



# Introduction to ALBA Synchrotron

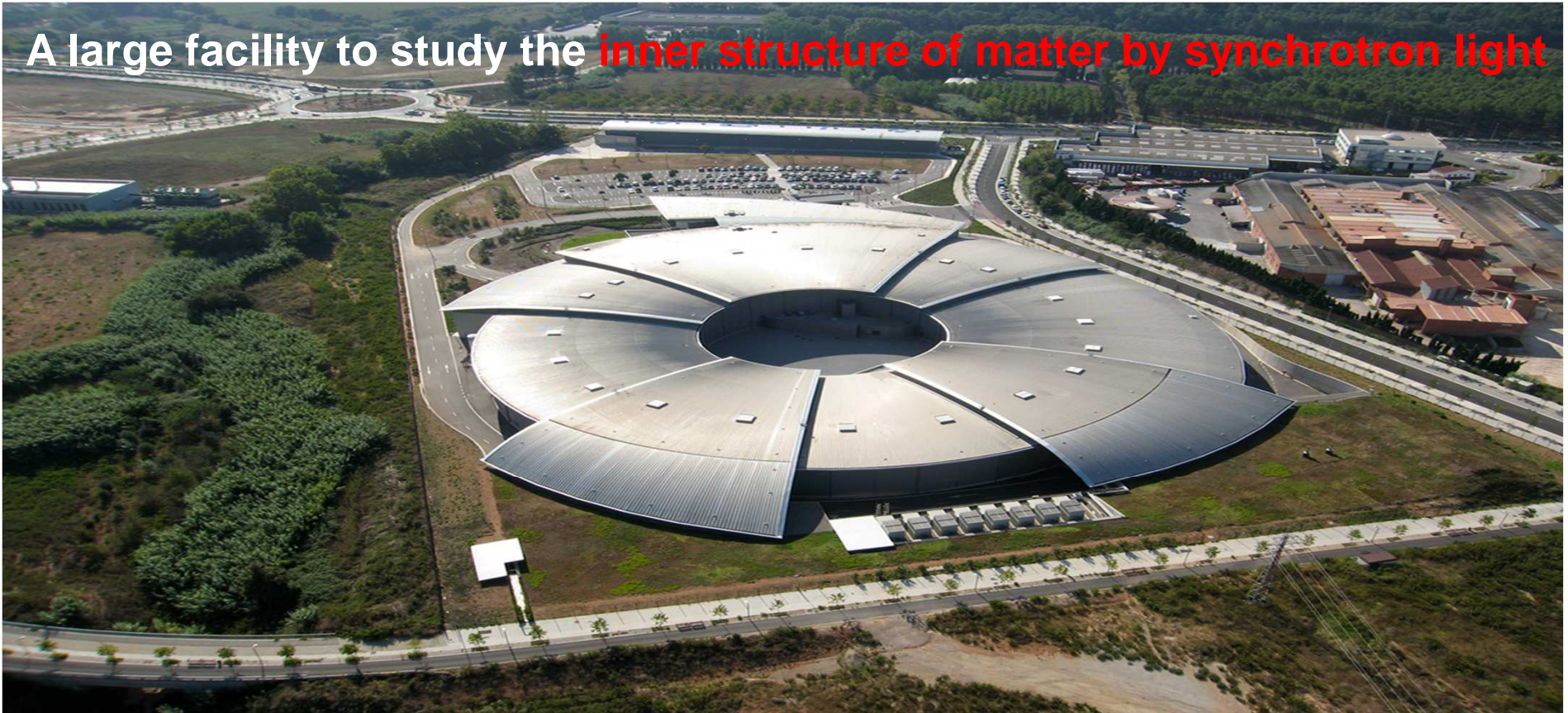
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ALBA Synchrotron Light Source



CALIPSOplus has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 730872

# ALBA Synchrotron in short

A large facility to study the **inner structure of matter by synchrotron light**



**1<sup>st</sup>**  
SCIENCE FACILITY  
IN SOUTH-WEST EUROPE

**200**  
STAFF (20% INTERNATIONAL)

**1700**  
RESEARCHERS PER YEAR

**250**  
EXPERIMENTS PER YEAR

**210 M€**  
PUBLIC INVESTMENT  
(2011)

**5000**  
HOURS PER LAB PER YEAR

**TOP-NOTCH RESEARCH IN:**

- BIOTECHNOLOGY AND LIFE SCIENCES
- MICROELECTRONICS AND NANOTECHNOLOGY
- ENVIRONMENT, ENERGY AND AEROSPACE
- MATERIALS DESIGN, DRUGS AND FOOD
- CULTURAL HERITAGE



# ALBA Synchrotron Beamlines

Chemistry & Material  
Science

Life sciences & soft  
condensed matter

Electronic & magnetic  
structure of matter

BL29: BOREAS  
REsonant Absorption  
and Scattering  
ES1: HECTOR ES2: MARES

BL24: CIRCE  
Photoemission  
Spectroscopy and microscopy  
ES1: PEEM ES2: NAPP

BL01: MIRAS  
IR Microspectroscopy

BL04: MSPD  
Materials Science and  
Powder Diffraction  
ES1: HRPD ES2: HP

BL22: CLÆSS  
Absorption &  
Emission Spectroscopies  
ES1: XAS ES2: XES

BL06: XAIRA (under construction)  
Microfocus macromolecular  
cristallography

BL20: LOREA (under construction)  
Low-energy Ultra-high  
Resolution Angular  
Photoemission (ARPES)

BL09: MISTRAL  
Transmission soft X-ray  
microscopy

BL16: NOTOS (under construction)  
XAS, HRPD, Instrumental  
development

BL13: XALOC  
Macromolecular  
Cristallography

BL11: NCD - SWEET  
Non Cristalline Diffraction  
SAXS/WAXS



# WHY DO COMPANIES USE ALBA SYNCHROTRON ?

The ALBA Synchrotron techniques allow to obtain outstanding results not achievable with other equipments or techniques very valuable to help boosting the competitiveness of companies.

