

P020 Nanoscale Structural Analysis of Self-Assembling Membrane Layers Using Neutron Reflection
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It has been shown previously that Outer Membrane Proteins (Omp) from *E. coli* can be immobilised on gold surfaces along with thiol labelled lipids to make stable model membrane layers (Terrettaz *et al*, 2002). The 3D structure of the immobilised proteins can be viewed by using techniques such as Atomic Force Microscopy (AFM) (Cisneros *et al*, 2006). However, neutron reflection can determine the relative distributions of protein and lipid perpendicular to a surface; the surface coverage of proteins in a membrane layer and how many water molecules associate with each protein in the layer can be calculated (Holt *et al*, 2005). Nanoscale resolution can be achieved; an example of this is the determination of the thickness and surface coverage of a 2-mercaptoethanol layer used to passivate the gold surface. Stations at the neutron sources of ISIS (UK) and NIST (USA) can generate polarised neutrons, which allow for the collection of complementary but independent data sets in reasonable time thus enabling more accurate structural modelling of membrane layers.