Preliminary Program for the

21st Ferrofluid-Workshop 2025

Benediktbeuern, September 30th – October 2nd 2025

Tuesday, September 30th

13:20	***Opening***	
13:40	**Session 1**	
13:40 – 14:00	I. Rehberg, P. Blümler	Tailoring Magnet Setups for Field Homogeneity: An Interactive GUI for Design and Exploration
14:00 – 14:20	M. Kermarrec, Y. Suffren, P. Roquefort, S. Triki, T. Aubry	Viscoelasticity and Fluorescence of polymer-based magnetically switchable composite gels
14:20 – 14:40	A. Leon-Cecilla,F. J. Vazquez-Perez, L. Álvarez de Cienfuegos, J. E. Martin, M. T. Lopez-Lopez	Chirality and Instabilities in Ferrogel Torsional Actuators under Uniaxial Magnetic Fields
14:40 – 15:00	M.D. Contreras-Mateus, C. Friedrich, S. Odenbach	Mechanistic insights into the magnetorheology of ferrofluid emulsions with tunable nanoparticle localization: Droplet-dispersed nanoparticles
15:00 – 15:20	K. Gerstenberger, G. K. Auernhammer	Cluster growth dynamics of nickel particles in viscoelastic matrices
15:20 – 15:40	N. Magin, D. Borin, S. Odenbach	Influence of microstructure on magnetic properties of anisotropic magnetic elastomers
15:40	***Coffee break & Posters***	
16:10	**Session 2**	
16:10 – 16:30	R. Stephan, S. Ranoo, P. Kreissl, C. Pabshettiwar, J. Kubis, C. Holm, R. von Klitzing, A. Schmidt, R. Weeber	Exploring the Mechanisms of Particle-Matrix Coupling in Magnetic Gels by Means of Simulations and Experiments

16:30 – 16:50	M. Heiber, L. Fischer, H. Reinken, A. M. Menzel	Structuring magnetic elastomers
16:50 – 17:10	H. T. Roth, P. Gebhart, K. A. Kalina, T. Wallmersperger, M. Kästner	A data-driven decoupled multiscale scheme for the modeling of structured magnetorheological elastomers
17:10 – 17:30	O. Bilous, K.A. Okrugin, A. Lakkis, R. Richter, S.S. Kantorovich	Cracking the Code of Anomalous Diffusion: Simulation Meets Experiment in Ferrogranular
17:30 – 17:50	M. Raphael, A. M. Schmidt	Micromagnetic Simulations of Magneto-Plasmonic Nano-Objects with Tunable Domain Architectures
17:50 – 18:10	K. Xiao, S. Lyer, J. Kirchner, G. Fischer	Molecular dynamics simulation of zipped chain-like agglomeration of the SPIONs

18:10 ***Poster Session***

Wednesday, October 1st

approx. 08:30 Mountain and Alternative Tour

approx. 13:30 Mountain Talks

The speakers will be announced in the final program within the book of abstracts.

17:30 Session 3

17:30 – 17:50	T. Becker, M. Reiche, L. Zentner	Multipolar magnetized magnetoactive elastomers for actuation and locomotion applications
17:50 – 18:10	Y. Remane, S. Hestermann, A. Wagner, M. Ehresmann, G. Herdrich	Ferrofluidic gears and seals for space applications

18:10 Presentations of the awardees of the “Promotionspreis des Ferrofluidverein Deutschland e.V.”

