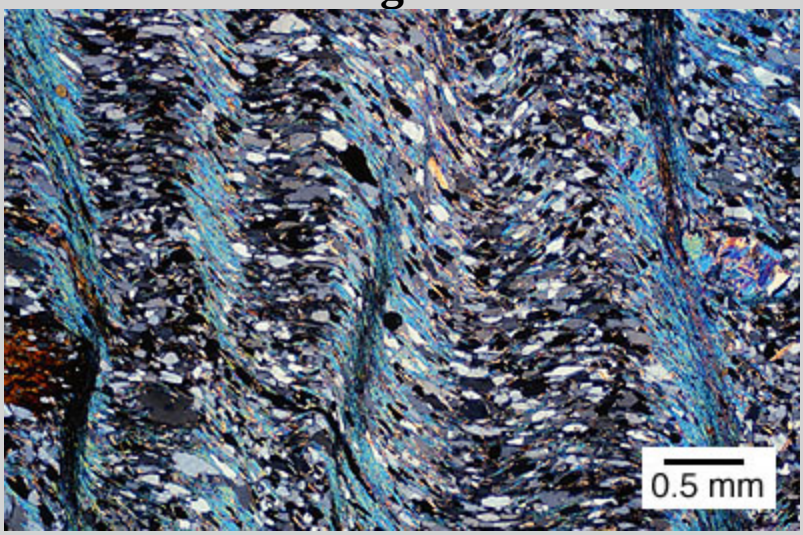
Crenulation cleavage



The vertical foliation in this rock is a crenulation cleavage, and developed after the horizonal foliation.

UNC sample

NM-21

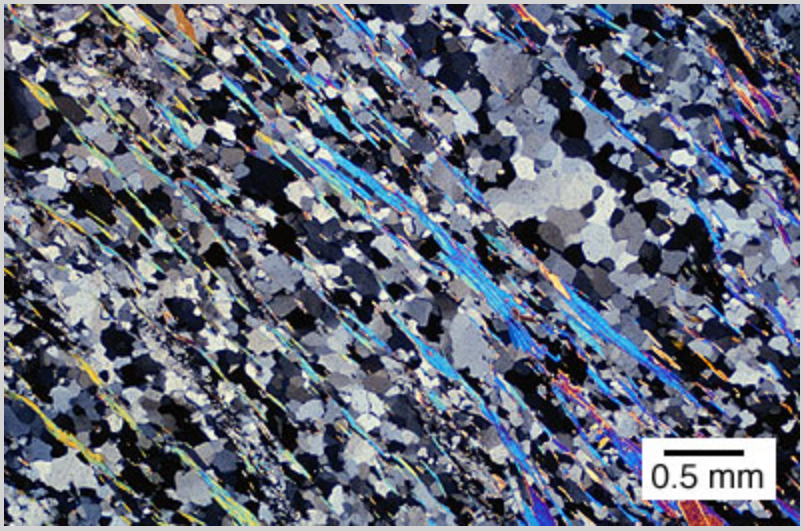
Rock type

Muscovite-biotite -garnet schist

Locality

New Mexico

Foliation



A foliation is any planar fabric in a metamorphic rock. In this case, the foliation is defined by aligned sheets of muscovite sandwiched between quartz grains.

