ALBA Newsletter
Aug-Sept 2012

Letter from the director

It is with great pleasure that I write my first communication in the ALBA Newsletter, starting with expressing how much honored I feel by the nomination as Director of the ALBA-CELLS laboratory. My thanks go to the whole ALBA Staff for their warm welcome upon my arrival in the team.

I mention with special emphasis my gratitude to Ramon Pascual, CELLS President, to Gastón García, who has been acting as Director in the last period, and to my predecessor Joan Bordas, who has led the construction of the largest Spanish and Catalan Scientific Infrastructure, with passion, technical and scientific competitiveness and strong personal involvement.

The year 2012 has meant for ALBA the starting of the user operation, and we are hosting external users since last spring. The accelerator is routinely providing stable photon flux to the seven operating beamlines, with reliable and reproducible beam current. Entering in the scientific production period is a challenge that we are happy to face: it is the realization of a shared dream of many people.

The present critical economic situation in Europe requires from us careful focusing and choice prioritization. We will keep the present excellences, lead the synchrotron ring to the nominal design parameters by increasing the beam current and implementing the topping up mode of operation, develop the already advanced programs for new beamlines and always aim at maintaining our laboratory at the front end of the synchrotron radiation science.

Finally I want to mention the recognitions that two of our funders are being given in these days. During the 2012-13 Academic Course Inauguration of the Universidad Autónoma de Barcelona (UAB), on 26th September, Prof. Ramon Pascual has been awarded with the UAB medal by the UAB Rector, Prof. Ferrán Sancho. The academic trajectory of Prof. Pascual was described by Prof. Antoni Méndez, who expressed the indebtedness versus Ramon Pascual not only by the UAB but by the whole country, for his continuous, effective, gently firm action in leading Spanish Scientific community during the last decades. Long and warm applauses underlined the public sharing of these feelings and the great appreciation for Ramon's person. I personally feel fortunate to have now the opportunity of being numbered among his collaborators. Another major character of the ALBA realization, Dieter Einfeld, Head of the Accelerator Division from the very beginning of the project up to few months ago, is being recognized by the Generalitat with the award of the Narcís Monturiol medal, for his scientific and technological contributions to the Catalunya region, in a ceremony which will take place in the Generalitat on 3rd October. Together with all my ALBA colleagues, I'm looking forward for the next future challenges and realizations.

Sincerely,
Caterina Biscari
Director

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New staff

http://www.cells.es/Jobs

We are pleased to announce the following new employees who have recently joined the ALBA synchrotron light source:

Prof. Miguel A.G. Aranda
Head - Experiments division
ALBA welcomes Prof. Miguel A.G. Aranda, former Professor of Inorganic Chemistry at University of Malaga, as Head of the Experiments Division for the next five years.

José Ángel Aguilar Mena
Safety Officer Assistant - Prevention Risks
José comes to ALBA from GRUPO-IMAN where he worked as Quality Control Technician. José has a degree in Prevention and Safety (UAB) and also a degree in Technical Engineering of Electricity (UPC).

Accelerators

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

- During the summer shut down several works have been performed in the accelerators:

  - Replace several waveguides pieces from the LINAC.
  - Exchanged an IOT in the RF system.
  - Open the vacuum in SR10 of the storage ring to replace an absorber.

- After all these interventions, two and a half weeks had been scheduled to re-start the beam. On 21st of September the beam was delivered to the beamlines as scheduled, with a reduced current of 60 mA. The current has been increased up to 100 mA along the run and the pressure in SR10 has been continuously monitored, to avoid any sudden increase.

- During the first week of the run, the accelerators have run with a 95% of availability and 150 h have been provided to the beamlines.

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Experiments

http://www.cells.es/Divisions/Experiments
http://www.cells.es/Beamlines

2013 beam time application call is OPEN
The deadline this Wednesday Oct 10th, 2012 at 23:59 GMT+1
Proposals can be submitted for beam time at: http://useroffice.cells.es/

*** BL04-MSPD: Materials Science and Powder Diffraction.**

- The transfer pipe that connects the High pressure endstation and the Powder diffraction endstation has been installed (See figure 1).

