

ULBS, CES and Environmental Measurements at Laboratorio Subterráneo de Canfranc (LSC)

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Content

The Laboratorio Subterráneo de Canfranc (LSC) is the second largest underground laboratory in Europe. LSC is located under the central Pyrenees in Spain. At LSC an number of experimental facilities are installed and under commissioning to search for rare events such as dark matter and neutrino-less double beta decay. More research is carried out in geophysics and life in extreme environments. To support the construction of the experiments at the LSC, an Ultra-Low Background Service (ULBS) and a Copper Electro-forming Service (CES) were created.

The measurement technique employed at the ULBS is gamma spectroscopy with HpGe detectors. Seven HpGe detectors are working at LSC. Improvements in the design of the shielding and the construction of an anti-radon system to lower the background of the detectors are being implemented. At LSC a radon abatement system, which produce radon-free air at 1 mBq/m³ is working. The ULBS facility at LSC will be reviewed.

The main goal of CES Service at LSC is to obtain high-purity copper pieces. The electro-forming of copper pieces has been reported to be an effective way to obtain high-purity copper needed for the construction of ultra-low-background radiation measurements devices. At present at LSC the ANAIS experiment is using electro-formed copper made on site. The techniques and results of the electro-formed copper pieces obtained at the CES will be presented. To improve even further the quality of the pieces produced, a new electro-forming set-up inside LSC underground clean room is planned. At LSC the copper to make electro-formed pieces is stored underground to avoid cosmogenic activation. A number of proposals have been submitted to LSC to study the radioactivity and the mechanical properties of electro-formed copper.

Radon and environmental measurements at the LSC are presented. Series of results along with their possible correlations are investigated.

About the Presenter

Chemical Technician at the Canfranc Underground Laboratory (Oct 2009 – nowadays), skilled in all aspects of chemical engineering including R&D copper electroforming process, clean room environments and dangerous waste management and its regulations. In overall charge of the Chemical Area, setting up and conducting chemical tests and analyses using different techniques, developing rules and safety guidelines and performed preventive and corrective maintenance of laboratory equipment. As the Clean Room Manager, supervising its construction, use and maintenance as well as teaching external users in these critical environments. Also in charge of Dangerous Waste Management, controlling its generation, storage and its ultimate disposal, and interacting with regulatory agencies to ensure regulatory compliance. Copper Electroforming Facility Manager, preparing the installation and controlling the conditions to obtain ultra-pure copper pieces according to the requests from external orders.

Involved in preparing samples, making different analyses and giving results related to radioactive & chemical environmental control, in collaboration with LABAC (University of Zaragoza).

Providing permanent technical support and assistance to external users and companies in area of responsibility.

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