

Program

**Biological & Pharmaceutical Complex Fluids:
*New Trends in Characterizing Microstructure,
Interactions & Properties***

July 30 - Aug 3, 2012

**Hotel dos Templarios
Tomar, Portugal**

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Monday July 30, 2012

15:00 – 17:00 Registration

17:20 – *Welcome and Introductory Remarks*
Mike Solomon (Conference Co-Chair)
Herman Bieber (ECI Technical Liaison)

Engineering microstructure, interaction & properties

Chair: Christoph Schmidt, Georg-August-Universität

17:30 – 18:00 *Control of biopolymer network elasticity through architecture and molecular-motor activity*
Fred MacKintosh, VU University, Netherlands

18:00 – 18:30 *Two- and three-dimensional lattice models for fiber networks with maximum coordination of four.*
Tom Lubensky, University of Pennsylvania, USA

18:30 – 19:00 *Mechanical and material properties of Staphylococcus epidermidis biofilms*
Michael Solomon, University of Michigan, USA

19:00 – 19:30 *Depletion interactions in mixtures of microgels*
Marc Obiols-Rabasa, Lund University, Sweden

19:30 – 21:00 Dinner

21:00 – 22:00 Social hour

NOTES

- Audiotaping, videotaping and photography of presentations are strictly prohibited.
- Speakers – Please leave at least 5 minutes for questions and discussion. Be available for discussion during meals and social periods.
- Please do not smoke at any conference functions.
- Turn your cellular telephones to vibrate or off during technical sessions.
- Sign up for the optional guided Tour of Convento de Cristo at the ECI desk.
- Be sure to check your contact information on the Participant List in this program and make any corrections to your name/contact information online. A corrected copy will be sent to all participants after the conference.

Tuesday July 31, 2012

07:30 – 08:30 Breakfast

Protein based formulations: Industrial challenges

Chair: Christopher Roberts, University of Delaware

09:00 – 09:30 *Mechanism of aggregation of therapeutic proteins*
Satish K Mallya, Bristol-Meyers Squibb, USA

09:30 – 10:00 *Aggregation stability of a monoclonal antibody during downstream processing*
Paolo Arosio, ETHZ, Switzerland

10:00 – 10:30 *Emerging techniques for detection of protein aggregates and sub-micron particulates*
Tapan Das, Pfizer, USA

10:30 – 11:00 Coffee/Tea Break

Protein aggregation: New insights

Chair: Tapan Das, Pfizer

11:00 – 11:30 *Therapeutic protein stability and colloidal interactions from “Low” to “High” concentrations*
Christopher J Roberts, University of Delaware, USA

11:30 – 12:00 *Protein interactions, stability and phase behavior – insight from neutron and x-ray scattering experiments*
Peter Schurtenberger, Lund University, Sweden

12:00 – 12:30 *Instability of protein solutions: formation of amorphous clusters and protein polymers*
Vincenzo Martorana, Institute of Biophysics, National Research Council of Italy, Italy

12:30 – 13:00 *Understanding protein and peptide aggregation for regenerative medicine applications*
Aline Miller, University of Manchester, UK

13:00 – 14:00 Lunch

14:00 – 16:30 *ad hoc* discussions/free time

16:30 – 17:00 Afternoon Coffee/Tea

Protein aggregation: Emerging characterization techniques

Chair: Michael Solomon, University of Michigan

17:00 – 17:30 *Rapid characterization of formulations for protein size, charge, aggregate levels and viscosity using UV imaging of pressure and voltage driven flow in a capillary*
David Goodall, Paraytec Ltd, U.K

17:30 – 18:00 *Rheology and interfacial rheology of proteins and emulsions*
Steven D Hudson, NIST, USA

Tuesday July 31, 2012 (continued)

- 18:00 – 18:30 *Application of interfacial microrheology to protein layer formation*
Robert Leheny, Johns Hopkins University, USA
- 18:30 – 19:00 *Real-time optical micro-rheology*
Aristide Dogariu, University of Central Florida, USA
- 19:00 – 19:30 *Rheological characterisation of protein solutions using rheo-chip technology*
Xue-Feng, University of Manchester, UK
- 19:30 – 21:00 Dinner
- 21:00 – 22:00 Social hour

