

## current events

This section carries events of interest to the synchrotron radiation community. Works intended for this section should be sent direct to the Current-Events Editor (s.s.hasnain@liverpool.ac.uk).

### LCLS gets approval for its next phase LCLS-II

Approval has been given to the Linac Coherent Light Source (LCLS), the world's first hard X-ray laser, to begin planning a second X-ray laser at the laboratory. LCLS-II would give investigators access to new regions of the X-ray spectrum and improved control over the X-ray beam. It will also accommodate a larger number of research scientists working simultaneously.

The 'Critical Decision 0', granted by the DOE, clears the way for scientific and technical teams to officially begin work on conceptual designs for LCLS-II. 'The success with the commissioning and early experimental operations of LCLS exceeded even our optimistic expectations and paved the way for significant upgrades of capability and capacity,' said SLAC Director Persis Drell. 'The CD-0 for LCLS-II gives us clearance to begin planning to extend that success and push the scientific envelope even further.'

The LCLS-II project will centre on two new undulator arrays as well as an upgrade of the existing LCLS undulator. When complete, the facility will produce multiple X-ray beams that could operate either together or separately, with unprecedented flexibility and control over a much extended range of X-ray energies. LCLS-II will provide the added capability of tailoring how the X-ray beam is polarized. Importantly, the LCLS-II will address the demand for access within the scientific user community, by supplying multiple research groups with X-rays simultaneously, instead of serving a single user group at a time.

### First phase of planning and development approved for APS upgrade

The Advanced Photon Source (APS) received the formal approval for conceptual design of the APS upgrade, the first in a series of major milestones that the project must meet under the DOE's project management. The announcement was made by Dr Pedro Montano,



Aerial view of the APS. (Photograph courtesy of the Advanced Photon Source.)

Director of the Scientific User Facilities Division of the Office of Basic Energy Sciences at the recently held APS users meeting. The upgrade will add new X-ray facilities, make existing X-ray facilities 10–100 times more powerful and almost double the number of experiments that can be carried out in a year. Murray Gibson, APS Director, said 'The scientific vision which drove upgrade planning is the need to image real materials under real conditions in real time, with resolution far better than is available today.' The upgrade will include superconducting undulators, higher beam currents and transverse radiofrequency deflection cavities to generate unique high-repetition-rate 1 ps-duration X-ray pulses. The beamlines upgrade programme will include the use of nanometre focusing optics for nanoscience applications as well as long beamlines for imaging applications. It is expected that all of the APS beamlines will be optimized in the upgrade with higher performance to match scientific demand, almost doubling experimental capacity. The upgrade will aim to provide world-leading one-of-a-kind instruments on each of the beamlines, a departure from the collaborative-access-team (CAT) model pioneered at the APS. The focus of the upgrade will be on X-rays above 20 keV and ultrafast dynamics and imaging, but it is expected that all of the users will see benefits from the upgrade. The upgrade is expected to be completed by 2017.

### Canadian Light Source and Minnesota-based BioBusiness Alliance reach collaborative agreement

The BioBusiness Alliance of Minnesota (BBAM), <http://www.biobusinessalliance.org/>, which brings together Minnesota's academic and industrial life-science researchers, signed a Memorandum of Agreement with the Canadian Light Source (CLS) for a close partnership. On this occasion the CEO of BBAM, Dale Wahlstrom, said "The goal of the partnership is to improve scientific and product outcomes while improving operating efficiency for both Minnesota and Canadian companies. We are looking forward to collaborating with CLS as we continue to retain, grow and expand Minnesota's bioscience industry." The agreement aims to make the CLS more easily available to Minnesota's academic and industrial researchers. BBAM will promote the synchrotron's techniques in biomedical imaging, crystallography and spectroscopy, capabilities unavailable in the state, to its network of researchers from academic and industrial institutions in Minnesota and throughout the USA. The CLS will provide access to its synchrotron facility to researchers from BBAM's stakeholder groups as well as host graduate students, post-doctoral fellows and scientists from Minnesota industry and academia to perform research. Both institutions expressed their wish to work together to promote the value of combining Minnesota's world-leading life-science network with the cutting-edge imaging and analytical capabilities of the CLS to advance research and innovation in the areas of renewable energy, agriculture, industrial bioproducts, and medical devices and products.

This is a welcome boost to the recent announcement by the Governments of Canada and Saskatchewan for further investments in CLS. The investment by the Government of Canada is made



Inside view of the CLS. (Photograph courtesy of the Canadian Light Source.)

through the Canada–Saskatchewan Western Economic Partnership Agreement. Both Canada and Saskatchewan are contributing CAD 25 million each, over four years, to strengthen economic activity and improve quality of life in western Canadian communities.

### **Brookhaven launches program to bring big science to classrooms**

Many synchrotron sources have been engaged in exposing high school students *via* schools visit programmes to the synchrotron

facilities and introductory lectures. Brookhaven's National Synchrotron Light Source (NSLS) has launched a very imaginative experiment where it will give high school teachers and their students access to multi-million-dollar instruments at NSLS. In its first year, this program, 'Introducing Synchrotrons into the Classroom (InSynC)', is expected to engage dozens of teachers and students in hands-on experiments at NSLS. Lisa Miller, co-founder of InSynC, said 'We often hear teachers say that students learn best in a laboratory but some of the most interesting experiments require equipment that is too expensive to provide in a high school laboratory. InSynC is a way to bring some of this big science into the classroom.'

Starting this summer, interested high school science teachers will participate in an intensive three-day InSynC workshop at Brookhaven to learn about the NSLS. The session will also introduce teachers to experimental techniques available at the NSLS, and show them how to write a proposal to use the facility. At the beginning of the school year, these teachers will work with their students to develop a synchrotron experiment. Their proposals will be reviewed by a panel of scientists and teachers, and the groups with the highest scores will bring their experiment to life. Initially, InSynC will be aimed at regional high schools, but the organizers say it has the potential to become a nationwide competition, involving the participation of all US synchrotron facilities. Synchrotron facilities around the world would look at the results of this experiment closely and may introduce similar programmes for their regional or national schools.