Petrographic Description of Samples

RRN – DDH 1 – 52.2 m

and

RRN – DDH 1 – 147.8 m

for

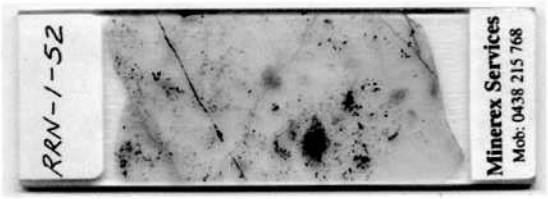
RedRiver Resources Ltd

Dr Richard M. Vielreicher
Date: 23/10/2006

Sample No: RedRiver– RRN-DDH 1-52 **Date**: 23/10/2006

Location: n/a

Thin Section:



Mineralogy:

Mineral	vol%
Diopside	50 - 60
Plagioclase	20 - 30
Prehnite	5 - 15
Titanite	1 - 2
Carbonate	< 1
White mica	< 1
Pyrrhotite	<< 1
Pyrite	<< 1
Chalcopyrite	<< 1

Description:

The rounded clasts in this holocrystalline, very fine-grained, subhedral-granular sample display 1) fragments composed of a dense mesh of subhedral, metamorphic diopside grains with additional subhedral pyrrhotite, 2) laminated fragments composed of layers dominated by plagioclase with fine-grained diopside and almost monomineralic, medium-grained diopside grains that are irregularly intergrown, and 3) fragments composed of plagioclase, diopside and additional disseminated pyrrhotite and chalcopyrite.

The "groundmass" is composed of irregular patches rich in dipsode and very fine-grained, mosaic-textured plagioclase, respectively. Prehnite as retrograde alteration mineral is also present disseminated throughout the groundmass, as well as associated with folded layers/veins?. Noteworthy is the relative abundance of very fine-grained, disseminated titanite. Additional, very fine-grained carbonate and white mica may also be present.

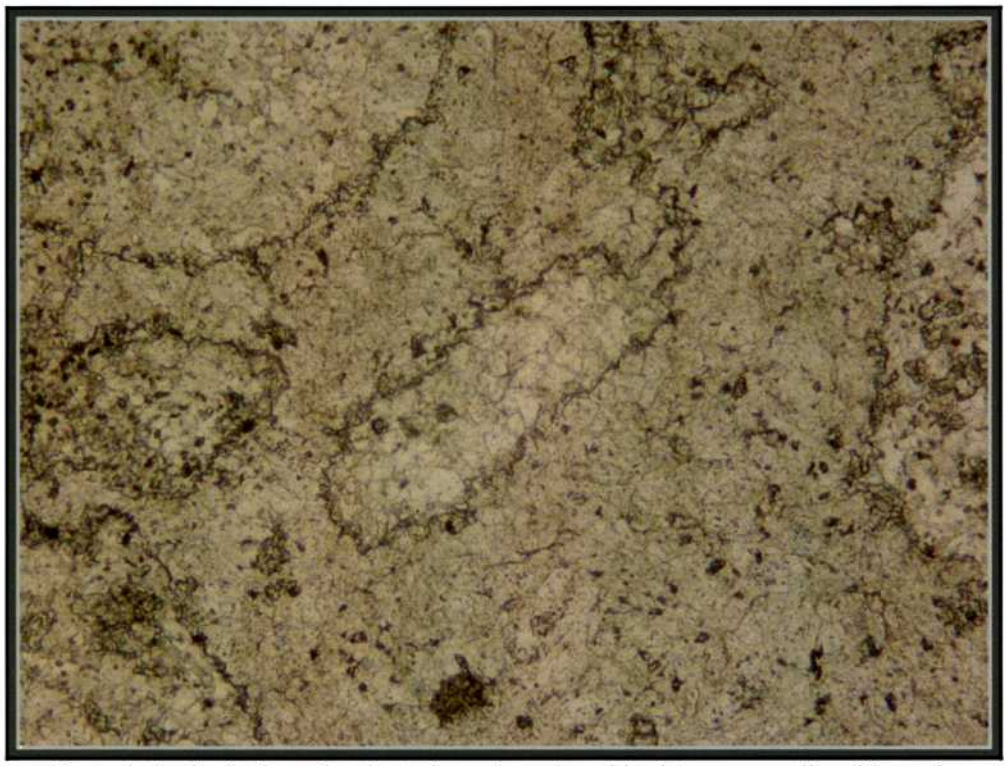
The opaque minerals, totaling about 1 vol-%, include subhedral to anhedral pyrrhotite (70%), pyrite (25%) and chalcopyrite (5%), which form up to 0.1 mm large grains and aggregates. Pyrrhotite and chalcopyrite occur in disseminated form, with a dense dusting related to fine-grained diopside; pyrite is generally associated with late fractures.

