

## Letter of Commitment for the EU Infratech Proposal: BOBINE-Bettering our B-field Infrastructure for Neutrons in Europe

The Spanish National Research Council (CSIC) is the largest research institution in Spain, the fourth-largest public research institution in the European Union and the seventh in the world, producing 20% of the national scientific output, and a major player in the development of the EU Research Area. Through its 121 research centres across the country, 50 of them joint research centres, and its management and support units, the CSIC has a broad experience managing research, innovation and training projects across all the disciplines of the knowledge. The CSIC through its Aragón Nanoscience and Materials Institute (INMA), a joint research centre with the University of Zaragoza, manages two unique CRG instruments at the Institute Laue Langevin; the D1B powder diffractometer and the extreme conditions diffractometer designed to operate with powders and single crystals under high magnetic fields and high pressures, called XtremED.

The employment of high magnetic fields and low mK temperatures provides a key tool in the investigation of magnetic phenomena with neutron-based techniques. As such, the magnets developed within the project BOBINE will be unique opportunity to strengthen the European large-scale research infrastructure. With a joint European 20T static magnet and a 40T pulsed magnet, both combined with a bespoke mK dilution insert BOBINE will significantly extend the available parameter range towards more extreme sample environment. The project will bring unique opportunities for the exploration of quantum disordered systems or exotic electronic ordering phenomena, especially in combination with the latest generation of neutron scattering instruments. BOBINE will be a key development towards the discovery of exciting new physics. Moreover, the technology employed in BOBINE, based on HTS superconductors, will serve as a prototype for future high-performance magnets, with potential use also beyond neutron scattering applications such as quantum computing.

We believe that the BOBINE project provides a very interesting and promising contribution towards a stronger and more competitive European neutron research landscape. We at CSIC/INMA foresee a strong request from our user community to have access to such a magnetic field and temperature range to address scientific challenges mainly from, but not limited to, the area of information technology and quantum phenomena. We strongly support the BOBINE project and are committed to contribute by providing the infrastructure to conduct the project and the operation of the magnets on the neutron scattering Spanish CRG beamlines.

We furthermore will be happy to allocate beamtime at our CRG for hot commissioning of the magnets in pilot experiments.

Francisco Javier MORENO FUENTES

Vice-President for International Affairs, CSIC



Javier CAMPO

Director of the Spanish CRG at ILL  
CSIC Researcher at INMA