- First diffraction data have been acquired with the Mythen detector in the powder diffraction endstation. The experimental set-up is shown in figure 2.

- The first official users at the powder diffraction endstation will start their experiment in October 2.

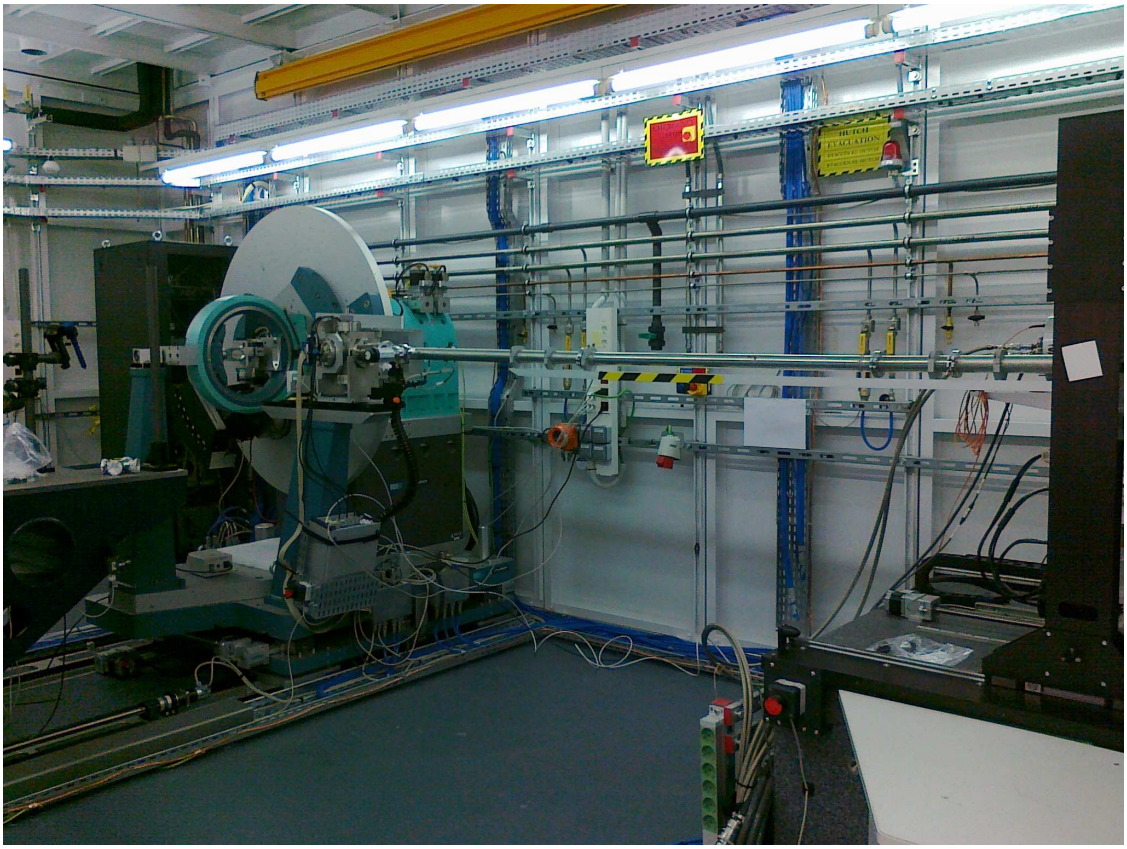

Figure 1. BL04-MSPD. Photograph of the experimental hutch as today.