The sample id cut by 1) carbonate-chlorite/clay mineral-pyrite veins, 2) laminated carbonate-prehnite-clay mineral-plagioclase veinlets, as well as 3) very thin quartz veinlets.

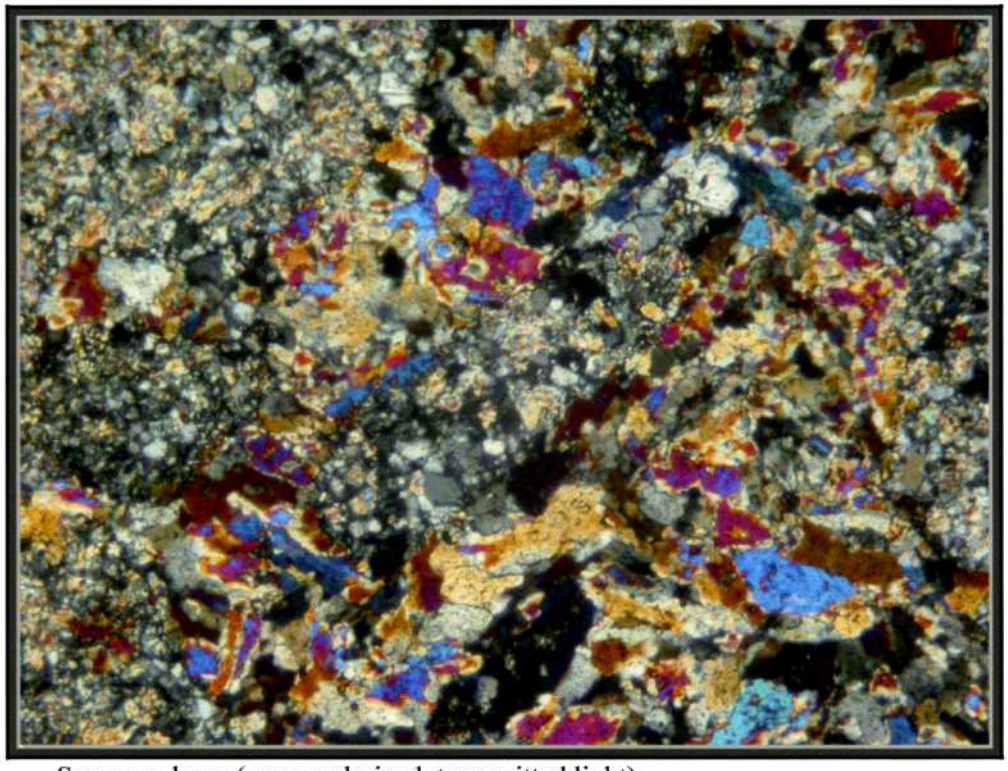
Comments: Due to the very fine-grained nature of the lithology, some scanning electron microscope studies may be of interest.
The sample contains metamorphic (diopside) and hydrothermal alteration (e.g. prehnite, white mica, carbonate) minerals, indicating a complex geological history.

Lithology: **metamorphosed and altered dolomite / marble**

Photomicrographs of Sample RRN-1-52 (Field of View = 2 mm)

