

Workshop on biomaterials and their interactions with biological and model membranes 2014

1-3 June 2014

<http://meeting.softmat.net/>



Hotel Magnolia****, Salou, Spain

Workshop on biomaterials and their interactions with biological and model membranes 2014 will be held at the hotel Magnolia****, Salou, Spain, 1-3 June 2014. The meeting is organized within the scope of EU funded Marie Curie [Initial Training Network Smart Nano-objects for Alteration of Lipid bilayers \(SNAL\)](#).

First day (**31 May**) of the meeting is reserved for management kick-off meeting for participants of the project. **1-3 June** is a regular scientific workshop open to everybody.

The general topic of the meeting is the interaction of synthetic polymers, nanoparticles, surfactants, proteins, small biomolecules with biological and model phospholipid membranes. Leading scientists and experts from biology, chemistry, physics, engineering and industry will participate in the meeting to give it a true multidisciplinary environment.

The meeting is planned in form of oral talks, posters and discussion panels, where experts from different fields can share their knowledge interactively.



Conference topics

- ✓ Phospholipid bilayer theory and computer modelling
- ✓ Synthetic polymers for cross-membrane delivery
- ✓ Supported lipid bilayers and Langmuir monolayers
- ✓ Bioinspired Polymers, Bioengineering and Biotechnology
- ✓ Lipid vesicles
- ✓ Phase separated bilayer domains
- ✓ Drug delivery systems
- ✓ Nanotoxicology
- ✓ Biostabilisation and cell preservation
- ✓ Regenerative medicine

Support from Marie Curie Actions FP7 People program:



Soft Matter and biophysics groups:

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Departament d'Enginyeria Quimica

Universitat Rovira I Virgili:



Workshop Program

1-3 June 2014, Hotel Magnolia, Salou

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1 June

time	
08:30	Registration
Drug delivery to living cells and nanotoxicology	
09:00	Nigel Slater (Cambridge University, Cambridge, UK) TBA
09:30	Charles James Kirkpatrick (University Medical Center Mainz, Mainz, Germany): <i>Functional co-culture models to study nanoparticle-cell interactions</i>
10:00	Shahram Ghanaati (Goethe University Frankfurt, Frankfurt, Germany): <i>Nano-composites in human cells "disease-in-a-dish" models</i>
10:30	Ruth Craven (University of Leeds, Leeds, UK): <i>Interactions of the plasma cell membrane with wear particles generated from artificial hip replacements</i>
11:00	Coffee break
Interaction of living cells with nanostructures	
11:30	Elena Ivanova (Swinburne Univerisity of Technology, Melbourne, Australia): <i>Dragonfly wing nanomorphology: mechanobiocidal activity versus antibiofouling</i>
12:00	David Mainwaring (Swinburne Univerisity of Technology, Melbourne, Australia): <i>Spontaneous stress-induced erythrocyte deformation and lysis through nanopillar substrate topology</i>
12:30	Hayden Webb (Swinburne Univerisity of Technology, Melbourne, Australia): <i>Bactericidal activity of three-dimensional fatty acid crystals</i>
13:00	Group photo Magnolia hotel hall
13:10	Lunch Magnolia hotel
Model lipid bilayers and biomolecules	
15:00	John Seddon (Imperial College London, London, UK): TBA
15:30	Jian R. Lu (University of Manchester, Manchester, UK): <i>Membrane selective responses of small designed peptides</i>
16:00	Fang Pan (University of Manchester, Manchester, UK): <i>Stable aqueous solutions of keratin polypeptides: their properties in solution and at interfaces</i>
16:30	André Schröder (Institut Charles Sadron, Strasbourg, France): <i>Membrane bio-adhesion on double-end grafted DNAs</i>

17:00	Coffee break
17:30	Tseden Taddese (<i>University of Manchester, Manchester, UK</i>): <i>Phase diagram of Pluronics monolayer</i>
18:00	Domenico Lombardo (<i>Consiglio Nazionale Ricerche - Istituto Processi Chimico-Fisici, Messina, Italy</i>): <i>Structure and Interaction of PAMAM Dendrimers and Model Lipid Membranes</i>
18:30	Discussion
19:00	Dinner Hotel Magnolia

