

Fostering a competitive economy focused on
green energy, digital transition and health



ALBA Science, Technology and Innovation Park

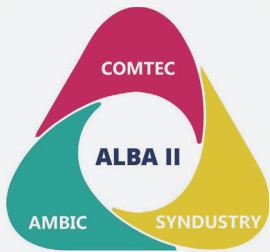
A truly unique research capability in Spain, setting a new international standard. An interdisciplinary hub for complex materials and biological systems strategically located at Parc de l'Alba, close to the Universitat Autònoma de Barcelona (UAB) and several first-class research and technology centers. Imaging and characterization tools, big-data, artificial intelligence, material growth and device testing and fabrication facilities.

ASTIP includes the upgrade of the ALBA Synchrotron and three new centers:

COMTEC
Complex Materials and Technologies Center

AMBIC
Advanced Multiscale Bio Imaging Center

SYNDUSTRY
Innovation Hub, an open testing and experimental facility. Complemented with a service facility, including an auditorium and a guest house

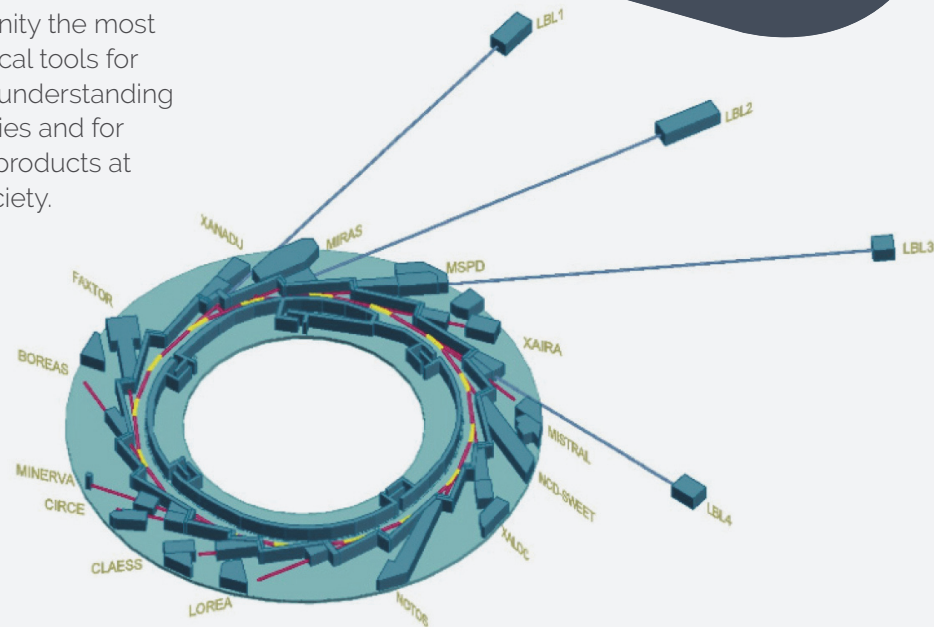


ALBA II

The evolution of the ALBA Synchrotron

ALBA, the largest research infrastructure in Spain, is ready to become a 4th generation facility. By combining the partial substitution of the accelerator, new beamlines and the upgrade of the existing instrumentation, it will offer the Spanish and international research community the most advanced analytical tools for advancing in the understanding of matter properties and for developing new products at the service of society.

- FROM 3rd TO 4th GENERATION
- INCREASED BRILLIANCE AND COHERENCE
- NEW BEAMLINES AND TECHNIQUES AVAILABLE



Complex Materials and Technologies Center for clean energy and digital transition

- ENERGY STORAGE (batteries, supercapacitors)
- ENERGY GENERATION, CONVERSION AND HARVESTING
- SENSING DEVICES
- QUANTUM MATERIALS
- MATERIALS AND DEVICES BEYOND CMOS DIGITAL TECHNOLOGIES
- QUANTUM COMPUTING
- HIGH TC SUPERCONDUCTIVITY

COMTEC

Materials and devices that enable efficient and cost-competitive generation, conversion and storage of clean energy are at the heart of the **green energy revolution**. Improving and going beyond silicon is pivotal to increase computing power and reduce energy consumption, as well as to enable completely new concepts like **artificial intelligence, big data, or quantum technologies**. Health, manufacturing, safety and transportation are other examples of key strategic areas where materials and their technologies provide transformative solutions.

