

HSR 2025: Detailed Program

Syros, Greece, June 11-14, 2025

Wednesday, June 11, 2025

18:00-21:00 Welcome Reception & Meeting Registration

Thursday, June 12, 2025

08:00 Welcome Remarks
V.G. Mavrantzas

Session 1: Honoring Professor Doi (Chair: Giovanni Ianniruberto)

08:10 Presentation of Honored Speaker, Professor Masao Doi
A.N. Beris & V.G. Mavrantzas

08:20 Diffusio-Rheological Coupling [1]
M. Doi

09:00 Phantom chain simulations for fracture of star polymer networks on the effect of arm molecular weight [2]
Y. Masubuchi

09:20 Non-universality of constraint release relaxation in entangled linear polymers of various chemical structures [3]
Y. Matsumiya, H. Watanabe

09:40 Dynamics of Viscoelastic Filament based on Onsager [4]
J. Zhou, M. Doi

10:00 *Coffee Break*

Session 2: Polymer Rheology (Chair: Savvas Hatzikiriakos)

10:20 Effect of Stereoisomerism on the Structure and Linear Rheology of Poly(Lactic Acid) [5]
P. Bačová, V. Harmandaris, D. Vlassopoulos, S.I. Molina

10:40 Polymer and ion dynamics during flow in nanopores [6]
G. Floudas

11:00 Attempts to measure normal stress differences in viscoelastic fluids [7]
B. Li, Th. Athanasiou, A. Mavromanolakis, D. Vlassopoulos

11:20 Viscoelasticity and extensional rheology of polystyrene based vitrimers [8]
T. Guarino, M. Conti, N. Van Zee, R. Nicolay, S. Coppola, D. Vlassopoulos

11:40 Open problems in the nonlinear rheology of unentangled polymer melts and solutions [9]
G. Ianniruberto, C. Pseudos, S. Costanzo, G. Marrucci

12:00 Connecting IWNET 2025 with HSR 2025
M. Grmela

12:20 *Lunch Break*

Session 3: Interfaces (Chair: John Tsamopoulos)

14:00 Rheology in Multilayer Film Coextrusion of Polymer Melts [10]
E. Mitsoulis

14:20 Spreading of a liquid metal coating in the presence of adhesion, Lorentz forces & heat transfer [11]
N. Pelekasis, A. Lytra, M. Vlachomitrou

14:40 Theoretical-numerical analysis of the acoustic response of a coated microbubble adhered to a solid substrate [12]
S. Rosios, N. Pelekasis

15:00 Interfacial stresses in foams: From microscale film dynamics to macroscale stability [13]
E. Chatzigiannakis

15:20 A new micro-inertia model for dilute emulsions [14]
A.N. Beris, B.J. Edwards

15:40 *Coffee Break*

Session 4: Elastoviscoplasticity (Chair: Emmanouil Chatzigiannakis)

16:00 Spreading lens on a compliant elasto-viscoplastic substrate [15]
P. Angelopoulos, C. Dritselis, G. Karapetsas

16:20 Rising and migration dynamics of an air bubble close to a wall in an elastoviscoplastic fluid [16]
G. Esposito, Y. Dimakopoulos, J. Tsamopoulos

16:40 Flow Behavior and Partial Melting of Heated Dense Viscoplastic Materials in a Rotating Drum [17]
A. Balachsis, Y. Dimakopoulos, J. Tsamopoulos

17:00 Pinch-off of an elasto-visco-plastic filament – scaling analysis and self-similarity [18]
P. Zakeri, P. Moschopoulos, Y. Dimakopoulos, J. Tsamopoulos

17:20 The flow of meat analogues [19]
T. Guan, C. Sägesser, A. Mathys, P. Rühs, P. Fischer

17:40 On the influence of fluid rheology in hydraulic fracturing [20]
M. Wrobel, G. Mishuris, P. Papanastasiou

18:00 *End of 1st day*

18:30 *General Assembly of the Hellenic Society of Rheology*

Friday, June 13, 2025

Session 5: Papanastasiou Award (Chair: Georgios Georgiou)

- 08:20 The work of T. Papanastasiou
E. Mitsoulis
- 08:40 The life of T. Papanastasiou
P. Papanastasiou
- 08:50 Presentation of the Papanastasiou Award and of the 1st Papanastasiou Awardee (Prof. Pavlos Stephanou)
D. Vlassopoulos
- 09:00 Non-equilibrium thermodynamics modeling of complex fluids: From polymer melts to cement pastes [21]
P. S. Stephanou
- 09:40 *Coffee Break*

Session 6: Hydrogels and Biofluids (Chair: Yiannis Dimakopoulos)

- 10:00 Erythrocyte sedimentation: Collapse of a soft-particle gel [22]
C. Wagner, A. Darras
- 10:20 Adaptive and multi-stimuli responsive hydrogels for 3D bioprinting and biomedical applications [23]
S.F. Saravanou, A. Anagnostou, M. Nikolaou, D. Toumpa, G. Pasparakis
- 10:40 Unraveling the scaling relations for Ca-alginate hydrogels [24]
D. Kogan, N. Eliraz, R. Bitton, M. Gottlieb
- 11:00 Biorheology of the percutaneous coronary intervention: Hemorheology, hemodynamic and hematology consequences of stenting and the subsequent medical treatment [25]
D. Kokkinidou, M. Chrysostomou, K. Nathanael, K. Kapnisis, A. Anayiotos, E. Kaliviotis
- 11:20 Modelling vascular perfusion in the human kidneys [26]
A. Kazakidi, W. Shu
- 11:40 Modeling the shear-induced migration of rigid particles and red blood cells in Newtonian and non-Newtonian fluids [27]
P. A. Polykarpou, E. Kaliviotis, P. S. Stephanou
- 12:00 *Lunch Break*