2 June

time

Permeability and translocation through lipid bilayers

09:00	Jens-Uwe Sommer (<i>Leibniz-Institut für Polymerforschung Dresden and Technische Universität Dresden, Germany</i>): <i>Passive transport of polymers through model lipid bilayer membranes: From polymer physics to biological systems</i>
09:30	Marco Werner (<i>Leibniz-Institut für Polymerforschung Dresden and Technische Universität Dresden, Germany</i>): <i>Translocation of amphiphilic polymers through lipid bilayer membranes - balanced hydrophobicity versus polarization</i>
10:00	Paraskevi Gkeka (<i>Biomedical Research Foundation, Academy of Athens, Greece</i>): <i>Partition of anionic nanoparticles in cholesterol-containing membranes occurs via a local lipid phase transition</i>
10:30	Selina Nawaz (<i>University of Manchester, Manchester UK</i>): <i>Interactions of Antimicrobial Polyelectrolytes with Bacterial Model Membranes</i>
11:00	Coffee break
12:00	Jehangir Cama (<i>University of Cambridge, Cambridge, UK</i>): <i>The Label-Free Quantification of Drug Permeability Coefficients across Lipid Bilayers</i>
12:30	Pierre Muller (<i>Institut Charles Sadron, Strasbourg, France</i>): <i>Interactions of elastin-like polypeptides with lipid membranes</i>
13:00	Lunch Magnolia hotel

Applications of lipid systems

15:00	Isobel Cook (<i>Biopharma, Winchester, UK</i>): <i>TBA</i>
15:30	Ian Tucker (<i>Unilever, Port Sunlight, UK</i>): <i>Membrane selective responses of small designed peptides</i>

Theory and computer modelling of lipid systems

16:00 **Thorsten Auth** (Forschungszentrum Jülich, Jülich, Germany):
Size, shape, and orientation matter for nanoparticle uptake by wrapping

16:30 **Luca Monticelli** (University Claude Bernard Lyon 1, Lyon France):
Polystyrene Nanoparticles Perturb Lipid Membranes

17:00 *Coffee break*

17:30 **Paola Carbone** (University of Manchester, Manchester UK):
Predicting the stability of macromolecules at liquid/liquid interface

18:30 *Event*

3 June

time

Supported lipid bilayers and Langmuir monolayers

09:00 **Thierry Charitat** (Institut Charles Sadron, Strasbourg, France):
Supported lipid bilayer destabilization by an electric field

09:30 **Tatiana Schmatko** (Institut Charles Sadron, Strasbourg, France):
Charged membranes and their influence on conformations of supercoiled DNA

10:00 **Tingting Bai** (Southeast University, Nanjing, China):
AFM Investigation of Hydrophobic gold nanoparticles Interaction with DPPC monolayers

Theory and computer modelling of lipid systems

10:30 **Klemen Bohinc** (University of Ljubljana, Ljubljana, Slovenia):
Analytic model for the dipole potential of a lipid layer

11:00 *Coffee break*

12:00 **Alexandru Botan** (Université Lyon 1, Lyon, France):
Lipid bilayer membranes under shear flow from molecular simulations

12:30 **Pierre Ayoub** (Institut Charles Sadron, Strasbourg, France):
Excimer formation dynamics in lipid bilayers

13:00 *Lunch*
Magnolia hotel

15:00 **Xubo Lin** (Southeast University, Nanjing, China):
Probe Interactions between Nanoparticles and Lipid Monolayer using Molecular Dynamics Simulations

Lipid vesicles and artificial membranes

15:30 **Carlos Marques** (Institut Charles Sadron, Strasbourg, France):
Transformation of lipid bilayers under photo-induced oxidation: bumper or crackerjack?

16:00 **Kerstin Göpfrich** (University of Cambridge, Cambridge UK):
Artificial DNA membrane pores

16:30 **Jean-Baptiste Fleury** (Saarland University, Saarbrücken, Germany):
Microfluidic Platform to Study Membrane Fusion

17:00 | **Mériem er-Rafik** (*Institut Charles Sadron, Strasbourg, France*):

TBA

17:30 | **Closing**

18:00 | **Coffee Break/Discussion**

20:00 | **Dinner**