COMTEC will be a hub for the development of advanced and complex materials and their enabling technologies. The expertise of BIST centers ICN2 and IFAE, together with ICMAB-CSIC (Severo Ochoa Excellence centers), will offer a unique capacity for **research and discovery, device fabrication, operando capabilities and computational and data infrastructures**.

COMTEC will be hosted in a new 10,000 m² building, strongly linked to the METCAM advanced materials electron microscopy infrastructure, and connected to an onsite ALBA II end-station. It will host PIC (*Port d'Informació Científica*, a joint venture of IFAE and CIEMAT) with enhanced computational and data storage capacities.

AMBIC

This new center, initially conceived by IBMB, UAB and ALBA, will contribute to **improving people's health by providing understanding of the molecular mechanisms** that sustain life in all its richness, from molecules to complex systems. It will build on the expertise and infrastructure of its partners and the X-ray and cryo-electron microscopy imaging capabilities of ALBA II, to expand the research to a multiscale approach. The **biosafety level 3 (BSL-3) laboratory, complete with sample preparation, imaging and bio-computing facilities and connected to a synchrotron beamline**, will make it unique in the world.

AMBIC will be hosted in a new building, including 10,000 m² of laboratory space, strongly linked to the CRIO-TEM-BIO specialized cryo-electron microscope for structural biology, and with an onsite ALBA II end-station contained within a BSL-3 environment.

Advanced Multiscale Bio Imaging Center to understand, control and provide solutions for health

- **CELL BIOLOGY**
- **COMPUTATIONAL BIOLOGY**
- **SAMPLE PREPARATION & SUPPORT FACILITY**
- **MACROMOLECULAR STRUCTURE & DYNAMICS**
- **SYSTEM & CELL IMAGING**

SYNDUSTRY

SYNDUSTRY will create the environment for industrial partners to understand and harness the potential of synchrotron light sources and level up their R&D capacities. Particularly those non-R&D-intensive sectors and companies, mainly SMEs, will most gain from a deeper understanding of the raw materials used in their processes and the materials they could introduce in the future. Deep-tech spin-off and start-up companies will find a place with a wide variety of available services and infrastructures to help them in

their tests, and proof of concept of new industrial materials and processes.

SYNDUSTRY will be hosted in a new 10,000 m² building. The proposed facility will bring researchers from the ALBA Synchrotron, participating research centers and Eurecat-UAB face-to-face with engineers and technologists from the target companies. They will share facilities, and work under a clear coordinated strategy for industrial research and improved IP policies that benefit both science and industry.

Bringing the benefits of synchrotron light-based R&D to the industrial sector

- **TECHNOLOGY TRANSFER**
- **INDUSTRIAL PHDS**
- **TAILORED INDUSTRIAL SERVICES**
- **KNOWLEDGE TRANSFER**
- **SPIN-OFFS AND START-UPS**
- **INNOVATION**
- **INTELLECTUAL PROPERTY**

Why

ASTIP?

Societal Transformation

- **To empower research and development in complex materials** with decisive impact on clean technologies.
- **To strengthen the health system** by linking fundamental biological research to clinical research.
- **To encourage public-private collaboration** in a wide range of technologies and disciplines.
- **To qualify industries** in collaboration with European partners such as those included in the League of European Accelerator-based Photon Sources (LEAPS) initiative.
- **To contribute to the Green Deal and Digital Transformation** aligned with the European research strategies.
- **To foster education, training and professional career development** of scientists, engineers, high-tech entrepreneurs.
- **To continue developing the local economy by** creating qualified jobs and being an essential building block of the evolution of Cerdanyola del Vallès as 'City of Knowledge'.



Barcelona Institute of Science and Technology



CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS



Institut de Biologia Molecular de Barcelona
Molecular Biology Institute of Barcelona CSIC



PARCDEL'ALBA
CERDANYOLA DEL VALLÈS
BARCELONA / CATALUNYA



ASTIP is a joint project by key actors of the innovation value chain of the Barcelona Metropolitan Area with a strong will to include other national and international partners