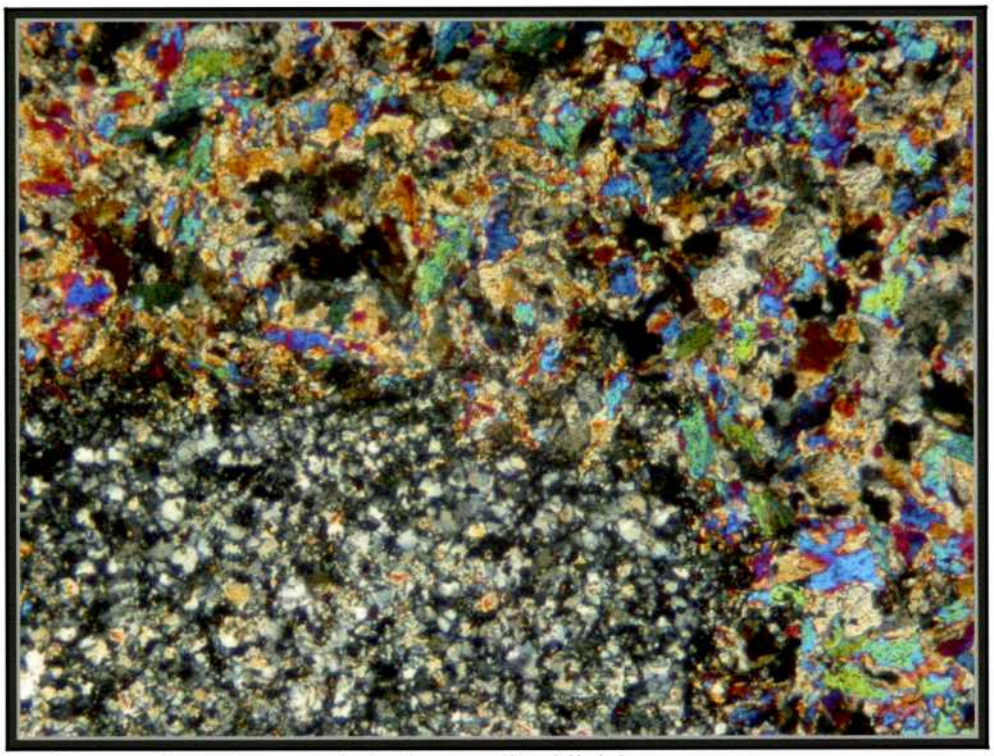


Rounded, plagioclase-dominated patch enclosed by intergrown diopside grains (plane-polarized, transmitted light).

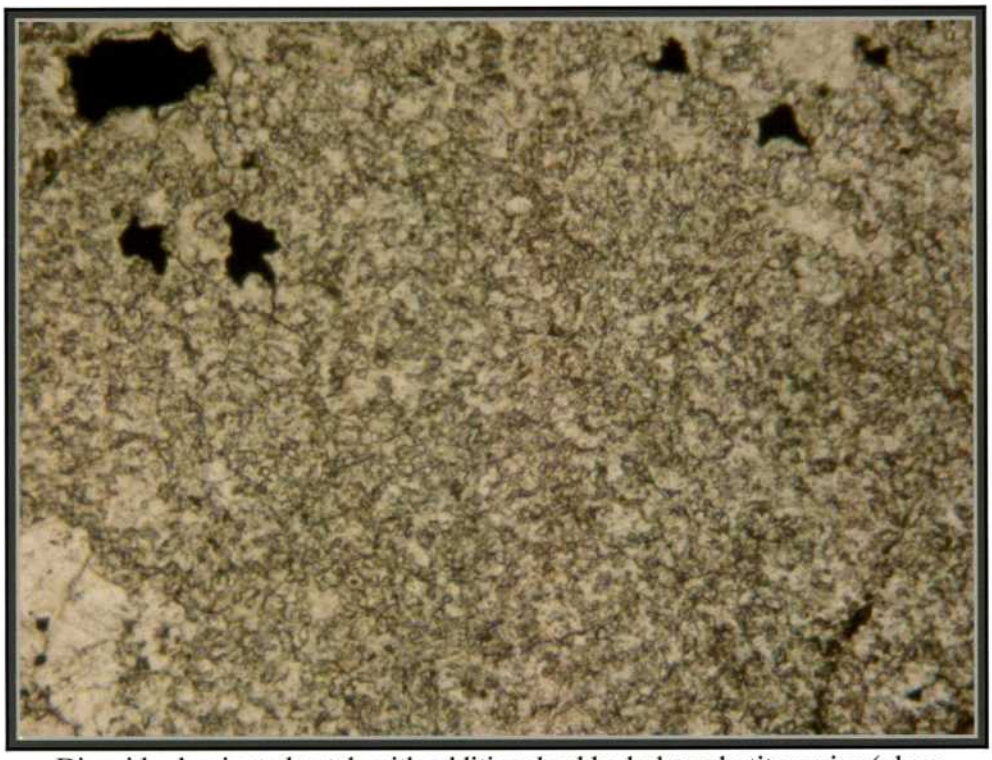


Same as above (cross-polarized, transmitted light).

