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PETROGRAPHIC AND MINERAGRAPHIC DESCRIPTIONS

SAMPLE NO: Sample PD - 1

TYPE: Rock chip

LOCATION: Mt Read Volcanics, Tasmania

FIELD IDENTIFICATION: Magnetite and pyrite stringers penetrating a tectonised felsic porphyry host. The sample is strongly magnetic.

SECTION TYPE: Thin Section and Polished Thin Section

CLASSIFICATION: *A quartz - plagioclase phyric rhyodacitic porphyry representing either a volcanic or subvolcanic that has been subject to brittle fracturing/cataclasis and concomitant magnetite - pyrite - minor chalcopyrite stringer mineralisation, as a syn-tectonic phase.*

DESCRIPTION:

MINERALS PRESENT:

Quartz (phenos)	16%	Opakes (17%):
(matrix)	2%	Magnetite - dominant (10%)
(veins)	20%	Pyrite - subordinate (7%)
Plagioclase - albite (phenos)	3%	Chalcopyrite - tr
Feldspar (matrix)	33%	
Sericite	6%	
Fe/Mg chlorite	3%	
Opakes	17%	

TEXTURE:

Variable, medium to coarse grained (up to 2.5 mm) corroded and resorbed quartz phenocrysts and subordinate, equant plagioclase - albite phenocrysts occur in a fine grained feldspathic matrix associated with minor interstitial quartz. The feldspathic matrix probably has a potash feldspar component based on the XRF K content. The matrix has developed spheroidal - like textures and has been incipiently sericitised.

The porphyritic felsite host has been brittle fractured and locally mylonitised with the development of a series of anastomosing sericitic shears. The quartz phenocrysts have been locally fractured and shattered, and can exhibit sector undulose extinction. The fractured and altered matrix has been cut by mineralised stringers (magnetite and pyrite) closely associated with deformed, fibrous quartz and fibrous Fe/Mg chlorite associated with ongoing deformation of the matrix.

In reflected light, fine, anhedral and closely packed magnetite aggregates and lenses, exhibiting deformation textures, represents the initial stronger mineralised phase and has been locally overprinted by anhedral pyrite aggregates. Fine, anhedral magnetite is disseminated through the adjacent felsite matrix. Magnetite can exhibit subtle exsolution textures. Trace chalcopyrite inclusions occur in pyrite. Gold was not observed.

Paragenesis: Magnetite → pyrite → chalcopyrite.

SAMPLE NO: Sample PD – 1 - CONTINUED

ALTERATION/METAMORPHISM:

The porphyritic felsite host has preserved subtle resorption and possible devitrification textures confirming that the metamorphic grade is low. The quartz feldspar porphyry has been subject to ongoing brittle tectonism and cataclasis culminating in magnetite and pyrite – minor chalcopyrite stringers as syn-tectonic phases associated with quartz and Fe/Mg chlorite that have been subject to ongoing deformation.

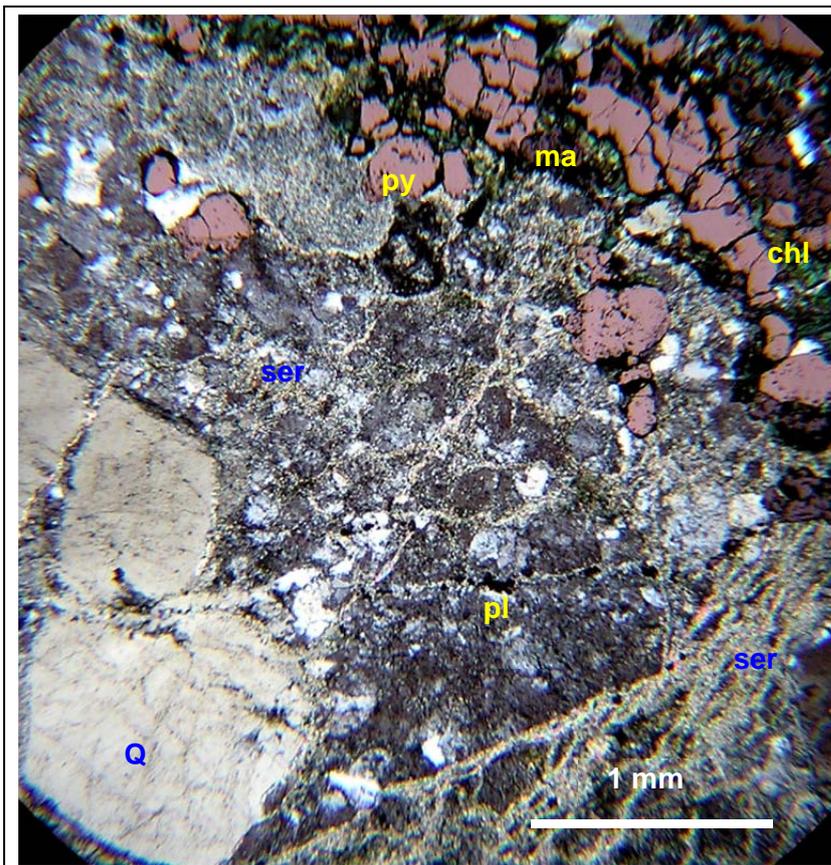
NITON XRF ANALYSIS: Matrix Zr – 292 ppm, Sr – 33 ppm, Rb – 72 ppm, Pb – 20 ppm, Cu – 166 ppm, K – 3.65%, Ba – 2286 ppm, Ca – 320 ppm, Mn – 160 ppm, Cs – 82 ppm, U – 8 ppm, Th – 16 ppm, Sb – 30 ppm.

