

April 2012 ALBA newsletter

Accelerators

<http://www.cells.es/Divisions/Accelerators>

- Since mid-March accelerators is providing 150 mA regularly for the commissioning of the beamlines (BL). The tests to increase the current up to 200 mA within the next run for BLs commissioning have already been scheduled.

Beamlines

<http://www.cells.es/Beamlines>

* BL04-MSPD: Materials Science and Powder Diffraction.

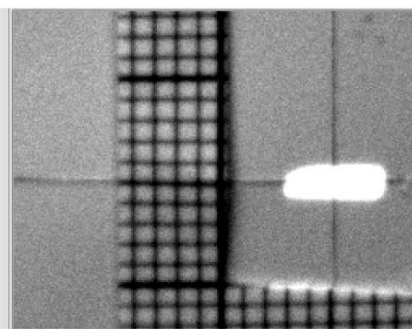
- The 3-circle powder diffractometer (3C-PD) has been installed in the Experimental Hutch (EH).
- The commissioning of the KBs mirrors is in progress. Two fluorescence screens, one at the sample position and one at the end of the EH wall are used to characterize the beam and optimize the mirror positions (see Fig. 1).



Direct beam and reflected beam by KB mirrors at sample position



Direct beam at sample position



Direct beam at the back wall of EH

Figure 1. BL04-MSPD: Several snapshots of the direct beam.

* BL09-MISTRAL: X-Ray Microscopy.

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- The mechanical failure of the mirror pitch axis of the monochromator has been repaired. This has implied the venting of the vacuum chamber, checking mechanics and optics inside, replacing mechanics outside vacuum, and realignment of the optics (2 gratings and plane mirror). The bakeout has now been completed. The beamline is ready to continue the commissioning on the next beamtime run starting April 19th.

* BL11-NCD: Non-Crystalline Diffraction.

- A draft version of the data collection system has been put together and ready for its first tests. The time-frame generator with its eight output channels is programmed to control the opening and closing of a fast shutter, to externally start and stop data collection on the two detectors available on the station, one channel is dedicated to control the sample temperature at the moment, but it can be used for any sample control parameter that is required.
- Optical systems, slits, and diagnostics on the beamline have been shown to perform correctly.
- Few remaining parts required for completion of the beamline layout have been designed and are ready for manufacturing in the workshop.
- A solution cell designed to contain small sample volumes, of the order of a few milliliters, is being tested off line to verify its performance.
- Information about the beamline required by the users when they arrive that will allow to decide the length of the x-ray camera flight tube, the combination of attenuating filters, and the degree of attenuation that results and so on.
- Installation and testing of data reduction software made available on the station.
- Dr. Christina Kamma-Lorger the new beam line scientist on BL11 started on the 1st of March 2012.
- A student from the Master course in Synchrotron Radiation started his project work in the group in March. He will work on preparing software and fitting routines that will allow to determine the rocking curve width of the monochromator system at variable photon energies and if required tune the system in order to optimize its performance during operation.

* BL13-XALOC: Macromolecular Crystallography.

- Dr. Fernando Gil, the new post-doc, joined the BL13-XALOC team on April 1st.
- We have managed to obtain our first fluorescence scans with the XFLASH detector at the beamline. We are currently developing its control system and graphical user interfaces.

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- We are currently developing the widgets that will allow the users to operate the beamline, especially to collect diffraction data sets.
- The designs of the sample and diagnostics diode supports design have been approved and are about to be sent for manufacturing.

* BL22-CLÆSS: Core Level Absorption & Emission Spectroscopies.

- XAFS COURSE ANNOUNCEMENT: As requested by several future users of the CLÆSS beamline, there will be a course on XAFS technique similar to that [held in 2009](#). The tentative date is mid-September. This time, it will be extended in two ways: a) a tutorial on the beamline control software will be given and b) the practical part will also include a guided self-work analysis of user-proposed cases. The course is planned for 3 days: the 2nd half of one day, the full next day and the 1st half of the 3rd day.

Note: the course will not cover *ab initio* XANES calculations; the XANES analysis will be limited to the basic data manipulations, factor analysis (PCA and TT) and linear combination fits.

A small fee is envisaged for covering snacks and drinks.

If you are interested in attending the course, please contact [Konstantin Klementiev](#) before the 1st of June for making the final planning.

* BL24-CIRCE: Photoemission Spectroscopy and Microscopy.

- There has been an intervention in the PGM to correct an inconsistency in manufacturing that did not allow us to operate it at certain photon energies and cff combinations. The commissioning will restart this week.
- The near ambient pressure photoemission spectroscopy end station (NAPP) is currently being assembled and tested at SPECS premises.

* BL29-BOREAS: Resonant Absorption and Scattering.

- The end station racks have been installed at their final location.
- The final scheme for forevacuum system (rough pumping) has been installed and is operating.
- The final cabling for the High*field vector magnet (HECTOR) has been installed, tested and is working.
- The control system has been updated to the newest version (SARDANA 3.0).
- Preparations and scheduling for the first user proposals have started and agreed with users.

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- The XMCD magnet preparation chamber has been completed with an Ion Gun for sputtering, and metal and organic molecule evaporators will follow soon.
- XAS and XMCD test measurements have been performed covering edges at GdCo and NdCo-alloy thin-film samples, and TiO₂ thin films.
- In the next few weeks of commissioning, we will be characterizing the x-ray beam size at the XMCD magnet, debugging further the control system and its graphic interface. We will be testing the intensity reference gold mesh (Izero) and evaluate signal normalization; we will also be doing tests on the encoders for the grating pitch motion (monochromator). After finalization of some pending aspects on the control integration of the XMCD high-field magnet, tests will be done for magnetic hysteresis loop measurements as well.