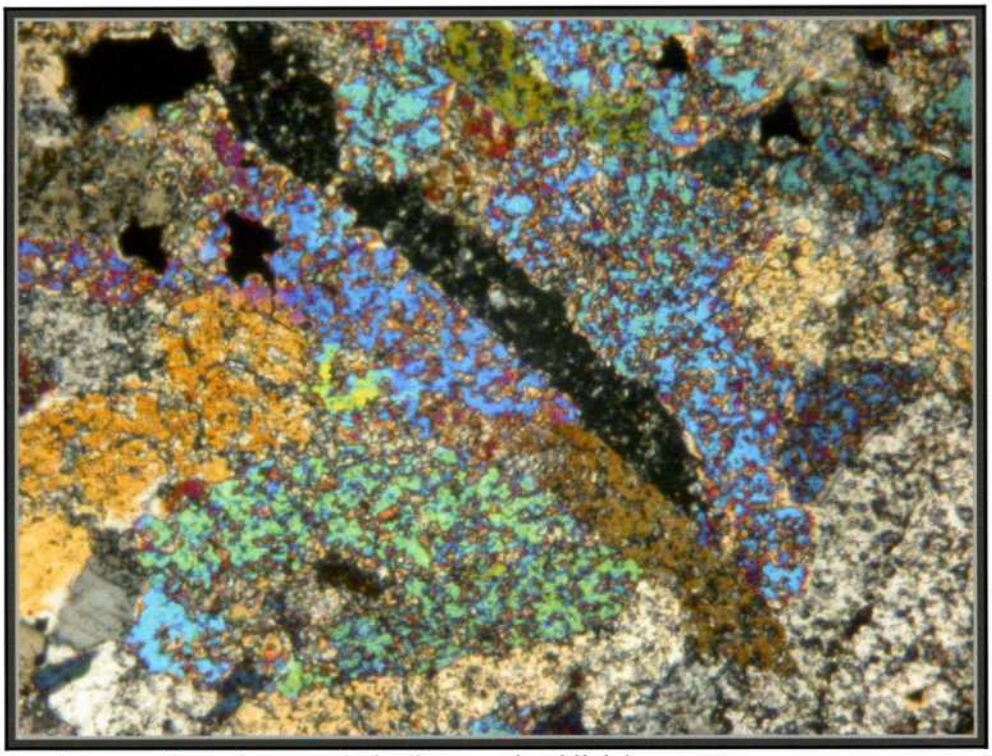
Plagioclase-phrenite-titanite bearing clast, surrounded by diopside grains (plane-polarized, transmitted light).



Same as above (cross-polarized, transmitted light).

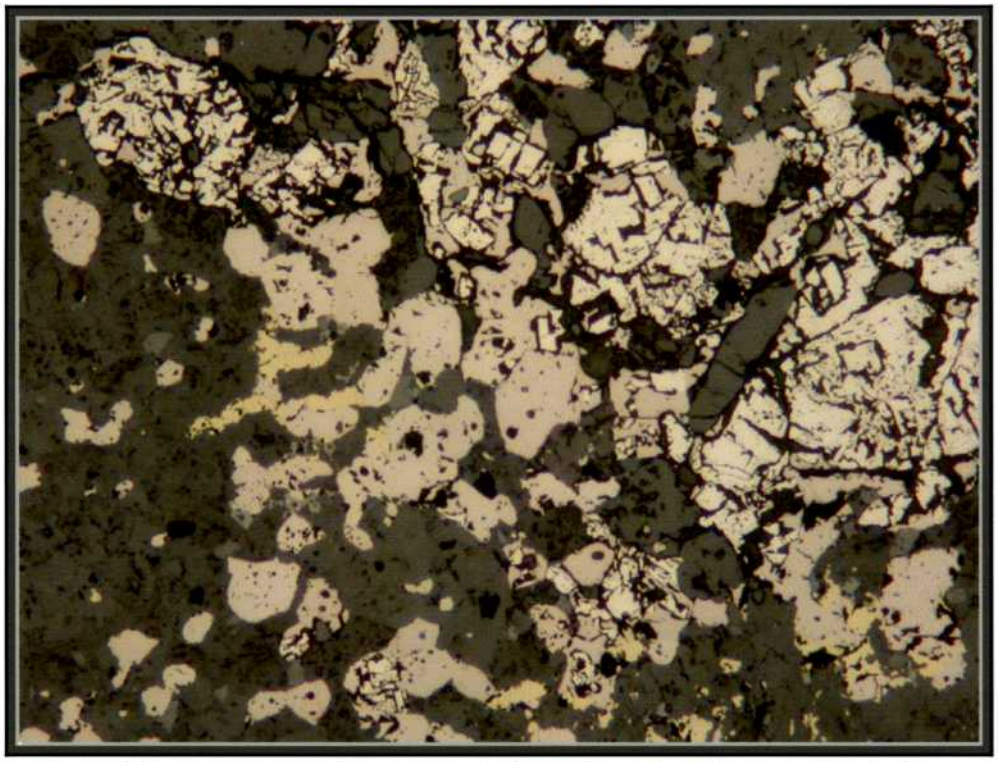


Diopside-dominated patch with additional subhedral pyrrhotite grains (plane-polarized, transmitted light).



Same as above (cross-polarized, transmitted light).

Late- cross-cutting fracture partly filled with pyrite aggregate (plane-polarized, reflected light).



Sulphide mineralization(pyrrhotite, chalcopyrite and pyrite) associated with diopside-dominated clast (plane-polarized, reflected light).

