MS34 O1

Diffraction at SOLEIL Sylvain Ravy, *Synchrotron SOLEIL, L'Orme des merisiers, Saint Aubin BP-48, 91192 Gif-sur-Yvette CEDEX, France.*
E-mail: ravy@synchrotron-soleil.fr

Keywords: synchrotron, diffraction

At SOLEIL, the first bunches of electrons have been accelerated in may 2006, and now almost all the first beamlines have started their commissioning. They will welcome their first users in a few months.
After a quick presentation of SOLEIL, we will introduce the beamlines dedicated to diffraction and structural studies of condensed matter.

MS34 O2

Status of the Diamond Light Source Colin Norris, *Physical Sciences Director, Diamond Light Source*
Email**:** colin.norris@diamond.ac.uk

Keywords: synchrotron, radiation, crystallography

The Diamond Light Source, near Oxford, is the biggest scientific project in the UK for 40 years. It will be a third generation machine operating at 3.0 GeV , 300 mA (rising to 500 mA) and with an emittance of 2.7nm-rad. It will compete well with other light sources in terms of the number and the brilliance of its undulator sources from 100ev to 25keV. Multipole wigglers will extend the energy range to beyond 100keV. Diamond has not been optimised for low energy radiation but bending magnets will provide intense radiation, suitable for many experiments below 50eV. It will be the main SR source to support the UK scientific community in a wide programme of research in the life, physical and environmental sciences. Phase I of the construction programme including the building the machine and 7 beamlines is nearing completion. A further 15 beamlines will come into operation by July 2011, and more are proposed for the future. To maximise the output of the facility, the beamline construction is supported by a detector development programme taking advantage of the expertise elsewhere on the Harwell site. The progress of the project, the planned scientific programme and the opportunities for the future will be described.

MS34 O3

First Commissioning Results for the Phase 1 Macromolecular Crystallography Beamlines at Diamond Light Source Ralf Flaigl[a], Alun Ashton[a], Jose Brandao[a] , Elisabeth Duke[a], Gwyndaf Evans[a], Alan Grant[b], Mike Latchem[a], Katherine McAuley[a], Geoff Preece[a], James Sandy[a], Thomas Sorensen[a], Armin Wagner[a], David Waterman[a], Richard Woolliscroft[a], [a]*Diamond Light Source, Chilton, UK.* [b]*Daresbury Laboratory, Daresbury, UK.*
E-mail: ralf.flaig@diamond.ac.uk

Keywords: Diamond Light Source; beamline commissioning; macromolecular crystallography

Diamond Light Source [1] is the new UK third generation synchrotron located south of Oxford. In January 2007 Diamond welcomed first users.
In Phase 1 seven beamlines are funded which includes three beamlines for macromolecular crystallography (MX) [2]. These are currently in a commissioning phase aimed for optimisation of operation. The beamlines are similar in design and take radiation from an in-vacuum undulator. A double cystal monochromator and a Kirkpatrick-Baez mirror arrangement are the main optical components.
First results of the commissioning of the MX beamlines will be presented. This will include preliminary results on the beam properties, the performance of the double crystal monochromator, mirrors and diagnostics in the optics hutch as well as results from commissioning of the components in the experimental end station. The software environment and results from data collections will also be discussed.

[1] http://www.diamond.ac.uk
[2] http://www.diamond.ac.uk/MX

MS34 O4

PETRA III - a new low-emittance synchrotron radiation source Ralf Röhlsberger, Hermann Franz, Werner Brefeld, Klaus Balewski and Edgar Weckert
Deutsches Elektronen Synchrotron DESY, Hamburg, Germany. E-mail: ralf.roehlsberger@desy.de

Keywords: synchrotron radiation, high-resolution X-ray diffraction, X-ray imaging

The new 3rd-generation synchrotron radiation source PETRA III results from an upgrade of the existing PETRA storage ring at DESY, Hamburg. An extremely low horizontal emittance of 1 nmrad at a particle energy of 6 GeV will be achieved via damping wigglers. Therefore, PETRA III will deliver synchrotron radiation beams of outstanding brilliance with unique applications for imaging or coherence applications.
Beginning in July 2007, 1/8 of the PETRA ring will be reconstructed to host 9 straight sections for the placement of insertion devices. The implementation of 5 canted undulators with a canting angle of 5 mrad leads to a total of 14 independent undulator beamlines. These beamlines cover scientific areas as microtomography, micro- and nanoprobe, coherent scattering and diffraction, high-resolution and resonant scattering, high-energy materials science, soft x-ray spectroscopy, biological immaging, macromolecular crystalography and more. First experiments are planned for beginning of 2009.
This contribution illuminates the technical challenges to design beamline components for such kind of facility as well as the new scientific opportunities emerging from this new source.