Microsamples from masterpieces.

LEDs and Van Gogh

The increasing use of LED lighting in museums and art galleries could be accelerating the demise of famous works of art, a new study carried out by an international team at the ESRF and DESY has shown. It is already known that some pigments, especially the chrome yellows used by Vincent Van Gogh, turn brown under normal lightning conditions. This stems from the chemical reduction of chromium and is enhanced by the presence of sulphur in the pigment.

Different types of chrome yellow were used by Van Gogh, and these react differently to light, depending on their chemical composition. Regular chrome yellow maintains its colour after exposure to green-blue light and also when irradiated with more damaging UV light, the team found. But laboratory tests with flecks of less stable varieties of chrome yellow paint turned a brownish-green colour after just a few days of exposure to green-blue light (*Analytical Chemistry* **85** 851–867).

Brazil to break ground for Sirius

Scientists in Brazil are about to prepare the site of a new third-generation synchrotron called Sirius, the first high-brightness photon source in Latin America. Located at the Brazilian National Synchrotron Light Laboratory (LNLS) in the state of São Paulo, the $330 m project is expected to be open for user operation in 2017, LNLS director José Roque told *ESRFnews*. "The building executive project should be finished by June 2013, and ground breaking should start by the end of April with the terrain cleaning, followed by the earth-levelling and drainage work."

The LNLS has been operating a soft X-ray source since 1997, hosting some 1500 users per year. Sirius, a 518 m-circumference machine with an energy of 3 GeV and a horizontal emittance of 280 pm rad, will provide 20 hard X-ray dipole-based beamlines with critical photon energies of 12 keV. It is based on a lattice similar to that proposed for Phase II of the ESRF Upgrade and to that being adopted at the MAX-IV Laboratory in Sweden.

Initially, says Roque, Sirius will have 13 beamlines. Five will be based on in-vacuum undulators for studies including micro-spectroscopy, coherent scattering, nano-diffraction and micro-focusing structural biology. A further five are to be based on bending-magnets for EXAFS, SAXS, powder diffraction, microtomography and infrared studies. The remaining beamlines will employ wigglers and elliptically polarising undulators.

Sirius will supersede Brazil's exisiting second-generation light source.

Former ESRF director-general Yves Petroff, who has been LNLS scientific director since December 2009, says that one of the biggest challenges has been to stabilise the project's finances. Another challenge, he says, has been hiring people from abroad. "It's not so quick to get a visa, and there is a lot of paperwork involved in the buying and delivery of components, so there is some bureaucracy here that needs to be improved. This is changing now though."

There are a lot of scientific opportunities in areas such as health, biology and catalysis, says Petroff. "Industry is investing in the project too, and with the kind of emittance we expect from Sirius I expect we will have a lot of international users."

Bill Stirling, also a former ESRF director general, is also a member of LNLS scientific committee, while the head of ESRF's Instrumentation Services and Development Division, Jean Susini, is a member of the X-ray spectroscopy Beamline Advisory Team for Sirius. Although there is no formal agreement between the ESRF and LNLS, says Petroff, the ESRF provides a template. "The scientific model of the ESRF is among the best in the world."

Users' corner

The next Beam Time Allocation Panel meeting to review proposals submitted for the 15 January 2013 (Long Term Projects) and 1 March (standard proposals) deadlines will be 25 and 26 April.

The next deadline for standard proposal submission is 1 September. Proposers must use the most recent experiment methods template available on the user guide web pages and respect the two-page length limit for this document. They should also ensure that experiment reports are submitted for all relevant previous proposals.

The 23rd ESRF Users' Meeting & Associated Phase II Workshops took place on 4–6 February. More can be read about this in the dedicated articles on pp8–12.

Users are kindly reminded to ensure that all new publications resulting from data collected either entirely or partially at the ESRF are registered in our database via our quick and easy-to-use interface: www.esrf.fr/UsersAndScience/Publications/publication-notification-form.

News from the beamlines

- **ID01** has increased its device and sample environment portfolio. A QuicK-MAPping procedure ("K-map") using a piezo positioning system supplying a 2D scanning probe in real space with a sub-micronic beam at a sampling rate of up to 100 points per second has been introduced, which accelerates scanning diffraction microscopy and allows a quicker and easier navigation on the sample. A lightweight He-flow cryostat providing temperatures in the range 2–300 K has been installed. Made by the ESRF sample environment unit, the cryostat can be mounted on the Hexapod of the ID01 diffractometer with a special holder and is compatible with scanning X-ray diffraction microscopy. In the next proposal round, ID01 will be available for only half of its usual beam time. The beamline will be closed in December in order to install the new optics and to move the end station into the new EX2 building. User operation will resume in November 2014.
- A new monochromator has been installed on **BM26A** (DUBBLE). Equipped with both Si-111 and Si-311 crystals, the energy range of the beamline is now 4.5–45 keV.
- An upgraded Laue micro-diffraction setup has been implemented on **BM32** (CRG-IF). Laue micro-diffraction uses a broadband white micro-beam (5–22 keV) combined with sample-scanning and a 2D detector for mapping strain and orientation in polycrystals. The new setup uses fixed-curvature ion-beam-polished KB mirrors mounted on hexapods for micro-focusing, which provide larger acceptance and reduced beam size at the sample. Precise translation stages for the microscope and a piezoelectric shutter were also added. The LaueTools data analysis software suite enables the automatic treatment of Laue maps and the display of 2D orientation and deviatoric strain fields.