19:00 ***Workshop dinner***

Thursday, October 2nd

8:30	**Session 4**	
8:30 – 8:50	A. Weidner, M. Kurniawan, B. Hankiewicz, S. Dutz, A. Bund	Light induced coating of iron oxide nanoparticles with Cu and assessment of their catalytic activity for electrochemical reduction of NO3- to NH4+
8:50 – 9:10	M. Weißpflog, G. Signorato, P. Schütz, B. Hankiewicz, V. Abetz	Hyperthermal-active and reprocessable composites based on magnetic nanoparticles in responsive polymer networks
9:10 – 9:30	D. Eberbeck, A. Knöchel, F. Mickoleit, D. Schüler, F. Wiekhorst	Alteration of MPS signal due to strong magnetic dipolar interactions within structurally different aggregates of magnetosomes
9:30 – 9:50	J. Landers, S. Salamon, H. Nádasi, A. Eremin, H. Wende	Ultralow-frequency AC-susceptometry for the analysis of complex fluids
9:50	***Coffee break & Posters***	
10:20	**Session 5**	
10:20 – 10:40	C. M. Huber, H. Ermert, I. Ullmann, M. Vossiek, C. Alexiou, S. Lyer	Ultrasound-based Methods for Imaging Superparamagnetic Iron Oxide Nanoparticles in Biomedical Applications
10:40 – 11:00	M. Löffler, B. Kluwe, C. Fiedler, F. Wiekhorst, S. Dutz	harmoMPI: Phantoms for Harmonizing Magnetic Particle Imaging Across Global Scanner Systems
11:00 – 11:20	B. Kluwe, L. Truttenbach, M. Löffler, U. Heinen, S. Dutz, F. Wiekhorst	Time-resolved magnetic particle spectroscopy to investigate aneurysm phantoms
11:20 – 11:40	F. Wolgast, R. Sack, Y. Wang, R. Amin, A. Lak, M. Schilling, T. Viereck	Magnetic particle spectroscopy based biosensing for antigens and nucleic acids
11:40 – 12:00	L. Wille, S. Lyer, G. Fischer, J. Kirchner	Advection of superparamagnetic nanoparticles in branched arterial networks
12:00 – 12:20	Y. Hadadian, H. Kim, T. L. Cao, F. Wiekhorst, J. Yoon	Tumor-Size Effects on Magnetic Hyperthermia Efficiency: A Simulation-Guided In Vivo Validated study
12:20	***Closing***	

Abstracts

A. Lakkis, M. Biersack, O. Bilous, S.S. Kantorovich, R. Richter	Two time scales drive the formation of transient networks in a ferrogranular experiment, and how to control them	X
J. Landers, S. Salamon, H. Nádasi, A. Eremin, H. Wende	Ultralow-frequency AC-susceptometry for the analysis of complex fluids	X
A. Leon-Cecilla,F. J. Vazquez-Perez, L. Álvarez de Cienfuegos, J. E. Martin, M. T. Lopez-Lopez	Chirality and instabilities in ferrogel torsional actuators under uniaxial magnetic Fields	X
M. Löffler, B. Kluwe, C. Fiedler, F. Wiekhorst, S. Dutz	harmoMPI: Phantoms for harmonizing magnetic particle imaging across global scanner systems	X
N. Magin, D. Borin, S. Odenbach	Influence of microstructure on magnetic properties of anisotropic magnetic elastomers	X
N. Magin, S. Odenbach	Application of the Scharr edge detection algorithm for microstructure assessment of magnetic composites	X
P. Patel, M. Saphiannikova, D. Romeis	Structured magneto-active elastomers under inclined fields and an approximation for the near-field effect in particle clusters	X
M. Raphael, A. M. Schmidt	Micromagnetic simulations of magneto-plasmonic nano-objects with tunable domain architectures	X
I. Rehberg, P. Blümler	Tailoring magnet setups for field homogeneity: an interactive GUI for design and exploration	X
Y. Remane, S. Hestermann, A. Wagner, M. Ehresmann, G. Herdrich	Ferrofluidic gears and seals for space applications	X
H. T. Roth, P. Gebhart, K. A. Kalina, T. Wallmersperger, M. Kästner	A data-driven decoupled multiscale scheme for the modeling of structured magnetorheological elastomers	X
R. Stephan, S. Ranoo, P. Kreissl, C. Pabshettiwar, J. Kubis, C. Holm, R. von Klitzing, A. Schmidt, R. Weeber	Exploring the mechanisms of particle-matrix coupling in magnetic gels by means of simulations and experiments	X
K. Xiao, S. Lyer, J. Kirchner, G. Fischer	Molecular dynamics simulation of zipped chain-like agglomeration of the SPIONs	X
A. Weidner, M. Kurniawan, B. Hankiewicz, S. Dutz, A. Bund	Light induced coating of iron oxide nanoparticles with Cu and assessment of their catalytic activity for electrochemical reduction of NO3- to NH4+	X
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M. Weißpflog, G. Signorato, P. Schütz, B. Hankiewicz, V. Abetz	Hyperthermal-active and reprocessable composites based on magnetic nanoparticles in responsive polymer networks	X