and viscosity of healthy and diseased mucus on the respective HAEC cultures. We then test rheological response to the application of existing mucoactive agents to establish correlation with clinical response and assess the impact of genetic variants. With this method, we demonstrate the ability to study mucus rheology in a physiologically relevant environment, examine phenotypic differences in mucus rheology, and rapidly test drugs on mucociliary mechanics.

Tuesday 14:30 Prado / Track 4

BM9

Cancer viscoelasticity: A dynamic compression assay for tumor spheroids characterization

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Cancer is a complex, heterogeneous and multifactorial disease, that is a leading healthcare problem worldwide. Several experimental and clinical studies of malignant neoplasms indicate that invasive growth and metastasis are the main manifestations of tumour progression, strongly influenced by the microenvironment (Ferraro, under review), in particular mechanical stresses. Deep biomechanical differences between healthy and tumoral tissues exist, in fact, malignant transformations are associated with significant changes in the cytoskeleton structure and cell-cell interactions. Understanding the mechanical behaviour and cellular organization is not easy; a novel approach is based on the analysis of living