

*Program*

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

**July 30 - Aug 3, 2012**

**Hotel dos Templarios**

**Tomar, Portugal**

**Conference Chair**

**Samiul Amin**

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**Conference Co - Chair**

**Michael Solomon**

University of Michigan



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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-hemorheology*  
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 *Bringing Fluids to Life*  
Jon Cooper, University of Glasgow, U.K

11:30 – 12:00 *Rapid high resolution imaging of diffusive properties in turbid media*  
Frank Scheffold, University of Fribourg, Switzerland

12:00 – 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 *Measuring the interfacial viscoelasticity, yielding and power-law rheology of globular protein-surfactant systems*  
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