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Biological and Pharmaceutical Complex Fluids III:  
Protein Self-Assembly, Rheology and Interfacial  
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7-14-2019

# Conference Program

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### Recommended Citation

Samiul Amin, Paolo Arosio, and Miguel Rodrigues, "Conference Program" in "Biological and Pharmaceutical Complex Fluids III: Protein Self-Assembly, Rheology and Interfacial Properties", Samiul Amin, Manhattan College, USA Miguel Rodrigues, University of Lisbon, Portugal Paolo Arosio, ETHZ, Switzerland Eds, ECI Symposium Series, (2019). [https://dc.engconfintl.org/bpcf\\_iii/34](https://dc.engconfintl.org/bpcf_iii/34)

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*Program*

# **Biological and Pharmaceutical Complex Fluids III: Protein Self-Assembly, Rheology and Interfacial Properties**

July 14-18, 2019

Schloss Hernstein  
Hernstein, Austria

Conference Chairs

Samiul Amin, Manhattan College, USA  
Paolo Arosio, ETHZ, Switzerland  
Miguel Rodrigues, University of Lisbon, Portugal



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**Previous conference in this series**

***Biological & Pharmaceutical Complex Fluids:  
New Trends in Characterizing Microstructure, Interactions & Properties***  
July 30 - Aug 3, 2012  
Tomar, Portugal

*Conference Chairs:*  
Samiul Amin, Yet2.com Europe Ltd.  
Michael Solomon, University of Michigan, USA

***Biological and Pharmaceutical Complex Fluids II: Novel Trends in Characterizing  
Interactions, Microstructure and Rheology***  
August 10-14, 2014  
Durham, North Carolina, USA

*Conference Chairs:*  
Samiul Amin, Malvern Instruments, USA,  
Tapan Das, Bristol Meyers Squibb, USA

## **Sunday, July 14, 2019**

- 16:30 - 17:30 Conference check-in
- 17:30 - 19:00 Reception and Wine Tasting in the historic castle
- 19:00 - 20:30 Dinner

### **Room locations and notes**

- Technical sessions will be in the Studio.
- Meals will be in the Panorama Restaurant.
- Social Hours will be in the bar behind the Panorama Restaurant.
- Audio, still photo and video recording by any device (e.g., cameras, cell phones, laptops, PDAs, watches) is strictly prohibited during the technical sessions, unless the author and ECI have granted prior permission.
- Speakers – Please have your presentation loaded onto the conference computer prior to the session start (preferably the day before).
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- Emergency Contact Information: Because of privacy concerns, ECI does not collect or maintain emergency contact information for conference participants. If you would like to have this information available in case of emergency, please use the reverse side of your name badge.

## **Monday, July 15, 2019**

- 07:30 - 08:45 Breakfast buffet
- 08:45 - 09:00 Welcome from Conference Chairs  
Paolo Arosio, Miguel Rodrigues
- 09:00 - 10:30 **Session 1: Protein-Protein Interactions**  
**Chair: Robin Curtis**
- 09:00 - 09:30 Marco van de Weert, University of Copenhagen, Denmark  
*The challenge of formulating high concentration therapeutic peptides*
- 09:30 - 10:00 Frank Schreiber, University of Tübingen, Germany  
*Tuning protein behavior by multivalent charges: Aggregation, diffusion, and adsorption*
- 10:00 - 10:30 Olga Matsarskaia, University of Tübingen, Germany  
*Ion-specific effects for tuning the phase behavior of protein solutions*
- 10:30 - 11:00 Coffee break
- 11:00 - 12:30 **Session 2: Protein Aggregation: Thermodynamics, Kinetics & Interactions**  
**Chair: Miguel Rodrigues**
- 11:00 - 11:30 Peter Schurtenberger, Lund University, Sweden  
*A colloid approach to self-assembling antibodies*
- 11:30 - 12:00 Komla AKO, LRP, France  
*Concept on self-assembly and structure of globular protein fluids*
- 12:00 - 12:30 Anna Stradner, Lund University, Sweden  
*Arrest transitions in protein solutions – insight from combining scattering, microrheology, and computer simulations*
- 13:00 - 14:30 Lunch
- 14:30 - 15:30 Optional tour of historic areas of Schloss Hernstein (led by Director Jan Soucek)
- 14:30 - 16:30 Networking / free time / *ad hoc* sessions
- 16:30 - 17:00 Afternoon coffee break
- 17:00 - 18:30 **Session 3: Protein Aggregation: Thermodynamics, Kinetics & Interactions**  
**Chair: Paolo Arosio**
- 17:00 - 17:30 Jingtao Zhang, Merck & Co. Inc., USA  
*Aggregation challenges in the formulation development of multi-dose peptide products*
- 17:30 - 18:00 Vito Foderà, University of Copenhagen, Denmark  
*Linking protein-protein interactions to the diversity of amyloid-like aggregates*
- 18:00 - 18:30 Richard Melien, Martin-Luther-Universität Halle-Wittenberg  
*Activation energies define kinetic (in)stabilities of therapeutic antibodies*
- 18:30 - 19:00 Free time
- 19:00 - 21:30 Dinner followed by Social Hour



## **Tuesday, July 16, 2019**

07:30 - 08:30 Breakfast buffet

### **Session 4: Protein Novel Applications**

**Chair: Deniz Gunes**

08:30 - 09:00 Cait MacPhee, University of Edinburgh, UK  
*Bacterial surface layer proteins: a new class of 'smart' switchable surface-active proteins*

