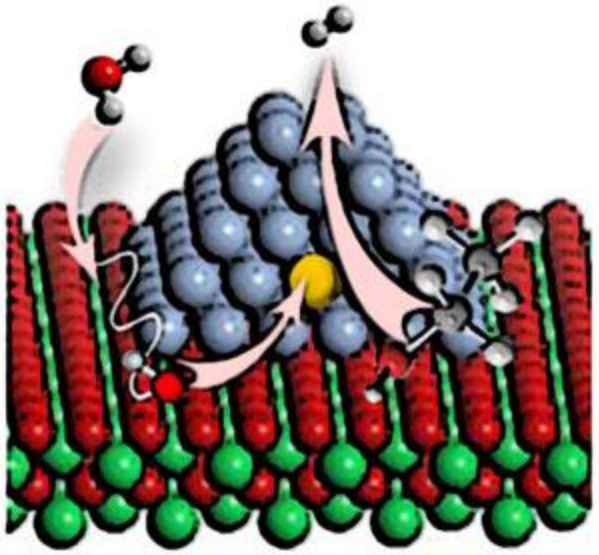
INDUSTRIAL LIAISON OFFICE
ALBA-CELLS

Cements, pigments, ceramics and glasses
Industrial Workshop, May 6th, 2016

Alejandro Sánchez
Associate Director. Industrial and Project Office

Why using a Synchrotron?

- Product innovation
- Product development
- New and advanced materials
- Manufacturing improvements
- Costs reduction
- Patents
- Because other competitors are using it!
- ….



Drawing of a ceria-supported metal rhodium-palladium nanoparticle.

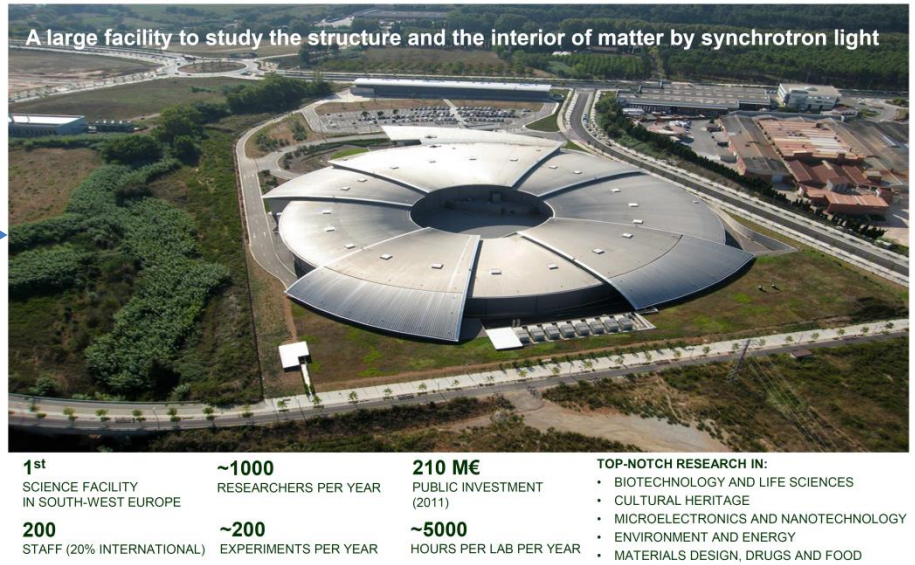
How to contact ALBA?

one-stop shop service

ALBA Industrial Liaison Office
industrialoffice@cells.es

INDUSTRY, CUSTOMER

ALBA Synchrotron in short



INDUSTRIAL LIAISON OFFICE

VISION

- Contributing to improve the Industry competitiveness by using the latest Synchrotron Light developments.

MISSION

- To promote and to make available to the Industry all the potential of the Synchrotron Light applications.

