

# Programme

## Faraday Discussion 161: Lipids & Membrane Biophysics 11 – 13 September, 2012 London, UK

### Tuesday 11 September

12:50	<b>Welcome and Introduction</b> Professor John M. Seddon, <i>Imperial College London, UK</i> Professor Calum Drummond, <i>CSIRO, Melbourne, Australia</i>
13:00 <b>Paper 1</b>	<b>Introductory Lecture:</b> John Nagle <i>Carnegie Mellon University, USA</i>
<b>Session 1</b>	<b>Novel Structural, Spectroscopic, and Imaging Techniques</b> Session Chair: Professor Colin Bain, Durham University
14:00 <b>Paper 2</b>	<b>Switchable domain partitioning and diffusion of DNA origami rods on membranes</b> Aleksander Czogalla, Eugene P. Petrov, Dominik J. Kauert, Veselina Uzunova, Yixin Zhang, Ralf Seidel and Petra Schwille* <i>Biotechnologisches Zentrum der TU Dresden, Germany</i>
14:05 <b>Paper 3</b>	<b>Lipid translocation and compositional asymmetry: A new perspective provided by sum-frequency vibrational spectroscopy</b> Jin liu, Krystal L. Brown and John C Conboy* <i>University of Utah, USA</i>
15:00	Afternoon Tea
15:30 <b>Paper 4</b>	<b>Computer simulations of phase separation in model membranes</b> Svetlana Baoukina*, Eduardo Mendez-Villuendas, W F Drew Bennett and D Peter Tieleman <i>University of Calgary, Canada</i>
15:35 <b>Paper 5</b>	<b>Observing lipid-protein interactions and membrane nanodomains with far-field fluorescence STED spectroscopy</b> Alf Honigmann*, Veronika Mueller, Stefan W Hell and Christian Eggeling <i>Max Planck Institute for Biophysical Chemistry, Germany</i>
15:40 <b>Paper 6</b>	<b>Dynamic phase behaviour in supported bilayers</b> Simon D Connell* and Peter D Olmsted <i>University of Leeds, UK</i>
17:00	Close of Sessions
17:00 – 18:30	Poster Session and Wine Reception <i>Sponsored by The Commonwealth Scientific and Industrial Research Organisation (CSIRO)</i>
	Free evening

## Wednesday 12 September

<b>Session 2</b>	<b>Lipid Self-assembly, Structure, Ordering and Dynamics</b> Session Chair: Professor John M Seddon, Imperial College London
09:00 <b>Paper 7</b>	<b>Lipid phase behavior under steady state conditions</b> Christoffer Aberg, Emma Sparr and Hakan Wennerström* <i>University of Lund, Sweden</i>
09:05 <b>Paper 8</b>	<b>Transient pearling and vesiculation of membrane tubes under osmotic gradients</b> Jeremy Sanborn, Kamila Oglecka, Rachel S. Kraut and Atul N Parikh* <i>University of California, Davis, USA</i>
09:10 <b>Paper 9</b>	<b>Mode specific elastic constants for the gel, liquid-ordered, and liquid-disordered phases of DPPC/DOPC/cholesterol model lipid bilayers</b> Mark J Uline and Igal Szleifer* <i>Northwestern University, USA</i>
10:30	Morning coffee
11:00 <b>Paper 10</b>	<b>Tuning the aggregation behavior of single-chain bolaphospholipids in aqueous suspension: from nanoparticles to nanofibres to lamellar phases</b> Alfred Blume*, Simon Drescher, Annette Meister, Gesche Graf and Bodo Dobner <i>Martin-Luther-Universität Halle-Wittenberg, Germany</i>
11:05 <b>Paper 11</b>	<b>Polycontinuous geometries for inverse surfactant phases with more than two aqueous network domains</b> Gerd E Schröder-Turk*, Liliana de Campo, Myfanwy E. Evans, Matthias Saba, Sebastian Kapfer, Trond Varslot, Karsten Grosse-Brauckmann, Stuart Ramsden and Stephen T Hyde <i>Friedrich Alexander University Erlangen Nuremberg, Germany</i>
11:10 <b>Paper 12</b>	<b>Physical properties of mixed bilayers containing lamellar and nonlamellar lipids: a quantitative description from coarse-grain molecular dynamics simulations</b> Mario Orsi* and Jonathan W Essex <i>University of Southampton, UK</i>
12:30	Lunch  <i>Sponsored by The Commonwealth Scientific and Industrial Research Organisation (CSIRO)</i>