Session 7: Suspensions and Colloids (Chair: Dimitris Vlassopoulos)

- 14:00 Real-time monitoring of enzymatic hydrolysis of globular protein and protein particles with High-Resolution Ultrasonic Spectroscopy [28]
G.I. Papoutsidakis, V. Buckin
- 14:20 Probing cage dynamics in concentrated hard sphere suspensions and glasses with high frequency rheometry [29]
T. Athanasiou, B. Mei, K.S. Schweizer, G. Petekidis

- 14:40 Hydrodynamic reversibility in shear-induced crystals of Brownian Hard sphere glasses under non-linear oscillatory shear [30]
G. Petekidis, R.K. Pujala, N. Koumakis
- 15:00 Insights on Friction characteristics using squeeze flow approach in a Soft-jammed Material [31]
I. Chaudhary, M. Kaushal
- 15:20 From suspensions to gels: Rheological insights into porous particles enhanced systems [32]
M. Minale, H. Nassiri, M. Alessio, C. Carotenuto
- 15:40 Revealing the origin of the mechanical reinforcement in polymer nanocomposites via atomistic simulations: From the glassy to the liquid state [33]
H. Reda, V. Harmandaris
- 16:00 *Coffee Break*

Session 8: Posters and Excursion

- 16:20 Poster Session
- 17:40 *Break*
- 18:00 *Excursion and Meeting Dinner*
- 23:00 *End of 2nd day*

Saturday, June 14, 2025

Session 9: Complex Fluids (Chair: George Karapetsas)

- 08:40 Direct numerical simulation of passive scalar mixing and stirring in viscoelastic turbulent jets [34]
M.C. Guimarães, F.T. Pinho, C.B. da Silva
- 09:00 BD simulations of micellar solutions [35]
D. Aslanis, L.D. Peristeras, I.P. Stott, V.G. Mavrantzas
- 09:20 Fiber suspension flow with wall-slip in a hyperbolic planar channel [36]
K.D. Housiadas, A.N. Beris, S.G. Advani
- 09:40 Immersed boundary - lattice Boltzmann method for wetting problems [37]
E. Bellantoni, F. Guglietta, F. Pelusi, M. Desbrun, K. Um, M. Nicolaou, N. Savva, M. Sbragaglia
- 10:00 Tearing patterns in radially spreading sheets of fluid [38]
R. Sayag
- 10:20 Melt fracture and processing aids in polymer extrusion [39]
X. Jia, A.K. Doufas, S.G. Hatzikiriakos
- 10:40 *Coffee Break*

Session 10: Novel Methods (Chair: George Petekidis)

- 11:00 What parts of nonlinear behavior are captured by the linear spectrum? A Constitutive Model Based on Recoverable Strain [40]
A. Winters, J. Vermant, T. Tervoort
- 11:20 Development and application of Physics-informed deep learning models for polymeric systems [41]
E. Christofi, H. Reda, P. Bačová, V. A. Harmandaris
- 11:40 Theoretical Prediction of Viscosity using Zentropy Theory [42]
Zi-Kui Liu
- 12:00 Surrogate modelling and optimization of droplet motion on chemically patterned surfaces via automatic differentiation [43]
N. Savva, P.Y. Vrionis, A.D. Demou
- 12:20 *Lunch Break*
- 14:20 *Concluding Remarks / Deliberations about the next Meeting*
- 15:00 *End of the Meeting*

Poster Presentations

- P1 Investigation of self-healing polymers using a unique Rheo-NMR setup
A. Ananiadou, R. de Oliveira Silva, D. Sakellariou, C. Breton, C.-A. Fustin, C. Clasen
- P2 Numerical simulation of surface tension-driven flow: effects of wall slip
I. Bagkeris, A. Syrakos, G. Georgiou
- P3 Impact of cardiovascular stenting on blood rheology and local pressure drop
M. Chrysostomou, D. Kokkinidou, K. Kapnisis, E. Kaliviotis
- P4 Extensional rheology of vulcanized rubbers
T. Guarino, A. Mavromanolakis, S. Coppola, D. Vlassopoulos
- P5 Modeling the rheological behavior of cement pastes
A.K. Ioannou, P.S. Stephanou
- P6 Topology and mechanics of industrial elastomeric networks
S.V. Kallivokas, A. Hazirakis, V.A. Harmandaris
- P7 Rheology of negatively charged cellulose nanocrystal suspensions in the presence of oppositely charged polyelectrolytes
G. Katsidima, P. Tsaousis, K. Papapetros, G. Mathioudakis, G. Voyiatzis, G. Bokias
- P8 Shear-rate dependent viscometric functions of polymer melts from molecular dynamics
D. Tsalikis, V.G. Mavrantzas
- P9 A constitutive hemorheological model addressing the aggregation of red blood cells at low hematocrit values
M. M. Michail, K.P. Patsalidou, P.A. Polykarpou, E. Kaliviotis, P.S. Stephanou
- P10 Antithrombotic treatment and cardiovascular stenting effects on blood rheology and hemodynamics

K. Nathanael, M. Chrysostomou, D. Kokkinidou, K. Kapnisis, E. Kaliviotis

- P11 Exploring the limitations of erosion modelling with unresolved CFD-DEM
I.S. Panagiotopoulos, K. Ritos
- P12 Interaction of flow rotationalities and asymmetric boundary slip in the selective transition from stable to unstable modes
S. Sengupta, A. Syrakos, G. Georgiou
- P13 On the geometrical and electrical percolation of conductive polymer composites with surface modified copper flakes
L. Slemenik Perše, M. Mihelčič, A. Oseli
- P14 Impact of natural pozzolan addition on rheological properties of air lime-based injection grouts
T. Žižlavský, M. Vyšvařil