UNC sample

W-94

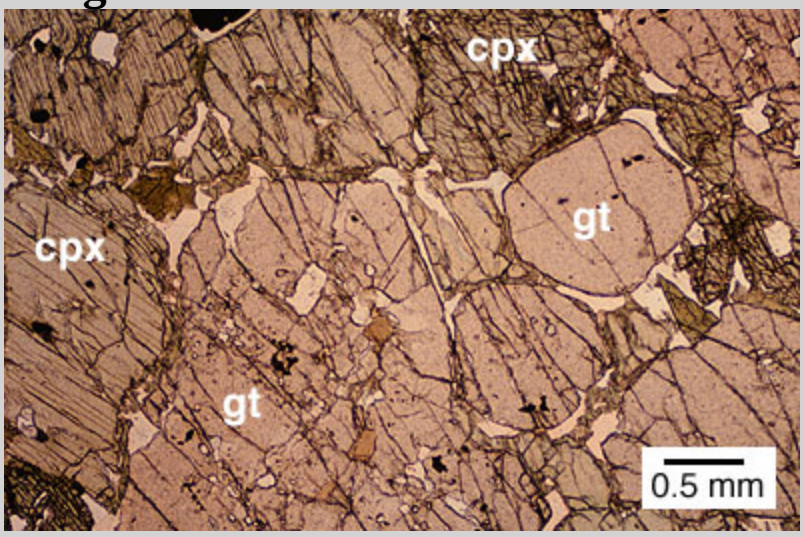
Rock type

quartz-mica schist

Locality

unknown

Eclogite



UNC sample

SA-19

Rock type

eclogite

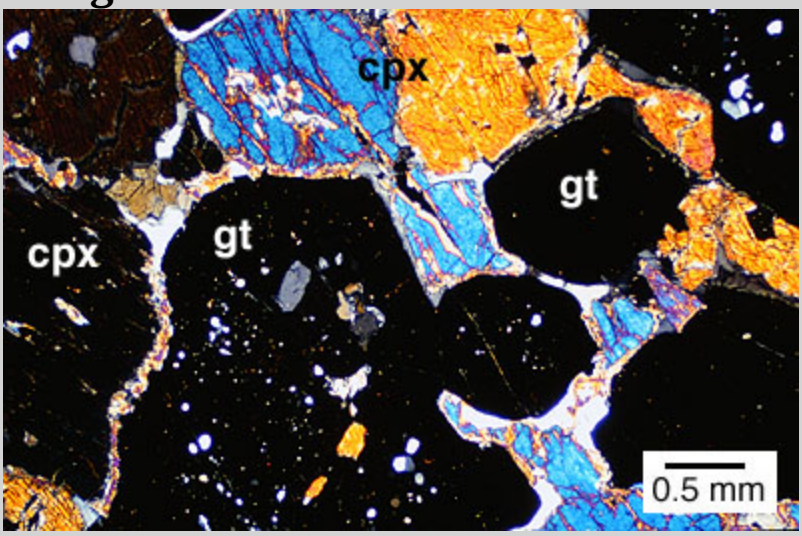
Locality

?

[Garnet](#) and [clinopyroxene](#) are the two major minerals in eclogite. Eclogite is basalt which has been metamorphosed at very high pressures in subduction zones.

Want to see what an eclogite looks like after a little [retrograde](#) metamorphism?

Eclogite



UNC sample

SA-19

Rock type

eclogite

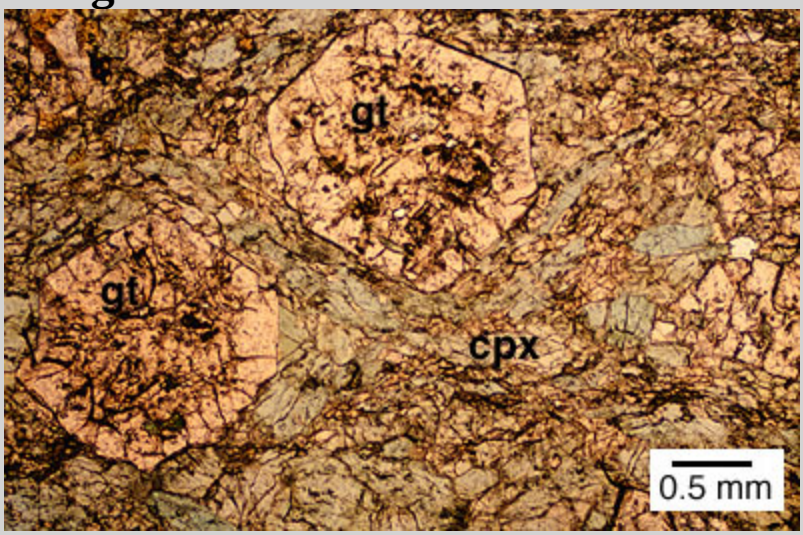
Locality

?