Sample No:	RedRiver– RRN-1-147	**Date**: 23/10/2006

Location: n/a

Thin Section:

Mineralogy:	**Mineral**	**vol%**
	Biotite	30 - 50
	Plagioclase	20 - 30
	Cordierite	15 - 20
	Quartz	10 - 15
	Tourmaline	< 1
	Ilmenite	<< 1
	Pyrrhotite	<< 1
	Chalcopyrite	<< 1
	Pyrite	accessory
	Zircon	accessory
	Carbonate	accessory

Description:

This holocrystalline, subhedral-granular, fine-grained and locally porphyritic rock is composed of alternating layers of variable thickness that are dominated by 1) fine-grained, subhedral to euhedral biotite flakes and 2) very fine-grained, mosaic-textured plagioclase and minor quartz, with disseminated, very fine-grained biotite flakes. Also forming pseudo-layers are elongate aggregates of inclusion-rich, ie poikiloblastic, cordierite. Locally cordierite also forms individual, subhedral poikiloblastic grains (< 2mm) that exhibit various degrees of pinitization, especially where they are set within a biotite-dominated matrix; here sub-rounded quartz grains are also present. Locally, subhedral to euhedral tourmaline grains (< 2 mm), displaying inclusion-rich rims, are present within some biotite layers.

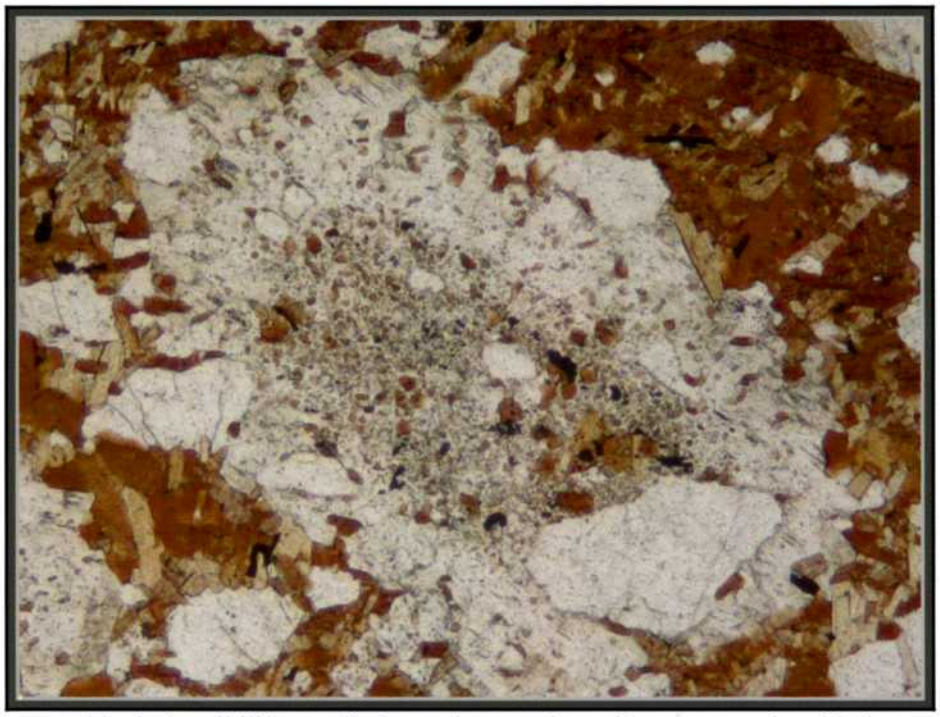
Opaque minerals are generally associated with cordierite layers and some coarse-grained biotite-rich bands, and are characterized by fine-grained, subhedral to euhedral blades of ilomenite, with additional disseminated pyrrhotite, minor chalcopyrite and very minor pyrite. Accessory minerals include zircon in some biotite flake, white mical associated with plagiuoclase-dominated patches, as well as carbonate, which also forms late veinlets.

The sample also displays a 5 mm wide quartz-albite-biotite-sulphide (po±cpy±py) vein that cuts the layering at an almost right angle.

Comments: The sample represents a metamorphosed (hornblende-hornfels facies) and hydrothermally-altered (K-metasomatised?) rock of sedimentary origin (pelite).