## Synchrotron light techniques:

- X-ray microscopy
- Powder diffraction
- X-ray absorption
- IR micro-spectroscopy
- Macromolecular crystallography
- Small and wide angle scattering (SAXS and WAXS)
- Photoemission (microscopy, near ambient pressure)
- X-ray magnetic dichroism



LOWER DETECTION LEVELS



CHEMICAL MAPPING



OXIDATION STATE DETERMINATION



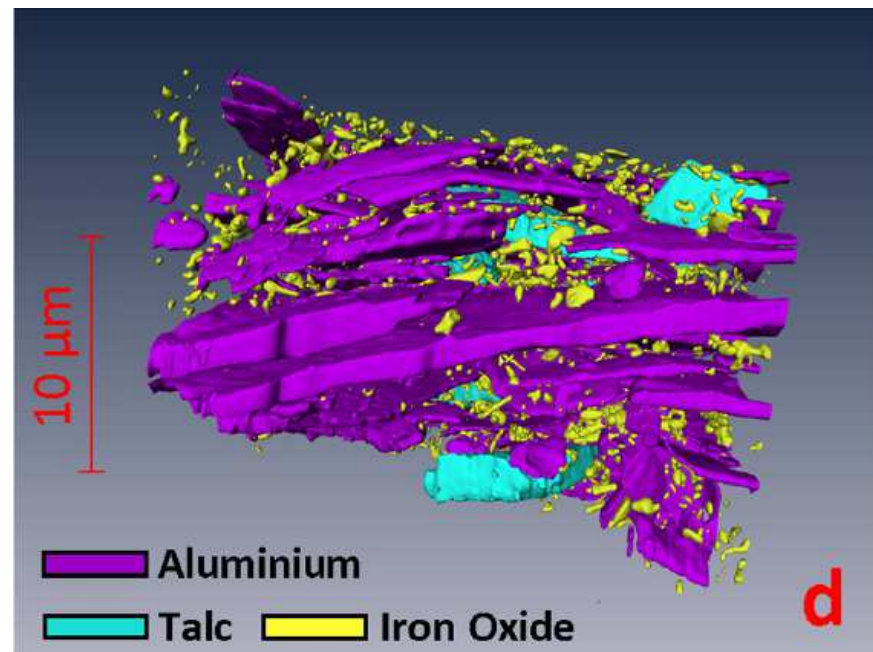
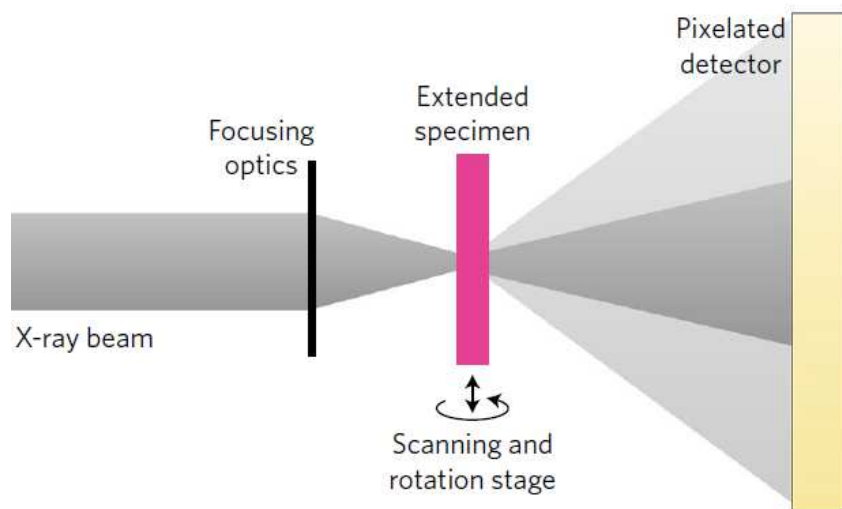
HIGHER RESOLUTION



FASTER EXPERIMENTS



WIDE VARIETY OF  
SAMPLES MEASURABLE



## WHAT CAN BE STUDIED?

- New materials for batteries
- Coatings and its stability
- Catalysts for reducing emissions
- Lightweight and heavy plastic materials
- Materials for hydrogen powered vehicles
- Fuel cells
- Corrosion
- ....



## ***SME access to ALBA Synchrotron***

- ***ALBA synchrotron is a partner of CALIPSOplus.***
- ***Small and Medium Enterprises (SME) may access to synchrotrons with the support of CALIPSOplus following the European rules.***



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# Synchrotron light can help Automotive industry!