<b>Session 3</b>	<b>Curvature, Shape Changes, Lipid-Protein Coupling, Fusion</b> Session Chair: Professor Ole Mouritsen, University of Southern Denmark
14:00 <b>Paper 13</b>	<b>Membranes under tension</b> Reinhard Lipowsky* <i>MPI of Colloids and Interfaces, Germany</i>
14:05 <b>Paper 14</b>	<b>Formation and analysis of topological domains between lipid membranes tethered by DNA hybrids of different lengths</b> Minsub Chung, Bonjun Koo and Steven G Boxer* <i>Stanford University, USA</i>
14:10 <b>Paper 15</b>	<b>Molecular view on protein sorting into liquid-ordered membrane domains mediated by gangliosides and lipid anchors</b> Djurre H de Jong, Cesar A. Lopez and Siewert J. Marrink* <i>University of Groningen, The Netherlands</i>
15:30	Afternoon Tea
16:00 <b>Paper 16</b>	<b>Gaussian curvature elasticity determined from global shape transformations and local stress distributions: a comparative study using the MARTINI model</b> Mingyang Hu, Djurre de Jong, Siewert J. Marrink and Markus Deserno* <i>Carnegie Mellon University, USA, and University of Groningen, The Netherlands</i>
16:05 <b>Paper 17</b>	<b>Elastic properties of polyunsaturated phosphatidylethanolamines influence rhodopsin function</b> Walter E. Teague Jr., Olivier Soubias, Horia Petrache, Kirk G Hines, R. Peter Rand and Klaus Gawrisch* <i>National Institutes of Health, USA</i>
16:10 <b>Paper 18</b>	<b>Anomalous and normal diffusion of proteins and lipids in crowded lipid membranes</b> Matti Javanainen, Henrik Hammaren, Luca Monticelli, Jae-Hyung Jeon, Markus S. Miettinen, Hector Martinez-Seara, Ralph Metzler, and Ilpo Vattulainen* <i>Tampere University, Finland</i>
17:30	Close of sessions
Time tbc	Pre-Dinner Drink
Time tbc	Conference Dinner

Thursday 13 September

<b>Session 4</b>	<b>Membrane Interactions and Applications</b> Session Chair: Professor Calum Drummond, CSIRO, Australia
09:00 <b>Paper 19</b>	<b>Interactions of Drugs and Amphiphiles with Membranes: Modulation of Lipid Bilayer Elastic Properties by Changes in Acyl Chain Unsaturation and Protonation</b> Michael J. Bruno, Radda Rusinova, Nicholas J. Gleason, Roger E. Koeppe II and Olaf S. Andersen* <i>Cornell University, USA</i>
09:05 <b>Paper 20</b>	<b>Cell cycle dependent changes in membrane stored curvature elastic energy: evidence from lipidomic studies</b> Charlotte V. Hague, Anthony D. Postle, George S. Attard* and Marcus K. Dymond <i>University of Southampton, UK</i>
09:10 <b>Paper 21</b>	<b>Impact of oxidized phospholipids on the structural and dynamics organization of phospholipid membranes: a combined DSC and solid state NMR study</b> Marcus Wallgren, Lenka Beranova, Quoc Dat Pham, Khanh Linh, Martin Lidman, Jan Procek, Konrad Cyprych, Paavo K. J. Kinnunen, Martin Hof and Gerhard Gröbner * <i>Umeå University, Sweden</i>
11:00	Morning Coffee
11:30 <b>Paper 22</b>	<b>Materials characterization of the low temperature sensitive liposome (LTSL): effects of lipid composition (lysolipid and DSPE-PEG2000) on the thermal transition and release of doxorubicin</b> David Needham*, Ji-Young Park, Alexander M. Wright and Jihong Tong <i>Duke University, USA</i>
11:35 <b>Paper 23</b>	<b>Segregated ordered lipid phases and protein-promoted membrane cohesivity are required for pulmonary surfactant films to stabilize and protect the respiratory surface</b> Jorge Bernardino de la Serna, Rodolfo Vargas, Victoria Picardi, Antonio Cruz, Jose M Valpuesta, Leonardo Mateu and Jesús Pérez-Gil* <i>Universidad Complutense, Spain</i>
11:40 <b>Paper 24</b>	<b>Gibbs energy determinants of lipoprotein insertion into lipid membranes: the case study of Ras proteins</b> Katrin Weise, Daniel Huster, Shobhna Kapoor, Gemma Triola, Herbert Waldmann and Roland Winter* <i>TU Dortmund, Germany</i>
13:00 <b>Paper 25</b>	<b>Concluding Remarks Lecture:</b> Evan Evans <i>Boston University, USA</i>
13:30	Acknowledgements
13:35	Close of Meeting