

Faraday Discussion 139: The Importance of Polymer Science for Biological Systems

Programme

Wednesday 26 March

11:30	Registration (Langwith JCR)
12:30	Lunch (Derwent Dining Room)
13:45	Welcome and Introductions: Professors Tony Ryan and Athene Donald (Langwith Lecture Theatre)

Session 1	Cell Interactions Session Chair: Athene Donald, <i>University of Cambridge, UK</i>
14:00 Paper 1	Introductory Lecture L Mahadevan <i>Harvard University, USA</i>
15:00 Paper 2	Phase separation of equilibrium polymers of proteins in living cells Richard P Sear* <i>University of Surrey, UK</i>
Paper 3	Internal friction of polypeptide chains at high stretch B S Khatri, E Paci, I Neelov, N Crampton and T C B McLeish* <i>University of Leeds, UK</i>
16:00	Afternoon Tea (Langwith JCR)
16:30 Paper 4	Quantifying the relation between bond number and myoblast proliferation Tanyarut Boontheekul, Hyun-Joon Kong, Susan X Hsiong, Yen-Chen Huang, L Mahadevan, Herman Vandenburg and David J Mooney* <i>Harvard University, USA</i>
Paper 5	Thermo-reversible protein fibrillar hydrogels as cell scaffolds Hui Yan, Julie E Gough, Alberto Saiani and Aline F Miller* <i>University of Manchester, UK</i>
Paper 6	The polymer physics and chemistry of microbial cell attachment and adhesion Mark Geoghegan*, Johanna Andrews, Catherine A Biggs, Kevin E Eboigbodin, Stephen Rolfe, Julie Scholes, Jesús Ojeda, Maria Romero González, David Brown, Robert Edyvean, Linda Swanson, Rasika Fernando, Yu Pen, Zhenyu Zhang and Steven A Banwart <i>University of Sheffield, UK</i>
18:00	Close of Session
19:00	Dinner (by pre-booked ticket only, Derwent Dining Room)
20:00 – 21:30	Poster/Networking Session and Wine Reception (Langwith JCR)

Thursday 27 March

Session 2	Membranes and Walls Session Chair: Kevin Shakesheff, <i>University of Nottingham, UK</i>
09:00 Paper 7	Leuko-polymersomes Daniel A Hammer*, Gregory R Robbins, John J Lin, Lee A Smith, P Peter Ghoroghchian, Michael J Therien and Frank S Bates <i>University of Pennsylvania, USA</i>
Paper 8	Non-cytotoxic polymer vesicles for rapid and efficient intracellular delivery Giuseppe Battaglia*, Hannah Lomas, Marzia Massignani, Khairuddin A Abdullah, Miriam V Flores Merino, Irene Canton, Sheila MacNeil, Jianzhong Du, Adam Blanz, Jeppe Madsen, Steven P Armes and Andrew L Lewis <i>University of Sheffield, UK</i>
Paper 9	Mixed protein-polysaccharide interfacial layers: A self consistent field calculation study R Ettelaie*, A Akinshina and E Dickinson <i>University of Leeds, UK</i>
10:30	Morning Coffee (Langwith JCR)
11:00 Paper 10	Calcium phosphate mineralization beneath monolayers of poly(n-butyl acrylate)-block-poly(acrylic acid) block copolymers Olivier Casse, Olivier Colombani, Katarzyna Kita-Tokarczyk, Axel H E Müller, Wolfgang Meier* and Andreas Taubert <i>University of Basel, Switzerland</i>
Paper 11	Probing (macro)molecular transport through cell walls G Kilcher, C Duckhama and N Tirelli* <i>University of Manchester, UK</i>
12:00	Close of Session Lunch followed by Posters/Networking Session (Derwent Dining Room and Langwith JCR)

Session 3	Proteins and Polysaccharides Session Chair: Richard Jones, <i>University of Sheffield, UK</i>
14:00 Paper 12	Fibronectin in aging extracellular matrix fibrils is progressively unfolded by cells and elicits an enhanced rigidity response Meher Antia, Gretchen Baneyx, Kristopher E Kubow and Viola Vogel* <i>ETH-Zurich, Switzerland</i>
Paper 13	Correlations between structure, material properties and bioproperties in self-assembled beta-hairpin peptide hydrogels Rohan A Hule*, Radhika P Nagarkar, Boualem Hammouda, Joel P Schneider and Darrin J Pochan <i>University of Delaware, USA</i>
Paper 14	Common motifs in protein self-assembly Mark R H Krebs*, Kristin R Domike, Danielle Cannon and Athene M Donald <i>University of Cambridge, UK</i>
15:30	Afternoon Tea (Langwith JCR)
16:00 Paper 15	Cellulose fibrils direct plant organ movements Peter Fratzl*, Rivka Elbaum and Ingo Burgert <i>Max Planck Institute of Colloids and Interfaces, Golm, Germany</i>
Paper 16	Molecular and crystal deformation of cellulose: uniform strain or uniform stress? K Kong, M A Wilding, R N Ibbett and S J Eichhorn* <i>University of Manchester, UK</i>
Paper 17	Protein crystallization: universal thermodynamic vs. specific effects of PEG F Pullara, A Emanuele*, M B Palma-Vittorelli and M U Palma <i>Università di Palermo, Italy</i>
17:30	Close of Session
19:00	Pre-Dinner Drinks (Langwith JCR)
19:30	Conference Dinner (Derwent Dining Room)

Friday 28 March

Session 4	Natural and Synthetic Polymers Session Chair: Tony Ryan, <i>University of Sheffield, UK</i>
09:00 Paper 18	Incorporating stimulus-responsive character into filamentous virus assemblies Harry Bermudez* and Adam P Hathorne <i>University of Massachusetts, USA</i>
Paper 19	The viscoelasticity of self-assembled proteoglycan combs A Papagiannopoulos, T E Hardingham and T A Waigh* <i>University of Manchester, UK</i>
Paper 20	Synthesis of well-defined glycopolymers and some studies of their aqueous solution behaviour N R Cameron*, S G Spain, J A Kingham, S Weck, L Albertin, C A Barker, G Battaglia, T Smart and A Blanz <i>Durham University, UK</i>
10:30	Morning Coffee (Langwith JCR)
11:00 Paper 21	Spontaneous flow of active polar gels in undulated channels A Zumdieck, R Voituriez, J Prosta and Jean-François Joanny* <i>Institut Curie, Paris, France</i>
Paper 22	Effect of confinement on properties of stiff biological macromolecules Peter Cifra*, Zuzana Benková and Tomáš Bleha <i>Slovak Academy of Sciences, Slovakia</i>
Paper 23	Marine biopolymer self-assembly: implications for carbon cycling in the ocean Pedro Verdugo*, Monica V Orellana, Wei-Chun Chin, Timothy W Petersen, Ger van den Eng, Ronald Benner and John I Hedges <i>University of Washington Friday Harbor Laboratories, USA</i>
12:00 Paper 24	Concluding Remarks David Tirrell <i>California Institute of Technology, USA</i>
12:30	Acknowledgements: Professors Tony Ryan and Athene Donald
12:45	Close of Meeting