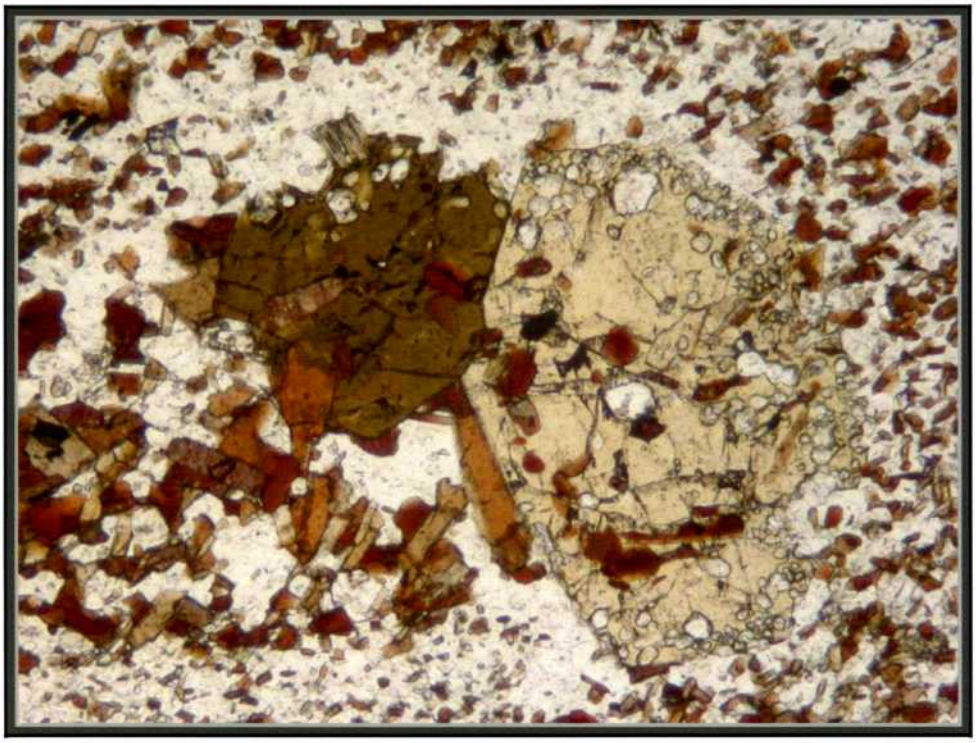
Lithology: **poikiloblastic cordierite-biotite schist**

Photomicrograph of Sample RRN-1-147 (Field of View = 2 mm)

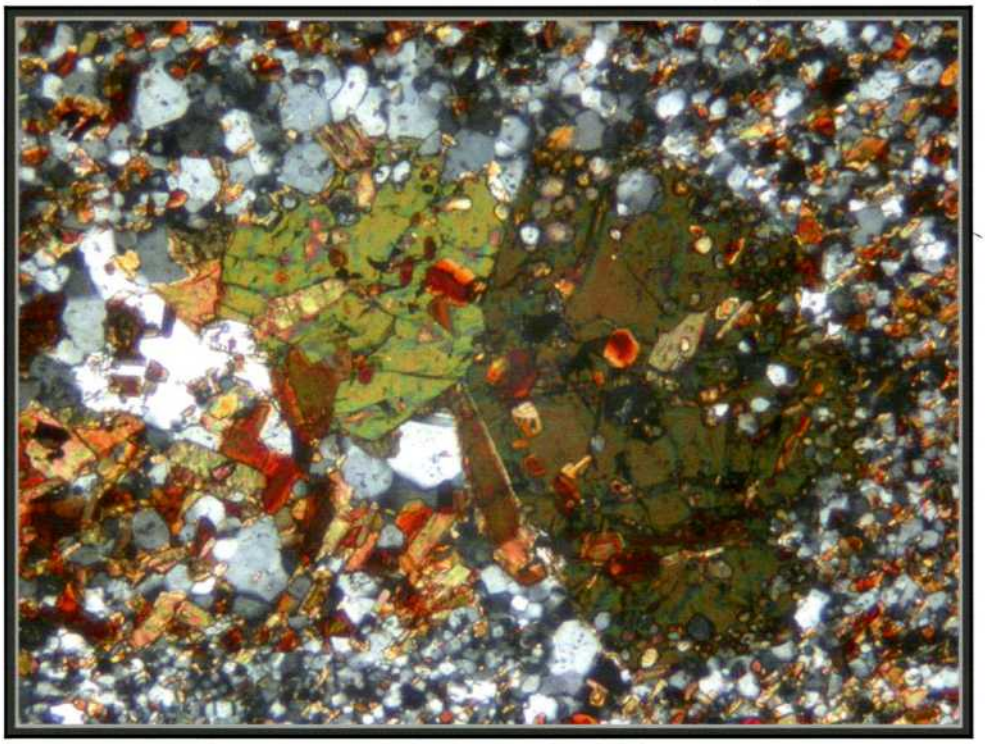


Subhedral, poikilitic cordierite grain, together with quartz set in a biotite-dominated matrix (plane-polarized, transmitted light)