COMMENTS:

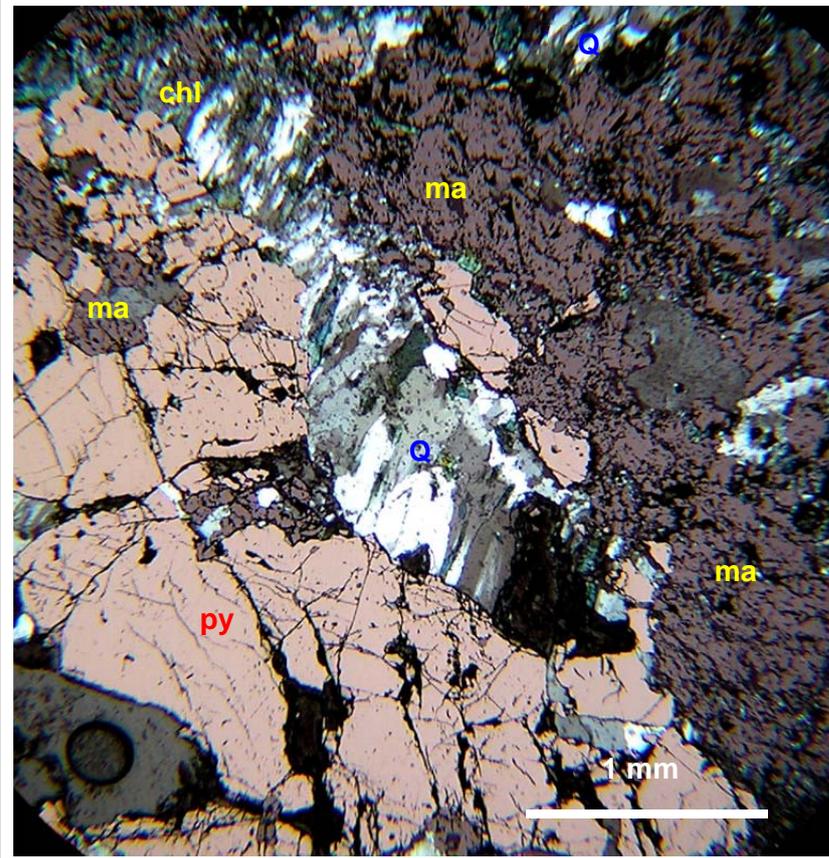
The composition of the quartz and plagioclase – phytic host with a possible devitrified potash feldspar matrix suggests either a volcanic or subvolcanic origin that can be classified as a rhyodacite. The felsite clearly represented a competent host that has been subject to brittle fracturing/cataclasis and concomitant hydrothermal magnetite – pyrite – minor mineralisation associated with a quartz – Fe/Mg chlorite gangue.

There is no clear evidence for IOCG affinities for the mineralisation although additional evidence may be required. The high K values tend to downgrade pervasive albitisation and there is no evidence of hematite alteration.

Photomicrographs



A corroded quartz (Q) phenocryst occurs in the fine grained felsite host comprising plagioclase (pl) and minor interstitial quartz. Plagioclase has been incipiently sericitised (ser) and a sericitic shear cuts the matrix. Anhedral pyrite (py) and magnetite (ma) have penetrated the felsic porphyry host. Crossed polars under reflected and transmitted light. Field of view – 3 mm.



Magnetite (ma) and pyrite (py) stringers are associated with a fibrous quartz (Q) and Fe/Mg chlorite (chl) gangue that has penetrated the felsic porphyry host. Magnetite has been further deformed and pyrite fractured during ongoing deformation. Crossed polars under reflected and transmitted light. Field of view – 3 mm