09:00 - 09:30 Elke Scholten, Wageningen University, Netherlands  
*Protein aggregates as building blocks for oil structuring*

09:30 - 10:00 Nikolai Denkov, Sofia University, Bulgaria  
*Protein-stabilized emulsions and nanoemulsions*

10:00 - 10:30 Clément de Loubens, CNRS, France  
*Interfacial rheology of microcapsules and dynamics in flow*

10:30 - 11:00 Coffee break

### **Session 5: Novel Characterization**

**Chair: Robin Curtis**

11:00 - 11:30 Paolo Arosio, ETHZ, Switzerland  
*Microfluidic and nanotechnology based assays for the development of safe biopharmaceuticals*

11:30 - 12:00 Hristo Svilenov, LMU München, Germany  
*Biophysical characterization approaches to aid the selection of protein formulations by predicting their physical stability during long-term storage*

12:00 - 12:30 Sarah Hedberg, Imperial College London, UK  
*Predicting the stability of biotherapeutics in formulation*

12:30 - 13:00 Luke Clifton, Rutherford Appleton Laboratory, UK  
*Neutron scattering: A versatile tool for probing complex solutions and surfaces*

13:00 - 14:30 Lunch

14:30 - 16:30 Tour of Pecher (resin) Museum in Hernstein – recognized by UNESCO as an “intangible cultural heritage” (short walk to the museum; tour in English)

16:30 - 17:00 Afternoon coffee break

### **Session 6: Novel Characterization**

**Chair: Peter Schurtenburger**

17:00 - 17:30 Hanna Jankevics, Malvern Panalytical Ltd, UK  
*Key stability attributes used from target protein development to process optimization*

17:30 - 18:00 Jeffrey Bodycomb, Horiba, USA  
*Multi-laser nanoparticle tracking analysis (NTA): Evaluating protein aggregation*

18:00 - 18:30 Lorenzo Gentiluomo, Wyatt Technology Europe, Germany  
*The development of therapeutic proteins can be hindered by poor decision-making strategies in the early stage*

**Tuesday, July 16, 2018 (continued)**

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|---------------|---|
| 18:30 - 19:00 | Dilip Sethi, Imperial College London, UK<br><i>A novel technique to characterize the surface hydrophobicity of proteins using inverse liquid chromatography</i> |
| 19:00 - 21:30 | Dinner followed by Social Hour  |

**Wednesday, July 17, 2019**

07:30 - 09:00 Breakfast buffet

09:00 - 10:30 **Session 7: Protein Rheology and Microrheology in Bulk**  
**Chair: Anna Stradner**

09:00 - 09:30 Daniel Molnar, Boehringer Ingelheim, Germany  
*Possible obstacles and pitfalls during biopharmaceutical processing of high concentration liquid formulations (HCLF)*

09:30 - 10:00 Christoph Grapentin, Lonza, Switzerland  
*Predicting viscosity of high concentration Mab formulations based on data from high throughput characterization methods*

10:00 - 10:30 Josef Hartl, Boehringer Ingelheim, Germany  
*Multiple interactions and complex viscosity: The impact of frequency rheology for the development of high concentration protein formulations*

10:30 - 11:00 Coffee break

11:00 - 12:30 **Session 8: Protein Structuring and Rheology at Interfaces**  
**Chair: Paolo Arosio**

11:00 - 11:30 Inas Elbially, LMU Muenchen, Germany  
*Compression and protein-protein interactions as triggers for aggregation of monoclonal antibodies at interfaces*

11:30 - 12:00 Ian Shieh, Genentech, USA  
*Predicting, characterizing, and controlling interfacial antibody adsorption and aggregation*

12:00 - 12:30 Joel Kaar, University of Colorado, USA  
*Understanding the stabilization of proteins in heterogeneous surface environments*

12:30 - 14:30 Lunch

14:30 - 16:30 Networking / free time / *ad hoc* sessions

16:30 - 17:00 Afternoon coffee break

17:00 - 19:00 **Session 9: Processing Impacts and Characterization**  
**Chair: Michael Marlow**

17:00 - 17:30 Karoline Bechtold-Peters, Novartis, Switzerland  
*Insights into freeze-thaw processes for therapeutic protein formulations*

17:30 - 18:00 Miguel Rodrigues, University of Lisbon, Portugal  
*A perspective on cold processing of proteins.*

18:00 - 18:30 Vitor Geraldes, University of Lisbon, Portugal  
*Implications of porous-flow in the design of freeze-thaw systems for biopharmaceuticals and rational scale-down methodology*

18:30 - 19:00 Eduardo Melo, University of Algarve, Portugal  
*Stability of protein formulations at sub-zero temperatures by isochoric cooling*

19:00 - 21:00 Conference Banquet followed by Social Hour

**Thursday, July 18, 2019**

07:30 - 09:00	Breakfast buffet
09:00 - 11:00	<b><u>Session 10: Protein Aggregation, Interaction with Surfactants &amp; Bionanotechnology</u></b> <b>Chair: Jintao Zheng</b>
09:00 - 09:30	Hannah Kientz, Hoffmann-La Roche, Switzerland <i>Evaluation of alternative surfactants as stabilizers for therapeutical protein formulations</i>
09:30 - 10:00	Mridul Sarker, Nanyang Technological University, Singapore <i>Structural integrity of protein nanocage at liquid-liquid Interface</i>
10:00 – 10:30	General Discussion
10:30 - 11:30	Coffee break
11:30 – 12:00	Conference wrap-up and future plans
12:00 - 13:30	Lunch (Note: Boxed lunches will be available by prior request on sign-up list)
13:30	Departures