

Report on CCP5 Workshop on ‘Particle adsorption at soft interfaces’, University of Warwick, 8th July 2010

This meeting, organized by Drs. David Cheung and Rebecca Notman and Prof. Mike Allen was held at the University of Warwick. There were nine invited and contributed talks and approximately 30 participants.

The aim of the workshop was to bring together researchers working in simulation and theory of particle adsorption at soft interfaces to discuss recent developments in methodology and applications, share ideas and consider future directions. A number of experimental researchers, Dr. Ir. Stefan Bon (Warwick), Dr. Phil Cox (Birmingham), and Dr. Andrew Marsh (Warwick), also attended the workshop, providing valuable insight during the discussions.

The morning session began with two talks, given by Fernando Bresme (Imperial) and Andrew Archer (Loughborough) describing simulation and theoretical studies on the statistical mechanics of particle adsorption at interfaces. After briefly outlining the statistical mechanics of interfacial adsorption, which underpinned many of the following talks, Fernando Bresme outlined some of his recent work, in particular the study of the interactions between nanoparticles on liquid-vapour interfaces. Andrew Archer then gave a brief introduction to liquid-state DFT and described its application to the study of solvent-mediated interactions for particles at interfaces and surfaces.

The remainder of the morning was devoted to talks discussing the effect of nanoparticles on interfacial properties; Matthew Turner (Warwick) outlined the similarities between membranes and interfaces (from a theoretical physicist’s perspective) and Sergey Lischuk (Sheffield Hallam) discussed the calculation of the saddle-splay modulus of a particle-laden interface. The final talk of the morning session was given by Kevin Stratford (Edinburgh) who briefly outlined the Lattice-Boltzmann method and described its application to particles at interfaces.

After lunch and posters the afternoon session began with two talks on the self-assembly of nanoparticles on fluid interfaces. Adam Law (Hull) first described some simulation and experimental work on the structures of 2D colloidal alloys formed on the air-water interface. Sara Fortuna (Warwick) then presented another combined simulation and experimental study, in this case on the structures formed by nanoparticles on spherical, fluid droplets.

The workshop was concluded with two talks on complex particles and interfaces, with Paola Carbone (Manchester) presenting preliminary results on the study of amphiphilic dendrimers at the air-water interface, while Andrey Brukhno concluded the workshop discussing recent work on the aggregation of peptides at membranes.

Overall the work presented at the workshop emphasised the wide variety of systems being investigated under the banner of particles at interfaces and the number of diverse computational tools that are being used to study them.

Photos taken during Lunch and Poster Session