STRATEGY

- Customer satisfaction, one-stop shop service

ORGANIZATION

- Office reporting to the Director

INDUSTRIAL OFFICE ACTIVITIES

Industrial access services

- Beam time access
- Other lab access: magnetic, metrology, RF…
- Other in-house developments

Industrial outreach

- Industrial Workshops
- Industrial sector congresses
- Industrial facility visits,…

INDUSTRY, CUSTOMER

Long term industrial collaborations

- R&D Projects
- Scientific staff funding
- Industrial PhD students funding
- Scientific instrument developments

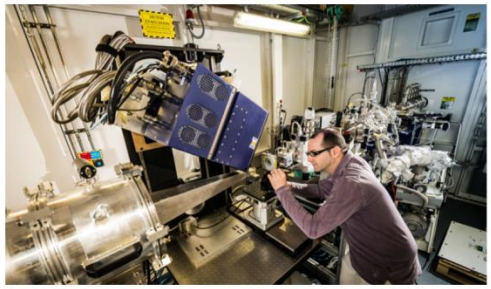
Technology Transfer

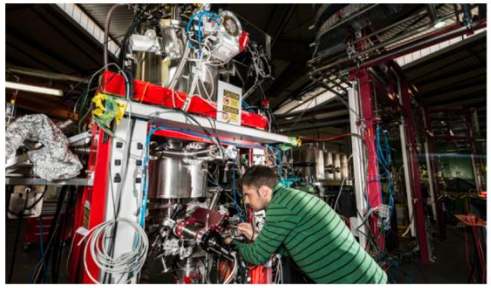
- Patents
- Licensing
- Spin-offs

Industrial Beamtime Services

SYNCHROTRON LIGHT LABORATORY TECHNIQUES

- **Powder microdiffraction** (including high-pressure)
- **Powder diffraction:** high resolution and high-speed
- **Small and wide angle X-ray scattering**
- **X-ray absorption spectroscopy**
- **Infrared spectro-microscopy**
- **Soft X-ray reflectivity and scattering**
- **Photoemission** (micros-copy and near ambient pressure spectroscopy)
- **Macromolecular crystallography**
- **Magnetic dichroism**
- **Full-field soft X-ray microscopy**



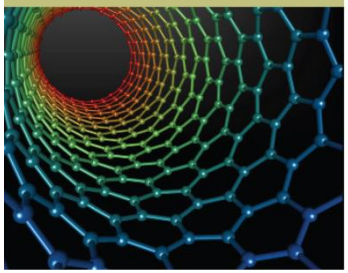


Industrial Beamtime Applications

CHEMISTRY AND MATERIAL SCIENCE

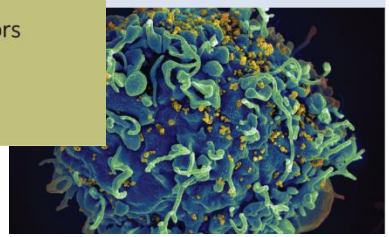
- **Chemistry**
  Catalysis, Plastics, Polymers, Pigments, Adhesives, Textiles, Cements, Ceramics, Glasses
- **Environmental science**
  Soils, Pollutants
- **Cultural heritage, Paleontology, Archeology**
  Ancient materials, Painting, Pottery
- **Automotive and aerospace**
  Coating, Motor oil, Corrosion, Plastics

ELECTRONIC AND MAGNETIC STRUCTURE OF MATTER



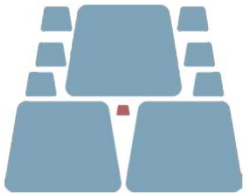
- **Magnetic (nano)materials**
  Data storage
- **Energy**
  Batteries, solar cells, combustion, fuel cells, oil and gas
- **Nanotechnology**
  Nanoparticles, Nanoelectronics, Semiconductors
- **Advanced materials**
  Magnetic, Superconductors, Multilayers

LIFE SCIENCE AND SOFT CONDENSED MATTER



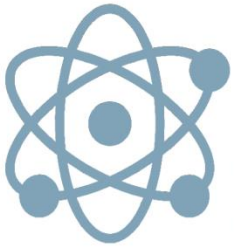
- **Health and Healthcare**
  Cosmetics, Biotomography, Emulsions and Gels
- **Food and agriculture**
  Food ingredients, Toxins, Plants
- **Pharmaceutical**
  Structural Biology, Drug discovery, Excipient phase, Polymorphs, Drug characterization