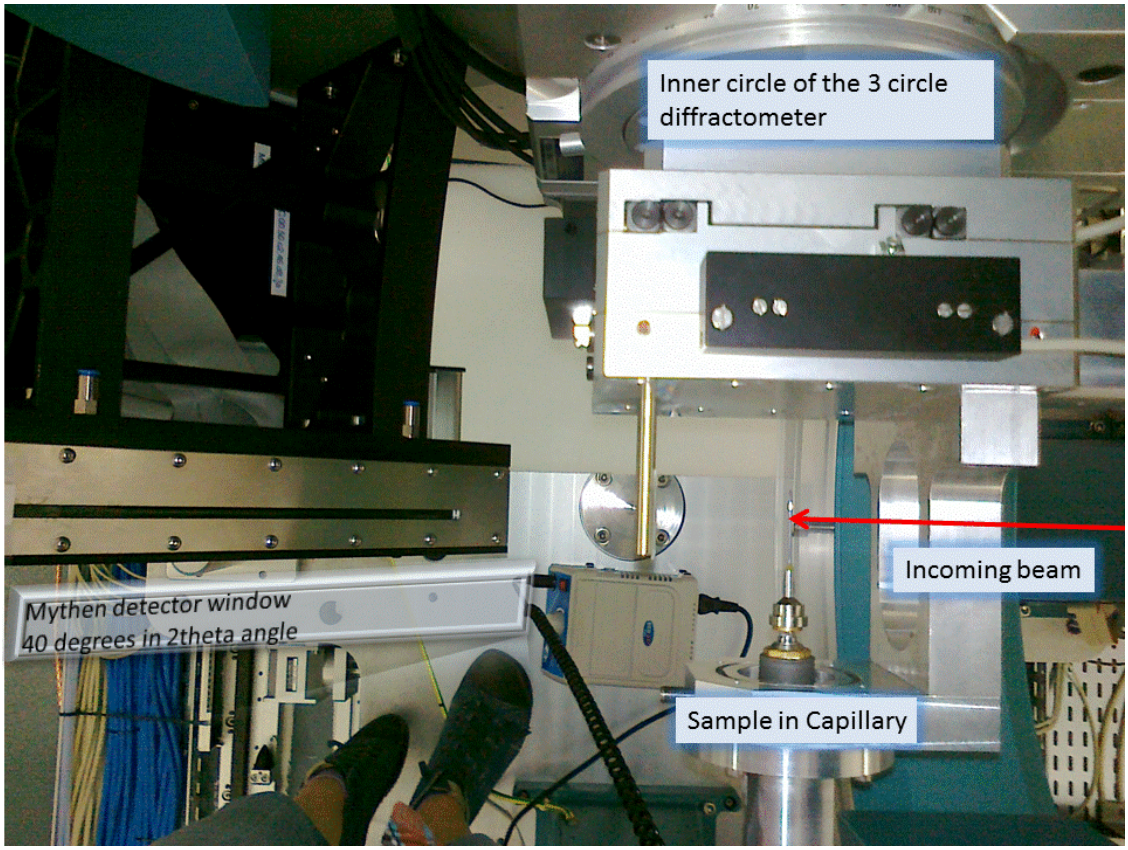

Figure 2. BL04-MSPD. SRM 640b - Silicon X-Ray Diffraction (from NIST) loaded on 1 mm diameter capillary is shown from the top of the experimental set-up.

*** BL09-MISTRAL: X-Ray Microscopy.**

- At the end of July we had a problem with a part of the cooling system of the microscope that was repaired last week. We have also had to replace a motor stage that was not working anymore.

- We are now in the process of realigning with beam the optics of the microscope again.

*** BL11-NCD: Non-Crystalline Diffraction.**

- The beam line received its two first user groups in the month of July, 2012.

- During the summer shutdown of ALBA maintenance of the beamline was carried out. Upgrades and repair of the electrometers were also made. Permanent cables that were missing in the optics and experimental hutches were laid and patch panels for signals, motors cables and encoders etc. were installed.

- The synchronization in time of the two detector systems that currently serve as the SAXS and WAXS detectors has been optimized. Together with a temporary WAXS support system the simultaneous SAXS & WAXS data collection will be offered to user groups taking beam during the autumn of 2012.