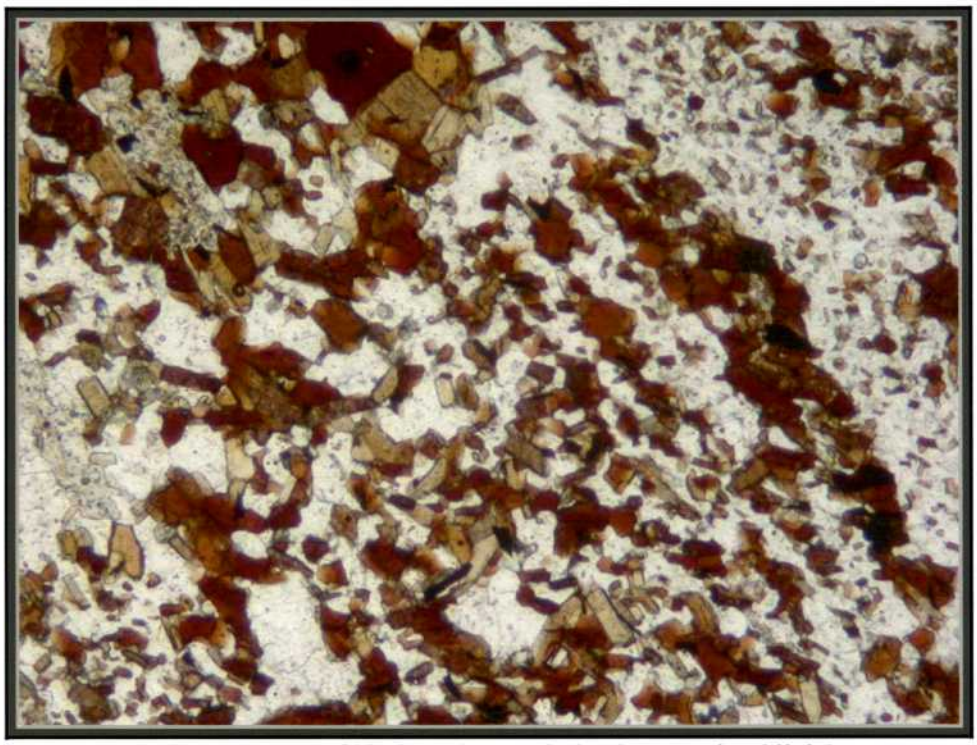
Same as above, but also showing penitization at margin of cordierite (cross-polarized, transmitted light)



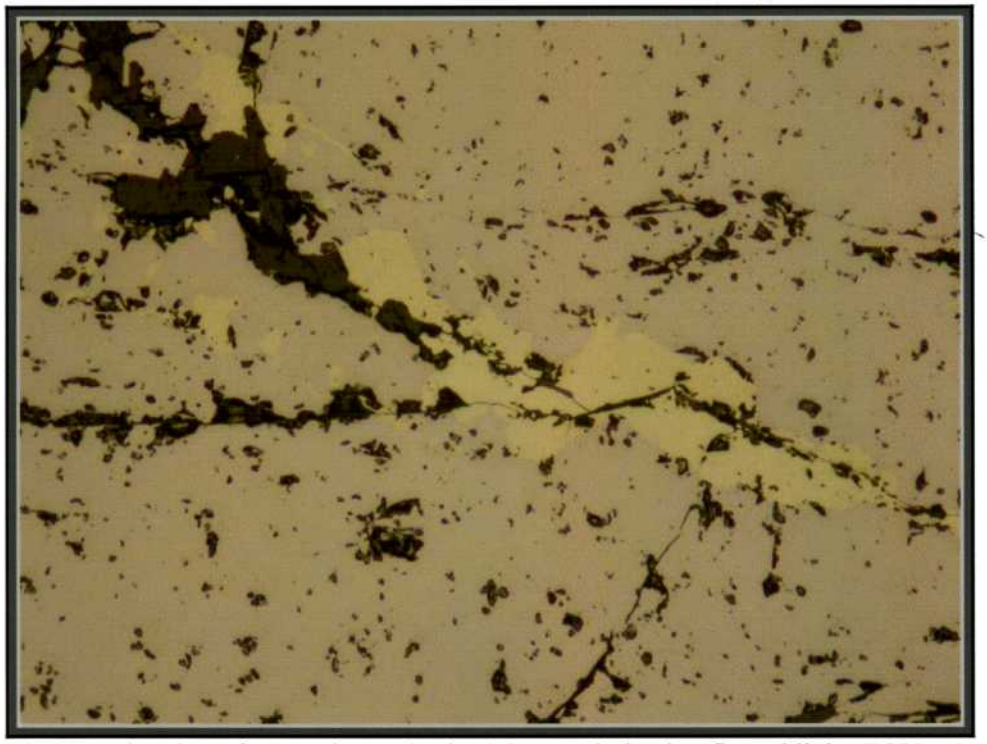
Subhedral, inclusion-rich tourmaline grains (plane-polarized, transmitted light).



