

Workshop on
“Charged Soft Matter: Bridging Theory and Experiment”

September 8 - 12, 2025

organized by

Emanuela Bianchi (TU Vienna), Peter Košován (Charles U, Prague), Christos Likos (U of Vienna), Roman Staňo (U of Vienna)

• **Monday, September 8th, 2025**

12:00 – 14:00 **Registration**

14:00 – 14:15 **Workshop Presentation**

Organization & information for participants

14:15 – 14:45 **Peter Schurtenberger (Lund U)**

Exploring charge effects in soft matter: responsive particles, shape anisotropy and the role of charge patches

Opening Lecture ONLINE via Zoom: Meeting ID: 637 5343 9554, Passcode: 674596

14:45 – 15:15 **Ilja Voets (TU Eindhoven)**

On Complex(ed) Relations: the Power and Peculiarities of Nanoscopic Polyelectrolyte-based Particles

15:15 – 15:45 **Jeetain Mittal (TAMU, College Station)**

From Wiggles to Flow: Multiscale Dynamics of Charged Protein Condensates

15:45 – 17:30 **Welcome Reception**

Drinks & snacks at the venue

• **Tuesday, September 9th, 2025**

09:00 – 09:30 **David Andelman (Tel Aviv U)**

Remembering Rudi Podgornik: Charged liquids, electrified interfaces and more

Session dedicated to Rudolf Podgornik

09:30 – 10:00 **Anže Božič (Jozef Stefan Institute Ljubljana)**

Evolutionary changes in charge on spike protein of SARS-CoV-2

Session dedicated to Rudolf Podgornik

10:00 – 10:30 **Nataša Adžić (IPB, Belgrade)**

Field-theoretic approach to charged Janus colloids beyond mean field

Session dedicated to Rudolf Podgornik

10:30 – 11:00 **Coffee Break**

11:00 – 11:30 **Andreas Walther (U Mainz)**

Phase Separation of DNA: From Fundamentals to Artificial Cells

11:30 – 12:00 **Ronald Larson (U of Michigan, Ann Arbor)**

pH and Salt-Dependent Charging and Coacervation of Weak Polyelectrolytes: Hydrophobic Effects

12:00 – 12:30 **Stefanie Schneider (RWTH Aachen)**

Monte Carlo Simulations of pH-sensitive polyelectrolyte microgels

12:30 – 14:00 **Lunch Break**

14:00 – 14:30 **Matthias Ballauff (FU Berlin)**

Driving Forces in the Formation of Biocondensates of Highly Charged Proteins

14:30 – 15:00 **Hannes Ausserwöger (U of Cambridge)**

Biomolecular condensates sustain pH gradients at equilibrium through charge neutralisation

15:00 – 15:30 **Coffee Break**

15:30 – 16:00 **Jeffrey Everts (U Warsaw)**

The interplay between electric double layers and nematic order

16:00 – 16:30 **Vitja Beltram (Jozef Stefan Institute, Ljubljana)**

Charged Active Nematics

• **Wednesday, September 10th, 2025**

09:00 – 09:30 **Ahmad Reza Motezakker (KTH, Stockholm)**

Simulation of Structure and Mechanics in Electrostatic Hybrid Networks

09:30 – 10:00 **Tomáš Sedláčik (UCT Prague)**

Charge in Double-Network Hydrogels: A Key to Understanding Toughening Synergy?

10:00 – 10:30 **Dikla Kolan (Haifa U)**

Propagation of a chemo-mechanical phase boundary in polyacrylate gels

10:30 – 11:00 **Coffee Break**

11:00 – 11:30 **Stefano Sacanna (NYU, New York)**

Harnessing Coulombic Forces to guide Colloidal Self-assembly

11:30 – 12:00 **Peter D J van Oostrum (BOKU Vienna)**

Harnessing the Triboelectric Effect for Patchy Particles Synthesis: Properties and Self-Assembly

12:00 – 12:30 **Jan Dhont (FZ Jülich)**

Temperature Induced Migration of Interacting Charged Colloidal Particles

12:30 – 12:35 **Workshop Photo**

Strudlhofstiege outside of the building

12:35 – 14:00 **Lunch Break**

14:00 – 14:30 **Ulrich Scheler (IPF Dresden)**

Counterion condensation, effective charge and ligand binding on macromolecules studied by PFG NMR

14:30 – 15:00 **Iris Smokers (Radboud U)**

Selective ion binding and uptake shape the microenvironment of biomolecular condensates

15:00 – 15:30 **Friederike Schmid (U Mainz)**

Using simulations to understand the role of charge interactions in drug delivery systems

15:30 – 17:30 **Poster Session**

Drinks & snacks at the venue

• **Thursday, September 11th, 2025**

09:00 – 09:30 **Daniele Parisi (U Groningen)**

Asymmetry in Biopolymer Complex Coacervates: Decoding the Interplay of Molecular Weight, Flexibility, and Ionic Strength

09:30 – 10:00 **Aida Naghilou (Med U Vienna)**

Scanning probe microscopy for elucidating the rheological properties of biomolecular condensates during gelation and rejuvenation

10:00 – 10:30 **Mehdi Vahdati (U of Strasbourg)**

Unifying the dynamics of viscoelastic liquids across the complex coacervation phase diagram: time-polyelectrolyte-salt superposition

10:30 – 11:00 **Coffee Break**

11:00 – 11:30 **Fabrizio Camerin (Lund U)**

A Colloidal Framework for Decoding Charge Heterogeneity in Antibody Solutions

11:30 – 12:00 **Sebastian Pineda Pineda (Charles U, Prague)**

Patchy charge distribution affects the pH in protein solutions during dialysis.

12:00 – 12:30 **Mikael Lund (Lund U)**

Anisotropic Interactions and Intermolecular Pose Exploration using Subdivided Spheres

12:30 – 14:00 **Lunch Break**

14:00 – 14:30 **Christos Likos (U of Vienna)**

Polymer topology and charged soft matter: a tale of rings

14:30 – 15:00 **Franco Ferrari (U Szczecin)**

Some nontrivial thermodynamic properties of polymer catenanes and chainmails in a salt solution

15:00 – 15:30 **Coffee Break**

15:30 – 16:00 **Igor Lacík (SAS, Bratislava)**

Propagation rate coefficient in radical polymerization for charged monomers polymerized in aqueous solutions

16:00 – 16:30 **Morine Nader (U of Maryland)**

Electroadhesion: Reversibly Adhering Hydrogels to Tissues Using Electric Fields

18:30 – 21:30 **Social Dinner**

Heuriger (Austrian wine tavern)

• **Friday, September 12th, 2025**

09:00 – 09:30 **Marketa Schmidt Cernohorska (UJEP, Usti nad Labem)**

Biomechanical resilience in centrosome kinetics

09:30 – 10:00 **Adam Harmat (Aalto U)**

Toward phase" diagrams in multidomain protein solutions in vitro

10:00 – 10:30 **Valerio Sorichetti (ISTA, Klosterneuburg)**

Charged for attraction: How biomolecular condensates pull chromosomes together

10:30 – 11:00 **Coffee Break**

11:00 – 11:30 **Cristian Micheletti (SISSA, Trieste)**

Nanopore translocation of entangled DNA and RNA filaments

11:30 – 12:00 **Juan Elezgaray (CNRS, U of Bordeaux)**

DNA origamis: their folding process and their interactions with lipid membranes

12:00 – 12:30 **Jennifer Tersteegen (Aalto U)**

Diverse non-equilibrium behavior of protein condensates in electric fields

12:30 – 12:45 **Concluding Remarks**

All talks take place at ESI Boltzmann Lecture Hall!