[Garnet](#) and [clinopyroxene](#) are the two major minerals in eclogite. Eclogite is basalt which has been metamorphosed at very high pressures in subduction zones.

Want to see what an eclogite looks like after a little [retrograde](#) metamorphism?

Eclogite



[Garnet](#) and [clinopyroxene](#) are the two major minerals in eclogite. Eclogite is basalt which has been metamorphosed at very high pressures in subduction zones.

Want to see what an eclogite looks like after a little [retrograde](#) metamorphism?

UNC sample

CA-77

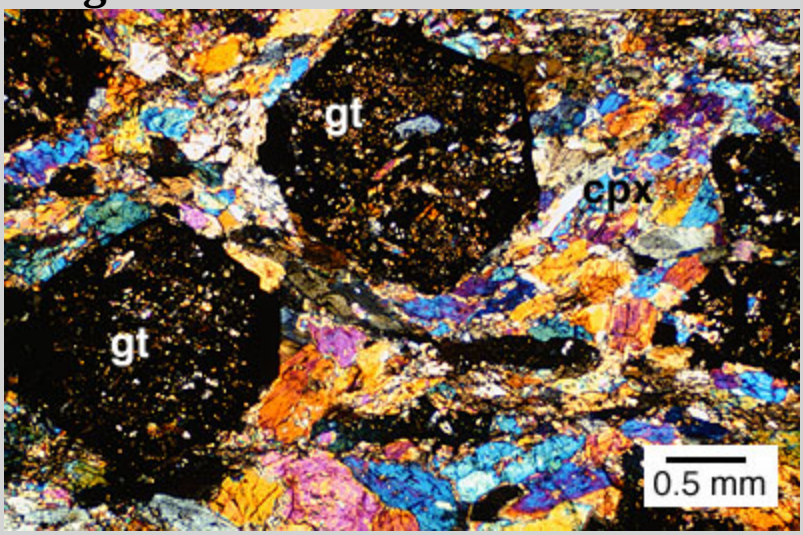
Rock type

eclogite

Locality

California

Eclogite



[Garnet](#) and [clinopyroxene](#) are the two major minerals in eclogite. Eclogite is basalt which has been metamorphosed at very high pressures in subduction zones.

Want to see what an eclogite looks like after a little [retrograde](#) metamorphism?

UNC sample

CA-77

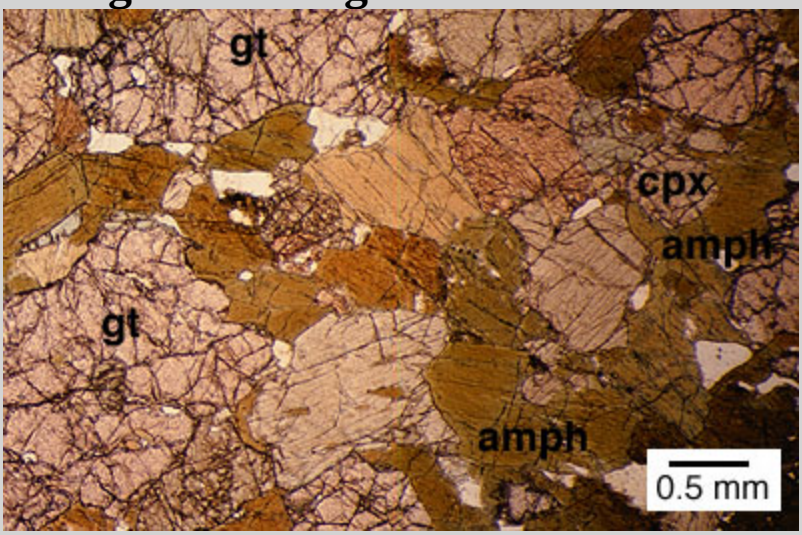
Rock type

eclogite

Locality

California

Retrograded eclogite



The presence of amphibole (probably hornblende) is a tip-off that this eclogite has been subjected to retrograde metamorphism. Note the reaction relationship between clinopyroxene and amphibole in the upper right.