Synchrotron light advantages



LOWER DETECTION LEVELS

CHEMICAL MAPPING

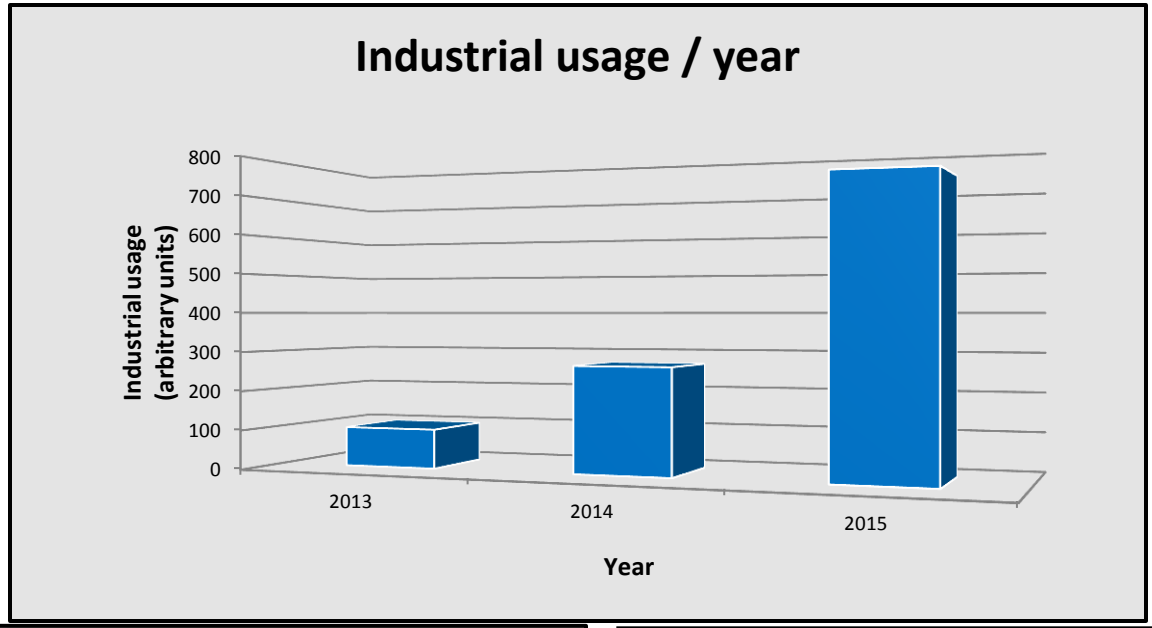


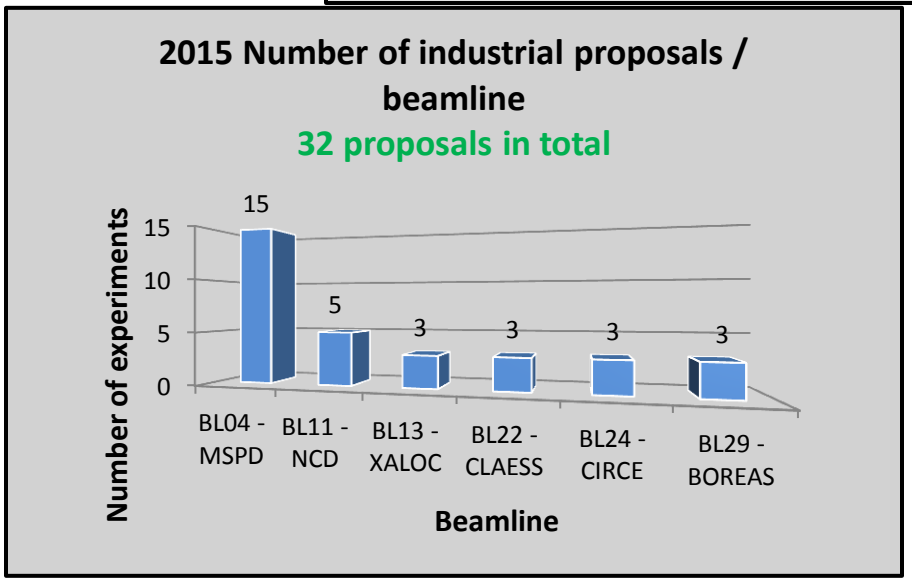
OXIDATION STATE DETERMINATION

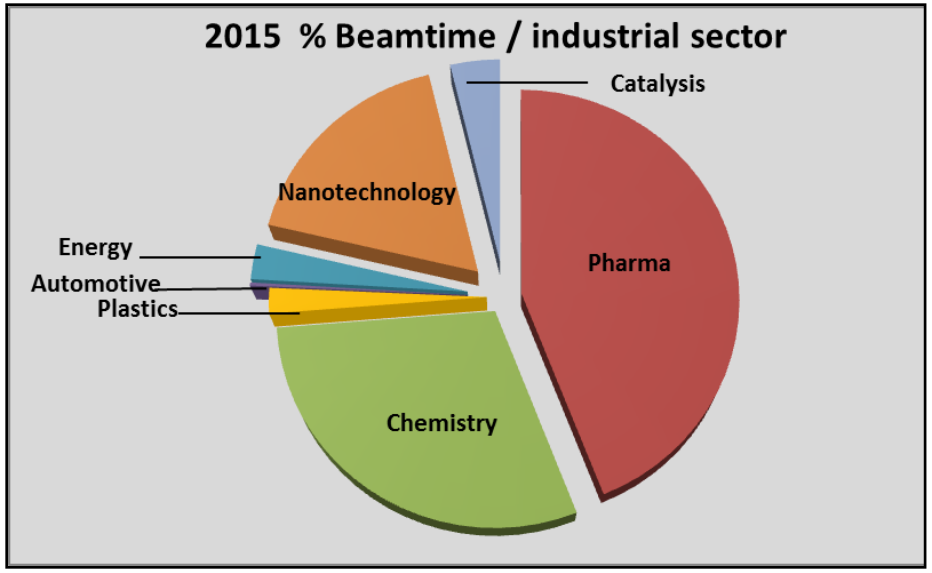
HIGHER RESOLUTION

FASTER EXPERIMENTS

INDUSTRIAL BEAMTIME BREAKDOWN







ALBA Industrial Services

As of today ALBA may offer the following laboratory services:

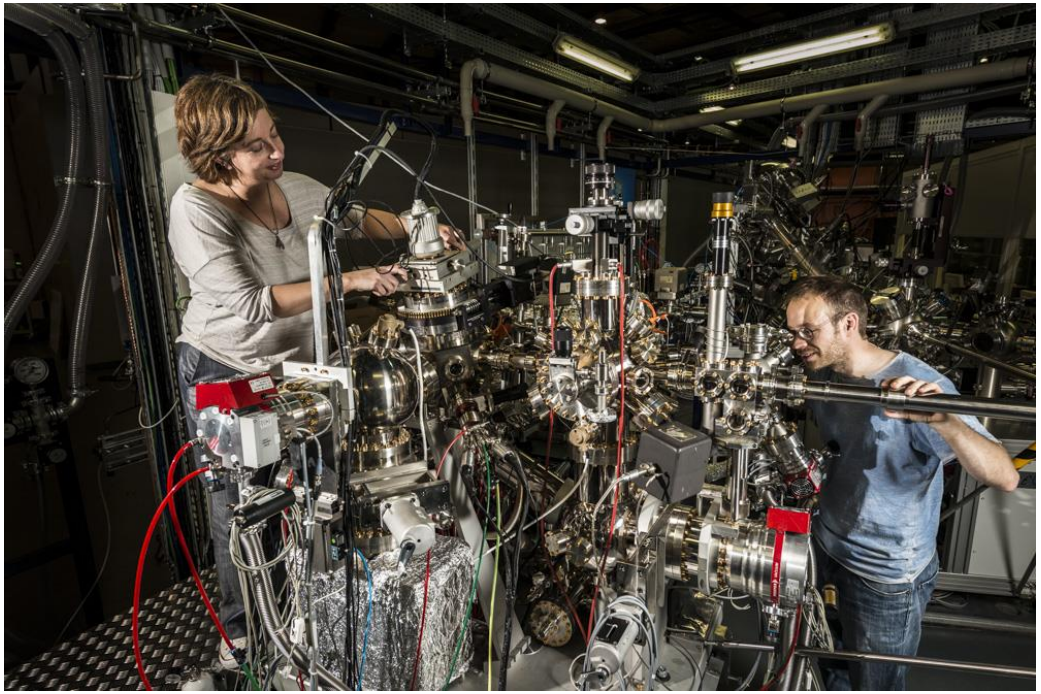
- 8 Beamlines (synchrotron light laboratories)
- Magnetic measurements laboratory
- Optics and metrology laboratory
- Vacuum laboratory (clean room)
- RF high power laboratory
- Electronics laboratory

If you do not find your solution today take into account that ALBA plans to offer up to 7 more Beamlines in the mid term and up to a total of 30 Beamlines in the long term.

