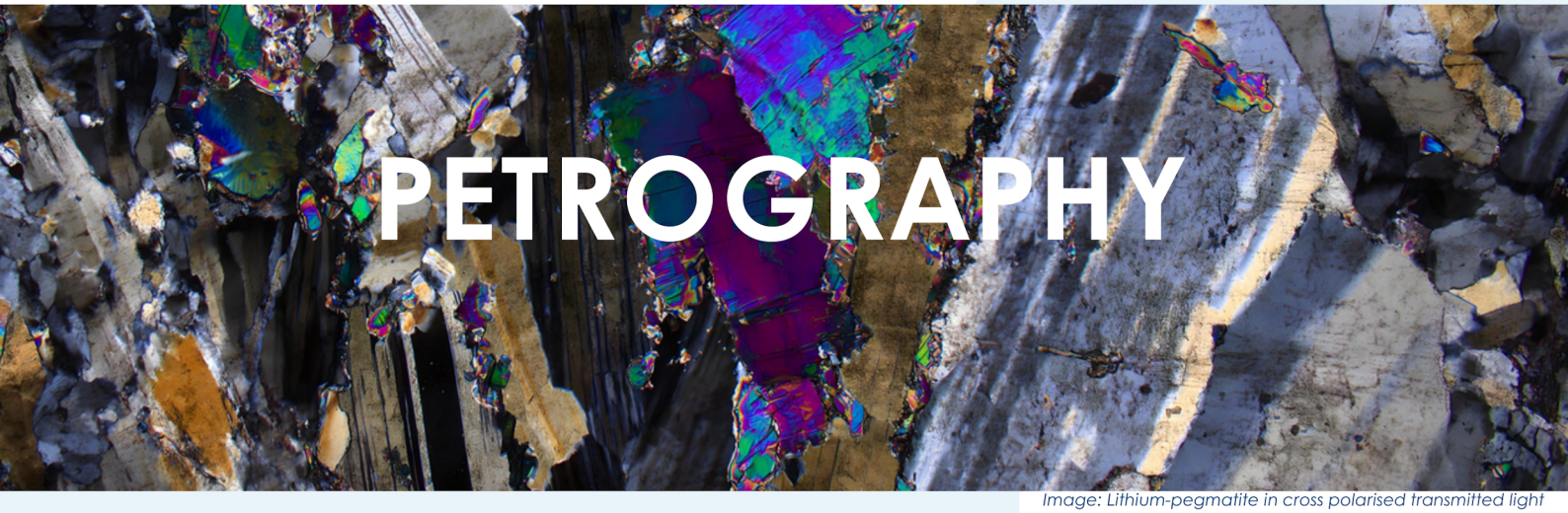
microanalysis australia



# PETROGRAPHY

*Image: Lithium-pegmatite in cross polarised transmitted light*

## Petrographic Analysis

From core samples to RC chips petrographic examination is the only way to understand mineral genesis, textural relationships, and in situ exploration targeting vectors.

Stereoscopic and thin section petrographic investigations are available to understand your geology fully, including speciation of critical minerals, primary and secondary origins, and potential processing pitfalls.

Microanalysis Australia work closely with a range of ore types and with multidisciplinary approaches to maximise analytical outcomes for hard won samples.

*Image: full thin section scan in ~XPL showing coarse prismatic spodumene and intergranular albite-quartz groundmass from a Western Australian LCT-Pegmatite. (Thin section ~50 mm in length).*

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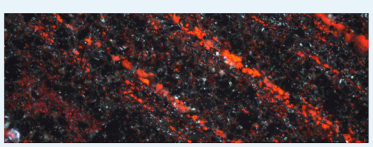
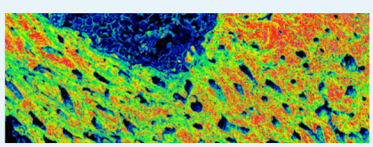
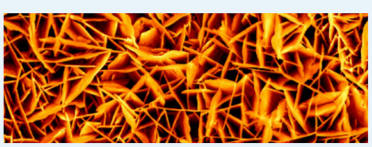
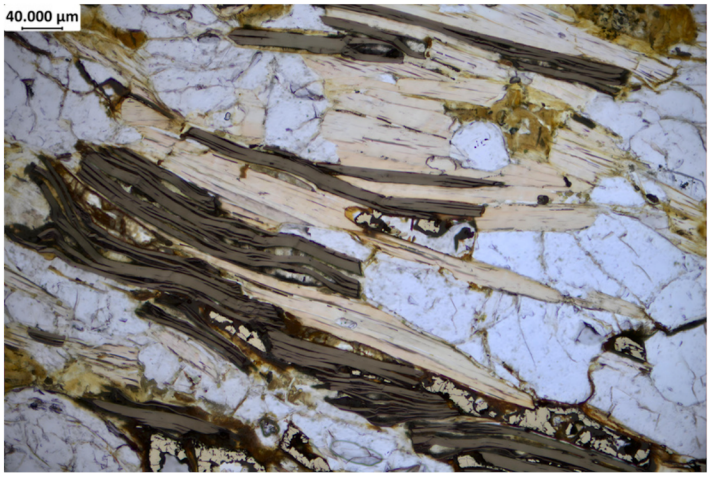