Sorry for the poor quality of this photo! Can you guess why the right side of this photo is darker than the left?

UNC sample

SA-20

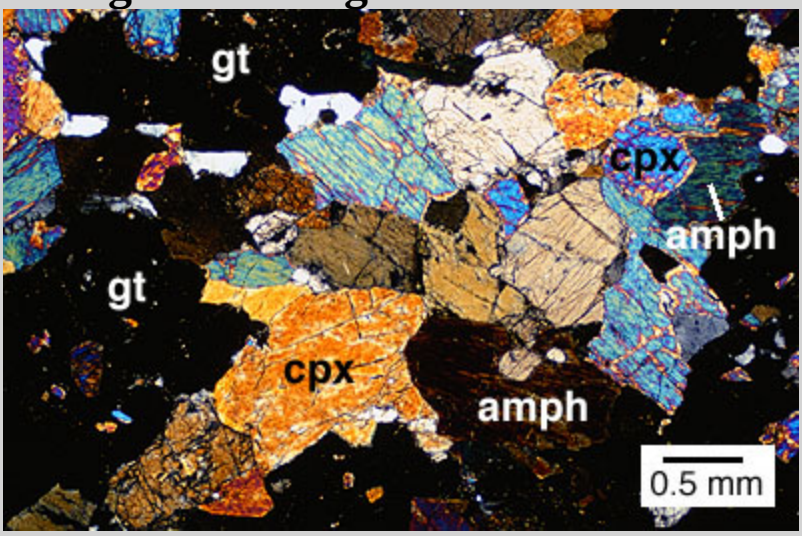
Rock type

retrograded eclogite

Locality

?

Retrograded eclogite



The presence of amphibole (probably hornblende) is a tip-off that this eclogite has been subjected to retrograde metamorphism. Note the reaction relationship between clinopyroxene and amphibole in the upper right.

UNC sample

SA-20

Rock type

retrograded eclogite

Locality

?

Retrograded eclogite

Note the coronas of plagioclase (white) + hornblende (green) which surround garnet (light tan) in this retrograded eclogite from the North Carolina Blue Ridge. The textures in this rock suggest that garnet was on its way out of this rock during retrograde metamorphism.

UNC sample

TS-31

(K. Stewart)

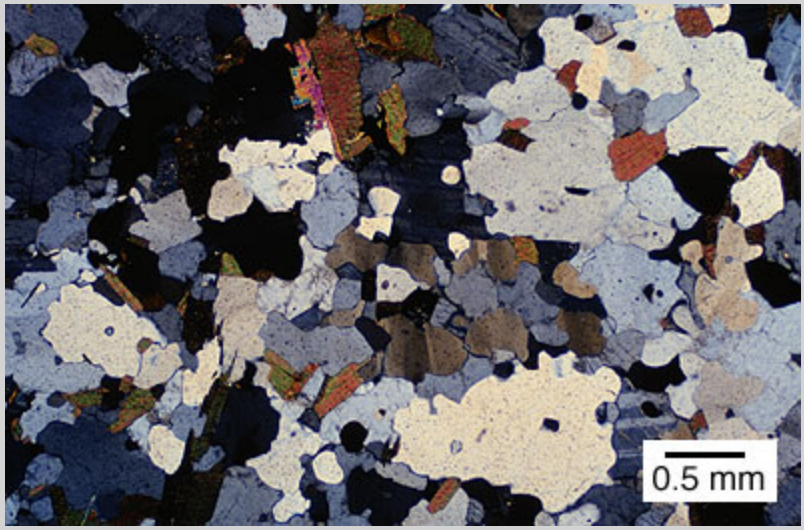
Rock type

retrograded eclogite

Locality

Blue Ridge, NC

Gneiss



This is a sample of the famous Lewisian Gneiss. Note the sutured grain boundaries between quartz. This rock also contains plagioclase, biotite, and K-feldspar.