Wednesday August 1, 2012

07:30 – 08:30 Breakfast

Cellular biophysics and multicellular dynamics I

Chair: Sibani Lisa Biswal, William Marsh Rice University

09:00 – 09:30 *Diagnostic substrates for biophysical manipulation of stem cell fate and cell-based microfluidic platforms for small molecule screening, stem cell expansion and controlled tissue genesis*
Justin Cooper White, University of Queensland, Australia

09:30 – 10:00 *Measuring the viscous and elastic properties of single cells using video particle tracking microrheology.*
Manlio Tassieri, University of Glasgow, UK

10:00 – 10:30 *Measuring physical properties of single cells*
Scott Manalis, MIT, USA

10:30 – 11:00 Coffee/Tea Break

Cellular biophysics and multicellular dynamics II

Chair: Peter Olmsted, University of Leeds

11:00 – 11:30 *Foundation principles of interactions of nanoparticles with cells and biological barriers (including the blood brain barrier)*
Kenneth Dawson, University College Dublin, Ireland

11:30 – 12:00 *Controlling cell endocytosis at the nanoscale*
Giuseppe Battaglia, University of Sheffield, U.K

12:00 – 12:30 *Origin of intracellular activity and mechanics of living breast-cancer cells with varying aggressiveness*
Daphne Weihs, Technion-Israel Institute of Technology, Israel

12:30 – 13:00 *Non-Gauss athermal fluctuations in active cytoskeletons*
Daisuke Mizuno, Kyushu University, Japan

13:00 – 14:00 Lunch

13:30 – 17:00 Free Time or optional guided tour of Convento de Cristo

19:30 – 21:00 Dinner

21:00 – 22:00 Social hour

Thursday August 2, 2012

07:30 – 08:30 Breakfast

Biological membranes and bilayers

Chair: Peter Schurtenberger, Lund University

09:00 – 09:30 *Morphology, structure, and properties of stratum corneum membranes*
Peter Olmsted, University of Leeds, UK

09:30 – 10:00 *Studying supported lipid bilayer dynamics using microcantilevers*
Sibani Lisa Biswal, William Marsh Rice University, USA

10:00 – 10:30 *Mesosopic mechanical properties of bilayers systems*
Yasuyuki Kimura, Kyushu University, Japan

10:30 – 11:00 Coffee/Tea Break

Emerging techniques for biological complex fluids I

Chair: Eric Furst, University of Delaware

11:00 – 11:30 *Rapid high resolution imaging of diffusive properties in turbid media*
Frank Scheffold, University of Fribourg, Switzerland

11:30 – 12:30 Discussion

12:30 – 13:30 Lunch

Emerging techniques for biological complex fluids II

Chair: Frank Scheffold, University of Fribourg

17:00 – 17:30 *Microrheology and stability of complex fluids via dynamic and static multiple light scattering*
Mathias Fleury, Formulation, France

17:30 – 18:00 *High-throughput viscosity measurements using microfluidics-based microrheology*
Eric Furst, University of Delaware, USA

18:00 – 18:30 *Microrheological characterization of solvent-responsive biological macromolecules*
Victor Breedveld, Georgia Institute of Technology, USA

18:30 – 19:00 *Apparent bulk yield stress, interfacial creep ringing and interfacial viscosity of globular protein-surfactant mixtures*
Gareth Mckinley, MIT, USA

19:00 – 19:30 *Microrheology of surfactant interfaces*
Todd Squires, University of California Santa Barbara, USA

19:30 – 21:00 Dinner

21:00 – 22:00 Social hour

Friday August 3, 2012

07:30 – 08:30 Breakfast

Emerging techniques for biological complex fluids III

Chair: Xue-Feng Yuan, University of Manchester

09:00 – 09:30 *High-bandwidth microrheology with equilibrium and non-equilibrium materials*
Christoph Schmidt, Georg-August-Universität, Germany

09:30 – 10:00 *Passive optical measurements of local viscoelastic properties pluronic systems*
Kyle Douglass, University of Central Florida, USA

10:00 – 10:10 Closing Remarks-Co-Chair

12:00 – Lunch

13:00 – Conference Close and Departure