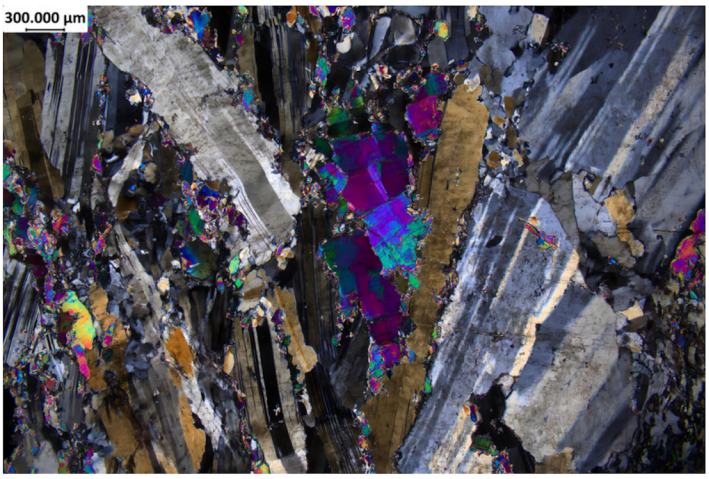
## Mineral Identification for Critical Minerals

Petrographic analysis involves the microscopic examination of thin sections of rocks or minerals. Such analysis identifies the minerals present in the ore, including cobaltite; copper sulphides such as chalcopyrite and bornite; lithium silicates such as spodumene and lepidolite; graphite; and REE hosting zircons, monazite, and apatite. Identification of these minerals is crucial for determining the quality and composition of ores as well as reporting under the JORC code.



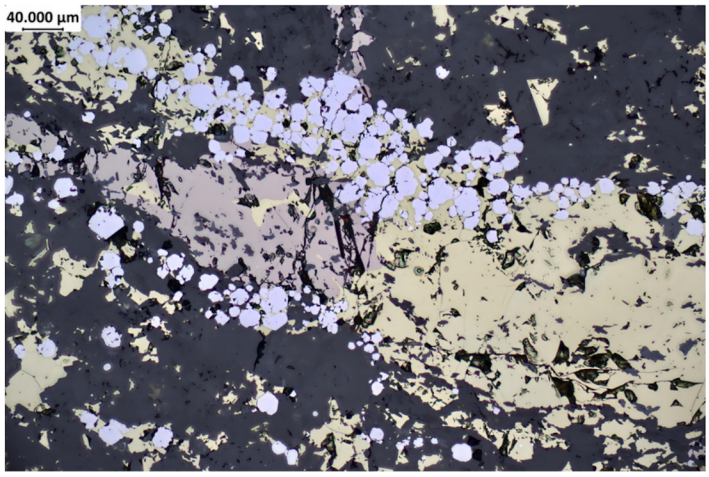

## Lithium and graphite

Lithium and graphite are of ever-increasing importance in the pursuit of the green energy transition. Microanalysis Australia are experienced in assessing and characterising lithium and graphite deposits. For graphite, petrography is the best primary tool for identifying the size and distribution of graphite crystals, the presence of deformation to the graphite and whether they are intergrown with phases that will prove difficult during mineral liberation. For lithium, and in particular lithium pegmatites, petrography can be utilised to assess the presence and timing of regional structural events, primary vs secondary origins for key lithium phases, vectors for proximal or distal lithium ore minerals, and importantly classification of lithium bearing phases that are unresolvable by other methods (e.g. lepidolite).




## Ore Characterisation

Petrography provides insights into the texture, structure, and composition of ore deposits and can further assess the degree of liberation of valuable minerals from the gangue minerals. Techniques like XRD can provide information on composition and abundance but petrographic approaches reveal mineral textures, forms, intergrowths, inclusions and genetic relationships. This information helps geologists and mining engineers better understand the ore body's genesis, depositional environment, and alteration history. Such knowledge aids in ore body modelling, mine planning, and resource estimation. Additionally processing of ore can be adjusted to optimise recovery rates and product quality. Characterisation of critical mineral ores are routinely conducted by Microanalysis Australia combining petrographic, XRD, and SEM-EDS approaches.




*Images: Top: Lithium-pegmatite in cross polarised transmitted light. Lepidolite and spodumene identification for Western Australian ore resource study (2.5x). Middle: Pyrite-biotite graphite schist in combined reflected and transmitted light. Graphite flake assessment for Madagascan ore resource study (20x). Bottom: Copper-cobalt-gold ore sample in reflected light. Late stage, pale pink euhedral cobaltite formed secondary to chalcopyrite-pyrrhotite vein phase (20x).*