**Colloid and Interface Science at Diamond**

Claire Pizzey, Anna Kroner-Niziolek, Michael Engel and Elizabeth Shotton

*Diamond Light Source, Diamond House, Harwell Science and Innovation Campus, Didcot, Oxfordshire, OX11 0DE, UK*

*claire.pizzey@diamond.ac.uk*

The Diamond Light Source is a third generation synchrotron light facility which generates highly intense beams of light ranging from IR and UV through to X-rays. The experiment stations, or beamlines, produce light with a width on the order of micrometers allowing investigation of very small samples or the possibility of mapping over larger areas. Diamond currently operates 15 beamlines, with seven additional beamlines to become operational by 2012.

The high brilliance of the light provided by the beamlines at Diamond allows investigation of materials under *in situ* conditions and on very fast timescales. This is very well suited to structural investigations of colloid and interface science, particularly under realistic environmental conditions. A variety of techniques is available for soft matter research ranging from non-crystalline diffraction (small and wide angle X-ray scattering), surface X-ray scattering and reflectivity through to infrared microspectroscopy. Structural information can be obtained from thin films and bulk samples in a nanometre to micrometre size range. Applications of these techniques include probing the molecular level orientation and conformation arrangements of polymer chains, structural characterisation of colloids and self-assembled systems and investigation of the thickness and roughness of buried layers in multilayer systems.

We will highlight how researchers can make use of the techniques available at Diamond to solve real world problems in the area of colloid and interface science.