UNC sample

H-198

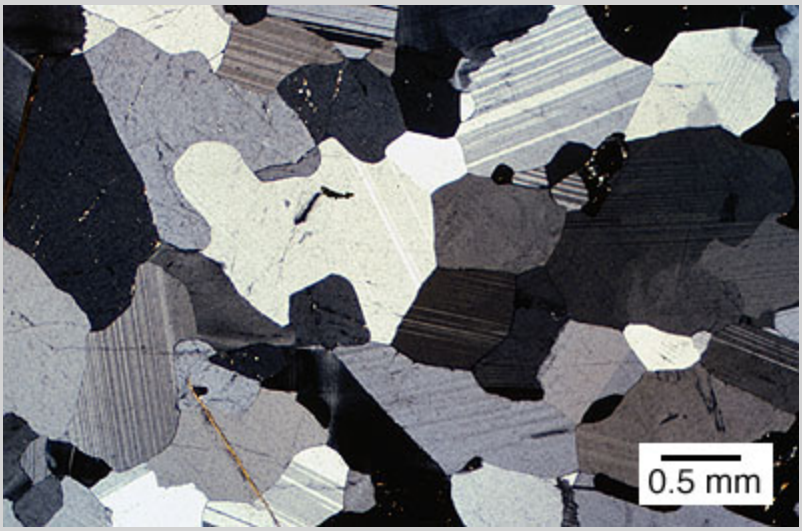
Rock type

gneiss

Locality

Strohness, Orkneys, Great Britain

Granoblastic texture



Note how the interlocking plagioclase grains in this rock meet at ~120 degree triple junctions. This feature is characteristic of granoblastic texture.

UNC sample

GSR X1810

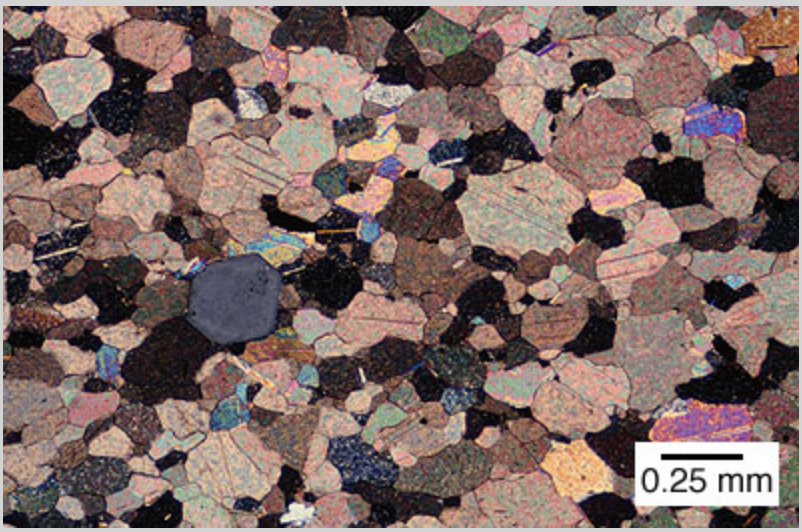
Rock type

metagabbro?

Locality

unknown

Granoblastic texture



Note how the interlocking calcite grains in this rock meet at ~120 degree triple junctions. This feature is characteristic of granoblastic texture.

UNC sample

W-95

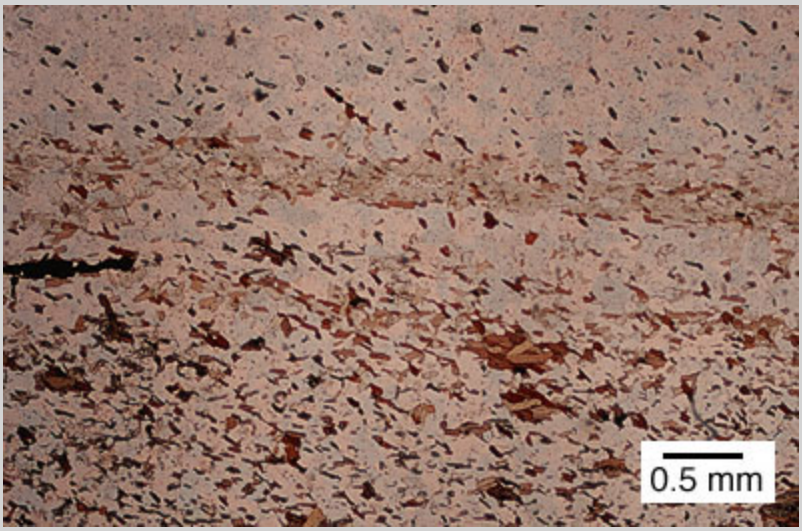
Rock type

marble

Locality

?

