


Name of the Partnering Organization:	ALBA- synchrotron light facility	
Location (town, country):	Cerdanyola del Vallès, Spain	
Web site address:	www.cells.es	
Brief description of the organization		
<p>ALBA is a third generation synchrotron light source facility starting operations, co-financed by the Spanish Government and the regional Government of Catalonia, and managed by the Consortium for the Construction, Equipment and Exploitation of the Synchrotron Light Laboratory (CELLS). In Phase I, an ensemble of seven beamlines was built and will be in operations in 2012. In subsequent Phases, more beamlines are expected to follow. Phase I beamlines are state-of-the-art in terms of optics and instrumentation. These initial beamlines are designed to cover a wide range of fields such as material science, nanotechnology, bioscience, physics, and chemistry.</p>		
Description of the research group		
<p>From the set of seven beamlines, five of them are directly linked to the EAgLE project. These are CIRCE, CLAEISS, MSPD, BOREAS and MISTRAL. CIRCE is a soft X-ray photoemission beamline fed by a helical undulator providing variable polarization. It has two state-of-the-art end stations. A PEEM instrument is equipped with the LEEM technique and with an imaging electron energy analyzer which is well suited for applications in nanotechnology. The second end station is a Near Ambient Pressure Photoemission equipment, NAPP, able to operate up to 20 mbar pressure around the sample. There are only few instruments like this in the world and it is expected to be very suitable for surface science studies involving liquids surfaces and surface chemistry applications including gas-solid/liquid-solid interactions. BOREAS is a soft x-ray beamline with a helical undulator devoted to magnetic dichroism, XMCD, (field of 6 T along the beam direction and of 2 T perpendicular to the beam direction) and to resonant magnetic scattering (RSXS). The latter end station is based on a UHV reflectometer including a rotatable magnet to investigate magnetic anisotropy in surfaces and thin films. CLAEISS is a state-of-the-art x-ray absorption beamline in the hard x-ray region equipped with a fast monochromator allowing to record EXAFS spectra in ~100 msec. In addition, an original x-ray spectrometer designed in-house allows to perform a spectral analysis of the fluorescence photons coming from the sample and inelastic x-ray scattering experiments. The beamline has two chemical reaction cells and an automated gas handling system to perform XAS measurements during chemical reactions. MSPD is devoted to high resolution powder diffraction. The large diffractometer equipped with two detector circles allows either to collect high resolution data in an efficient way by means of 13 analyzer crystals or to collect time dependent data. The sample environment allows studies at high temperatures and high pressures. MISTRAL is the soft x-ray microscopy beamline dedicated to transmission full-field imaging of biological and other thick samples from 270 eV to 2600 eV at cryo-temperature. The goal is to be able to record tomographic data sets in a few minutes and with 50 nm spatial resolution. X-ray microscopy has shown to provide insight into the internal structure of whole cells. Specimens can thus be imaged in their natural hydrated state. At higher energies it is also possible to perform spectroscopic imaging at wide range of edges for biological, environmental and materials science applications.</p>		
Selected list of relevant publications		
<p>“Surface symmetry breaking and strain effects on orbital occupancy in La₂/3Sr₁/3MnO₃ epitaxial films.” D. Pesquera, G. Herranz, J. Fontcuberta, A. Barla, E. Pellegrin, F. Bondino, and E. Magnano. Nature Communications 3, 1189 (2012).</p> <p>“Experimental Confirmation of the X-ray Magnetic Sum Rules for Iron and Cobalt.” C. T. Chen, Y. U. Idzerda, H.-J. Lin, N. V. Smith, G. Meigs, E. Chaban, G. Ho, E. Pellegrin, and F. Sette. Phys. Rev. Lett. 75, 152(1995)</p>		
Key researcher’s CV		
<p>Dr. Eric Pellegrin - Section head soft x-ray beamlines at the ALBA synchrotron light source. Scientific interests: Condensed matter physics, electron spectroscopies, high-temperature superconductors and correlated electron systems, solid state magnetism, surface physics. Technical skills: Solid state and electron spectroscopies, UHV technology, cryogenic systems, superconducting magnet systems, electron & photon detectors and beam diagnostics, electron and photon imaging systems, soft x-ray optics and technology, RF plasma technology.</p>		