

Finding and Quantifying Li-Bearing Mineralisations Using the GeoCore X10 Drill Core Scanner

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Raw materials from the recent lithium-cesium-tantalum (LCT) pegmatite field discovery in Bergby, in the central part of Sweden, could potentially quickly be put to use in European or even domestic electric vehicle and storage battery production.

When exploring, a challenge has been to actually detect and measure the abundance of light elements, such as Li. Laser induced breakdown spectroscopy (LIBS) is a method with such capabilities, and the task would be to make it practically feasible to apply it in a way suitable for exploration.

In the recently started ULiBS project, LCT pegmatites are studied with LIBS, X-ray computed tomography (CT), and xX-ray fluorescence (XRF), trying to differentiate and quantify Bergby lithium ore minerals such as petalite and spodumene. Moreover, the project aims to study the possibility of quantifying concentrations of quartz, feldspar, and mica, which could potentially be sold as by-products from a future mine at Bergby.

Orexplore's drill core scanner, the GeoCore X10, has been producing x-ray CT and XRF data for tens of thousands of meters of drill core, although LCT-pegmatites have not been scanned previously. In addition to scanning such drill cores, the ULiBS project will utilize a GeoCore X10 version with a modular LIBS system added alongside its other sensors to extend the range of detectable elements and boost both mineral identification and quantification capabilities while maintaining the scanning speed and usability of the original system.

Following the project, the enhanced system and methodologies could be rolled out to the fleet of GeoCore X10 drill core scanners to enable faster discovery of lithium mineralisations and conversion to active mines.