- Shown in the figure below (Figure 1) is a two-dimensional x-ray scattering pattern of silver behenate collected during a 1 second exposure. As can be seen the alignment of the beam stop still needs some refinement.

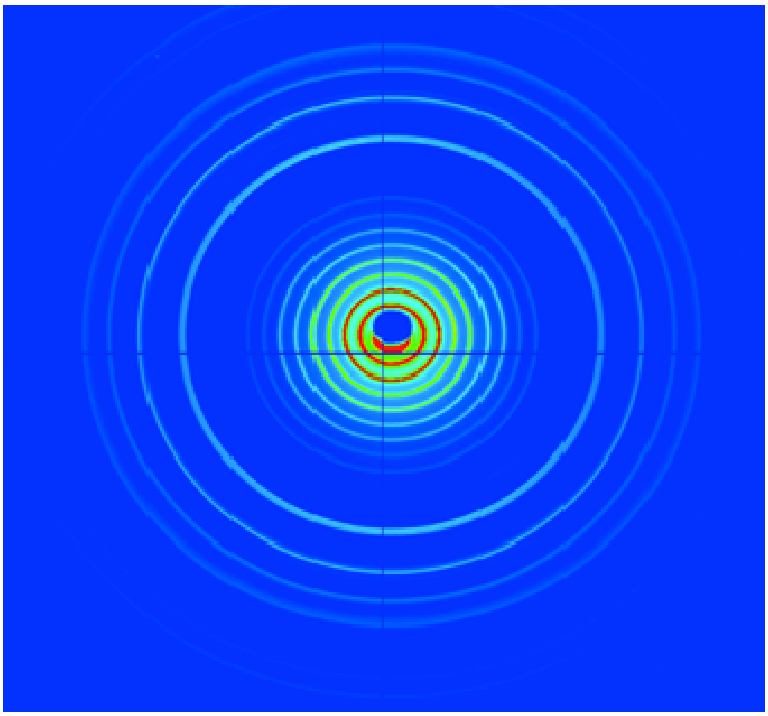

Figure 1. BL11-NCD: A 1 second exposure of silver behenate collected on an ADSC210 CCD detector with a sample to detector distance of ca. 220 mm is illustrated.

- In mid-September the water thermal stabilization circuit of the cryo-cooled monochromator failed. This has meant that the beamline is currently off line and will be open to the synchrotron radiation light again on the 17th of October. Repair work has been carried out and currently the monochromator is undergoing a bake-out to improve the vacuum in the vessel.

*** BL13-XALOC: Macromolecular Crystallography.**

- In mid-October we will have an upgrade of the software of the automated sample changer and a new gripper that should allow the manipulation of all the current SPINE standard vial/caps.
- The detector cover has been installed and is working properly.

- We have successfully resumed user operation after the summer shutdown.

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

- The piezo feedback controlling the fine pitch adjustment of the second crystal is now working. It stabilizes the intensity and the spot position of the beam in the experimental station. This function is crucial for real samples (pressed pellets) as it is usually difficult to achieve good thickness homogeneity in them. See the resulting spectra of copper oxides at www.cells.es/Beamlines/CLAESS/commissioning.html**.**

*** BL24-CIRCE: Photoemission Spectroscopy and Microscopy.**

*** BL29-BOREAS: Resonant Absorption and Scattering.**

- We have reinstalled the Medium Energy Grating (MEG) & High Energy Grating (HEG) monochromators.
- The bakeout of the monochromator has been accomplished successfully.
- We have performed the commissioning with X-rays of the MEG/HEG with Ne, obtaining very high resolution and overall good performance up to 3keV.
- We have installed the transmission diode detector in the HECTOR station.
- We have received the cryo-manipulator of the MARES station and we are currently preparing the site acceptance tests.
- Cristina Blanco is a visiting PhD student from the University of Oviedo.
- We are expecting next users by mid-October.