3 ULiBS

Li

Understanding lithium-bearing systems in Sweden

2022/03373

Sustainable and innovative exploration and exploitation of Swedish lithium ores

Presenter
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Project leader
Karin Högdahl, Uppsala University

Partners
Orexplore AB, Bergby Lithium AB

Program Day 2023

SWEDISH MINING INNOVATION

Med stöd från VINNOVA Sveriges innovationsmyndighet, Energimyndigheten, FORMAS, Strategiska innovationsprogram

LCT-granitic pegmatites at Bergby

SQUI, quartz, albite, muscovite

Spodumene, petalite, quartz, feldspars

Goals of the project

Characterise the Li-ore field at Bergby and the ore texture in 3D by Orexplore GeoCore X10 XCT-LIBS-XRF drill core scanning technique

Define the composition of the ore and gangue minerals and the proportion of the main ore phases (petalite and spodumene)

Constrain the origin, evolution and geological setting of the Li-bearing rocks at Bergby

Evaluate field based spectroscopic Li-exploration methods

Currently, there are no battery-grade Li-production within the EU

The Li-ore at Bergby is one of the most promising Li-prospects in Sweden

Quantifying the Li-ore by an upgraded GeoCore X10 XCT-LIBS-XRF drill core scanner, that is fast and non-destructive as opposed to used assay methods

The gangue minerals quartz, feldspars and mica may be suitable for industrial applications and thus could be valuable biproducts

Project Plan

Develop and upgrade the Orexplore GeoCore X10 with a LIBS detector in order to analyse light elements

Bedrock mapping of host rocks and ores

Whole rock geochemistry, mineralogy, petrology and structural analyses

Geochronology and thermobarometry


Petalite


Spodumene


Li-pegmatite

Project results so far

New Li-bearing boulder finds and outcrops extend the previous known ore field to the north and west

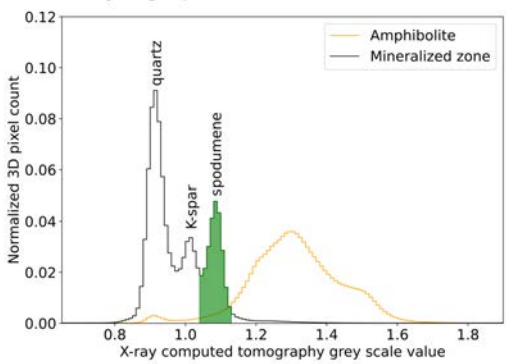
Mineralogy and spodumene content in the ore type SQUI are determined

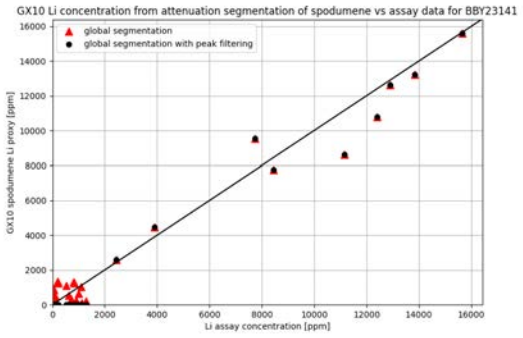
Spodumene, quartz and feldspar concentrations is defined in drill cores by their XCT-attenuation differences

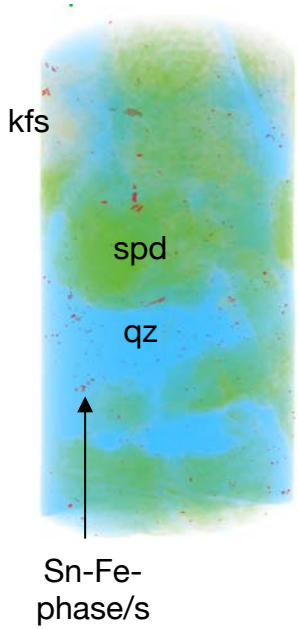
Li content correlates well with accepted assay data on half cores

Business discussions to use GeoCore X10 in Li exploration

ULiBS is a part in the multidisciplinary research centre funded by SSF







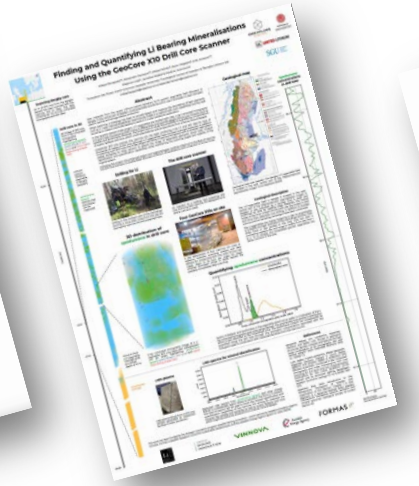
Dissemination

Organised excursions for Greenpeg (April) and the Swedish Mineralogical Society (Sept) with excursion guides

Poster presentation at the Greenpeg meeting in Uppsala

Poster presentation at StandUp for Energy, Ångström UU

Poster and oral presentations at the Society for Economic Geologists meeting in London



Next Steps

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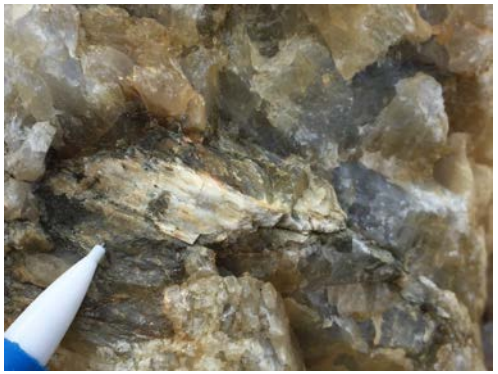

Andalusite

Sillimanite

The project commenced in April 2023

Plans for 2024:

Orexplore GeoCore X10 scanning of petalite-rich (ρ=2.4) cores

Major and trace element analyses (LAICPMS) of muscovite and quartz

Mineralogical and geochemical characterisation of ore and host rocks

Structural analyses

Geochronology

Evaluate UV-wavelength specific spectroscopy for Li-exploration

Upgrade Bergby LCT-pegmatite field from a Li-mineralisation to a Li-ore resource?

Mining innovation for a sustainable future

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