Industrial research collaborations

ALBA is open to long term industrial research collaborations through:

- **Personnel**
  - Industrial Scientific staff funding
- **Training**
  - Industrial doctorate students funding
- **Equipment**



- **Synchrotron techniques development**

Industrial Partnership

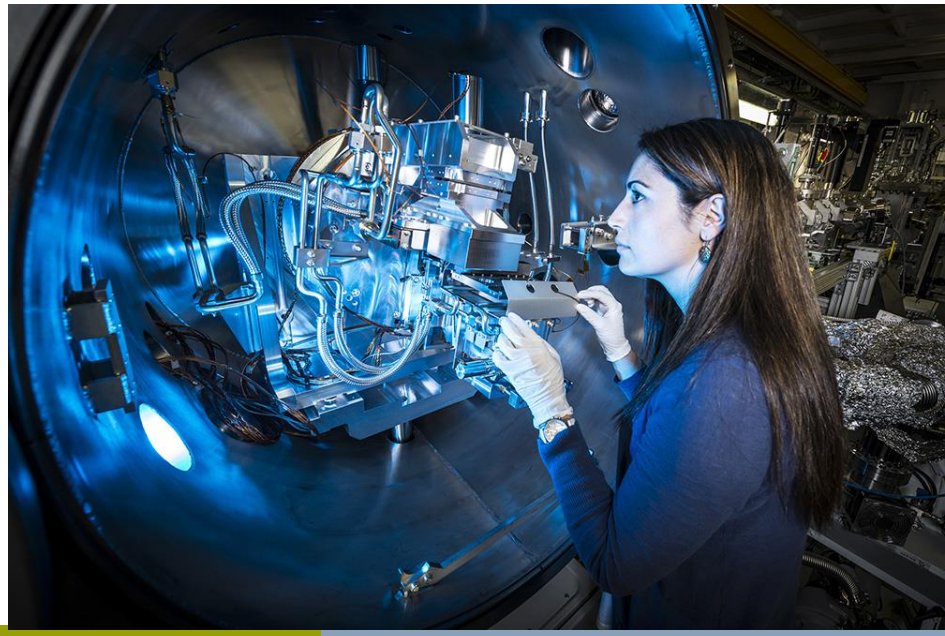
A Partnership Beam Line (PBL) is an ALBA Beamline designed, constructed, operated by an external (non ALBA) entity (it can be a country, a consortium, a company…).

Financial and human resources for construction and operation are fully assumed by the PBL operating entity.

If 100% PBL funded by the external entity:

- **70 % of beam time available for the PBL operating entity**
- **30 % of beam time available for ALBA users through proposal system**

Less than 100% PBL option could be discussed (-> ALBA share proportional to its participation)



And, now?...

How to access to ALBA?

NON PROPRIETARY ACCESS

- Based on proposals reviewed by an International Scientific Panel
- If awarded, finite amount of beam time
- Allocation of beamtime is typically for periods of 6 months
- Free access
- Results are public and must be published

PROPRIETARY ACCESS (COMMERCIAL)

- Based on costumer needs
- Beam time according to company needs
- Allocation of beamtime faster than Scientific access
- No free access, ALBA rates applicable
- Results are private, they belong to the costumer
- Additional pre- and post-experiment scientific support may be available

- Industrial Office is a one-stop shop service ("ventanilla única") by providing guidance through the whole process with ALBA

✓ Industrial research collaborations

✓ Industrial partnership

Summary

- **The ALBA Synchrotron is a valuable tool for the R&D and innovation activities in particular for the industry.**
- **One of the ALBA main goal is to improve Industry competitiveness.**
- **ALBA offers a wide range of industrial research services, collaboration possibilities and technology transfers.**
- **ALBA is looking for the needs of the industry.**
- **ALBA is committed to increase its industrial service offer in the future.**
- **ALBA has set an Industrial Office focused on the industrial costumer needs (industrialoffice@cells.es).**

industrialoffice@cells.es

Thank you for your attention !