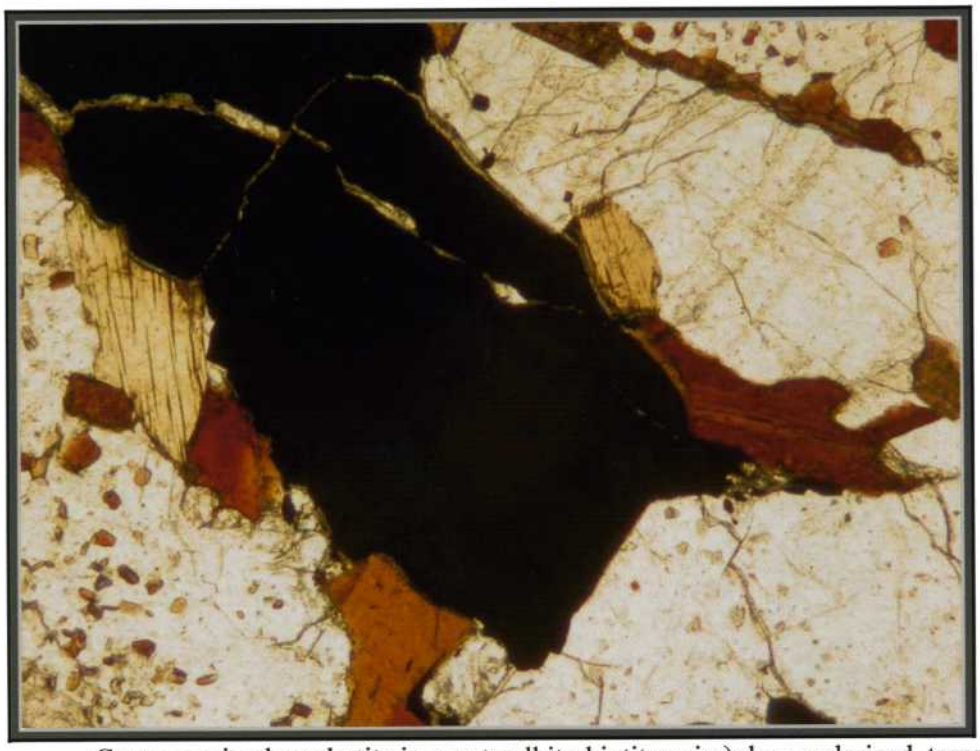
Same as above (cross-polarized, transmitted light).



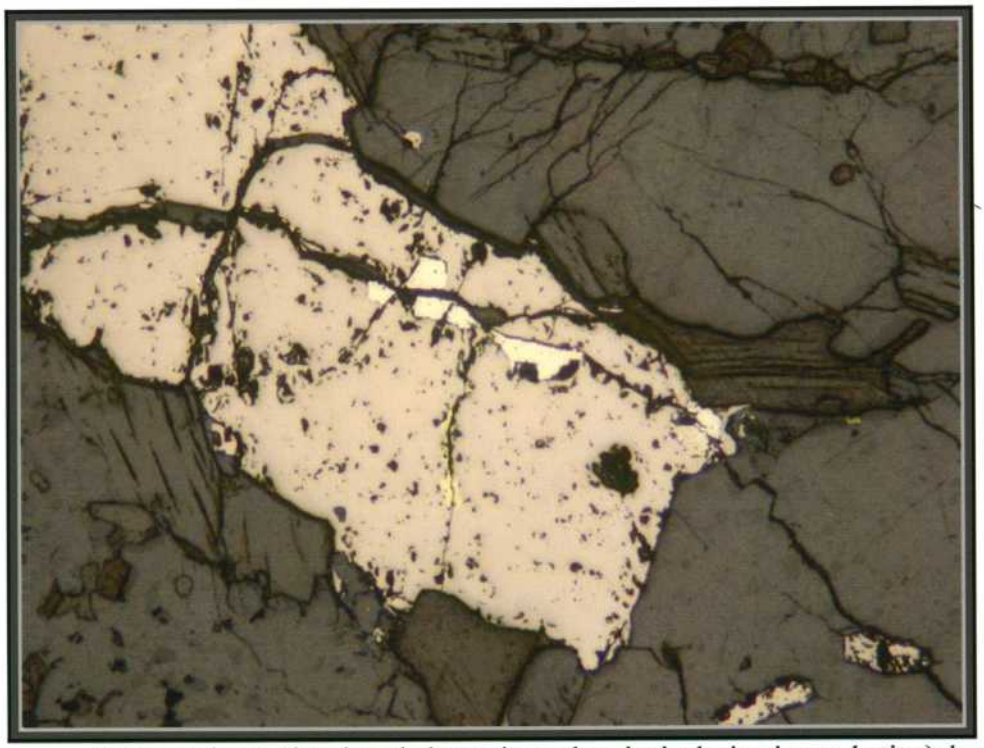
Typical occurrence of biotite (plane-polarized, transmitted light).



Chalcopyrite along fracture in pyrrhotite (plane-polarized, reflected light; FOV = 1 mm)



Coarse-grained pyrrhotite in quartz-albite-biotite vein)plane-polarized, transmitted light).



Same as above, showing chalcopyrite and pyrite inclusion in pyrrhotite)plane-polarized, reflected light).