DIAD: Opportunities from a New Synchrotron X-Ray Beamline

Locations	TBC
Date(s)	Wednesday 5th February 2014 (10:00-16:00)
Contact	To register your interest in attending this workshop please email **Sarah Myring (mailto:s.myring@bham.ac.uk)** , stating any special dietary requirements in your email.
Download	**Add to Calendar (/research/activity/ias/workshops/2014/diad.aspx?ical=true)**

Workshop Leaders: **Dr Alison Davenport (http://www.birmingham.ac.uk/staff/profiles/metallurgy/davenport-alison.aspx)** (EPS), **Dr Owen Addison (http://www.birmingham.ac.uk/staff/profiles/dentistry/addison-owen.aspx)** (MDS), **Dr Ivan Sansom (http://www.birmingham.ac.uk/staff/profiles/gees/sansom-ivan.aspx)** (LES), and **Professor Liam Grover (http://www.birmingham.ac.uk/staff/profiles/chemical-engineering/grover-liam.aspx)** (EPS)

DIAD is a new beamline planned for Diamond Light Source, the UK's synchrotron X-ray source, that has recently been awarded £5m of capital funds by BIS. It has a novel two-beam designed to study mm-sized samples with micron resolution for Dual Imaging And Diffraction.

The aims of this workshop are to explore key areas where University of Birmingham researchers and their external collaborators could benefit from carrying out scientific research on DIAD, and make greater use of Diamond's other beamlines.

Potential applications of DIAD are wide-ranging, connecting fundamental scientific challenges with practical industrial applications. A key research area is investigation of bone: local mechanical stresses (measured with the diffraction beam) in the bone structure (imaged with microtomography) can be related to fracture, exploring either biopsies or small animal models to develop treatments for diseases such as osteoporosis. A similar approach is ideal for tissue scaffolds, and mechanical properties of biomaterial/tissue interfaces, where there is strong multidisciplinary interest in the University.

In the area of energy, there are opportunities in batteries and fuel cells, as well as nuclear reprocessing and corrosion of nuclear waste containers. Manufacturing with light alloys, composites and polymers is readily studied, and there has also been industrial interest relating to paints, personal care products, coffee, chocolate, catalyst supports, fuel additives and pyrotechnical materials. There are opportunities in plant root/soil interactions, and in situ studies of processes such as gas fracking and carbon sequestration. DIAD is also ideal for non-destructive characterisation of valuable samples such as aerogel-captured cometary dust, meteorite fragments, and the earliest fossils.

DIAD has the potential to build a new user community in partnership with lab-based computed tomography centres in a number of UK and overseas Universities as well as STFC's Harwell Imaging Partnership. Furthermore, striking visual images of objects such as bone, fossils, cometary dust, coffee and chocolate also offer some interesting opportunities for enhancing public understanding of science.

The workshop will include external researchers and potential industrial partners with a strong interest in these research areas, as well as University researchers interested in using DIAD or other beamlines at Diamond Light Source.

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