Memory of Rare and Nonequilibrium Events

Conference Date*: April 27 – May 2, 2025*
Conference Locations: *Institute of Material Science of Uzbekistan (IMS) Parkent, Institute for Fundamental and Applied Research (IFAR) Tashkent, Samarkand University*

Day 1 | Sunday April 27		
17:00 – 19:00	Registration	IFAR
19:00	Dinner	IFAR

Day 2 | Monday April 28 | **Opening and Fundamental Concepts**		
7:30am 8:30am	Breakfast Departure to Parkent	Tashkent, Nuovo hotel
9:00am	Registration and Welcome Coffee	IMS
9.30am	Opening Remarks **O.R. Parpiev, Director of the Institute of Material Science** **S.Z. Mirzaev, Vice president of Academy of Sciences** **R. Netz, Free University Berlin**	IMS
	Session 1, *Chair:* Roland Netz	
10.00am 10:45am	A few recent results in the theory of electrolytes, **David Andelman** Solvation of Nanoions, **Dominik Horinek**	IMS
11:30am	Coffee break	IMS
12:00am	Unraveling the Mpemba Effect: Nonequilibrium freezing kinetics of supercooled liquid water, **Prabal K Maiti**	IMS
12.45am	Lunch & Networking	IMS
	Session 2, *Chair:* Michael Hinczewski	
2.00pm 2.45pm	Fast protein folding is governed by memory-dependent friction, **Benjamin Dalton** Exploring the Role of Proteins in Plasma Cancer Treatment: Simulations Reveal Molecular Secrets, **Jamol Razzakov**	IMS
3.30pm	Coffee break	IMS
4.00pm 4.45pm	How Vibrational Lines and Lifetimes are Shaped by Memory Friction, **Florian Brünig** Projection operator and reaction coordinates choice, **Yevgeni Mamasakhlisov**	IMS
7:00pm	Dinner	

Day 3 | April 29 | **Advanced Theories and Applications**		
Session 3, Chair: Dominik Horinek		
9.00am 9.45am	Statistical Physics of Optimal Transport and Schrödinger Bridges, **Henri Orland** Escaping Confinement: Optimizing First-Passage Rates, **Won Kyu Kim**	IFAR
10.30am	Coffee break	IFAR
11.00am 11.45am	Machine-Learning Potentials: A New Pathway to Accurate Simulations of Thermodynamic Ion Properties and Rare Exchange Kinetics? **Nadine Schwierz** Atomistic machine learning from the bottom up, **Philip Loche**	IFAR
12.30am	Lunch & Networking	IFAR
	Session 4, Chair: Nadine Schwierz	
2.00pm 2.45pm	Pseudo Non-Equilibrium Response of the Cell Nucleus, **Aykut Erbas** Modeling cellular interfaces, **Susanne Liese**	IFAR
3:30pm	Coffee break	IFAR
4.00pm	TBA, **Ali Naji**	IFAR
7.00pm	Conference Dinner	TBA

Day 4 | April 30| **Advanced Theories and Applications**		
Session 5, Chair: Matej Kanduc		
9.00am 9.45am	Zeta potentials of cotton membranes in acetonitrile solutions, **Yuki Uematsu** Aqueous Supercapacitors: Insights from Atomistic Simulations of Electrode/Electrolyte Interfaces Combined with Effective Medium Theory, **Alexander Schlaich**	IFAR
10.30am	Coffee break	IFAR
11.00am	The price of evolution: how thermodynamics shapes gene regulation, **Michael Hinczewski**	IFAR

11.45am	MD simulations for plasma cancer treatment: a case study with phospholipid membranes, **Maksudbek Yusupov**	
12.30am	Lunch & Networking	IFAR
	Session 6, Chair: Ali Naji	
2.00pm 2.45pm	Selective Growth of Carbon Nanostructures: A Computational Perspective, **Umedjan Khalilov** Cavitation events in soft matter systems, **Matej Kanduc**	IFAR
3.30pm	Coffee Break	IFAR
4.00pm 4.45pm	Do simulations properly forget? **Markus Miettinen** Force field development for polymolecular ions, **Shavkat Mamatkulov**	IFAR
7.00pm	Dinner	

Day 5 | May 1| **Challenges**		
7:20	Departure from Tashkent	
9:30	Arrival to Samarkand	
10:30	Networking	
12:00	Lunch	
14:00	*Panel Discussion:* Challenges in Nonequilibrium Memory Studies	Samarkand University
19:00	Dinner	

Day 6 | May 2| **Summary and Future**		
10:00	*Panel Discussion:* Summary and Future Perspectives	Samarkand University
12:30	Lunch & Networking	
16:00	Departure from Samarkand	
19:00	Dinner	Tashkent

Organizing committee

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