Biotite hornfels



Hornfels is a fine-grained contact metamorphosed rock. The layers of biotite in this sample probably respresent original sedimentary bedding.

UNC sample

H-186

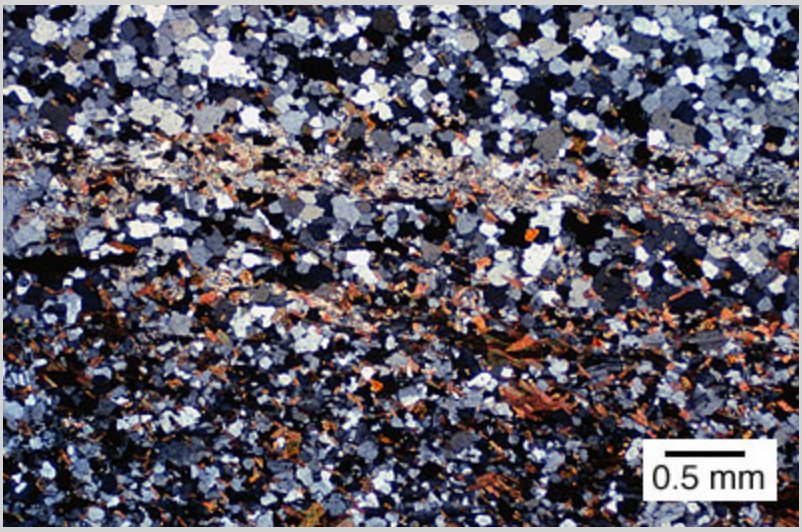
Rock type

biotite hornfels

Locality

unknown

Biotite hornfels



Hornfels is a fine-grained contact metamorphosed rock. The layers of biotite in this sample probably respresent original sedimentary bedding.

UNC sample

H-186

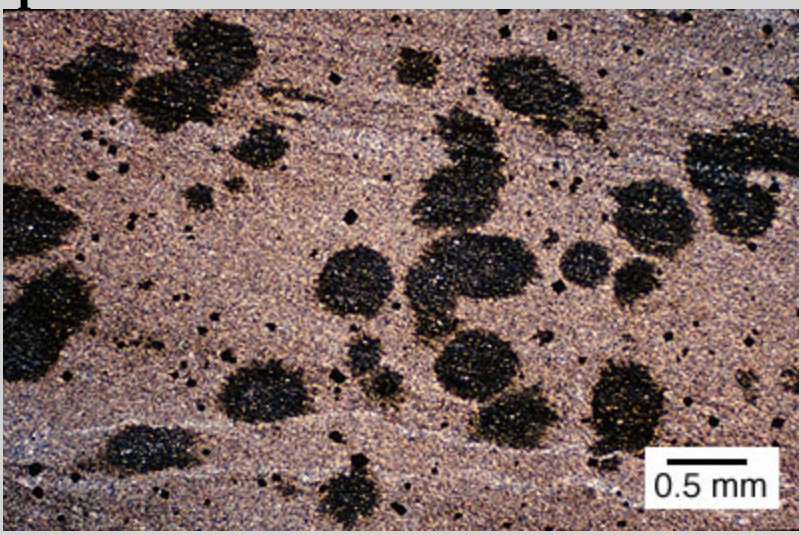
Rock type

biotite hornfels

Locality

unknown

Spotted hornfels



A hornfels is a fine-grained contact-metamorphosed rock. The mineral responsible for the spots is probably cordierite or andalusite.

UNC sample

G-42

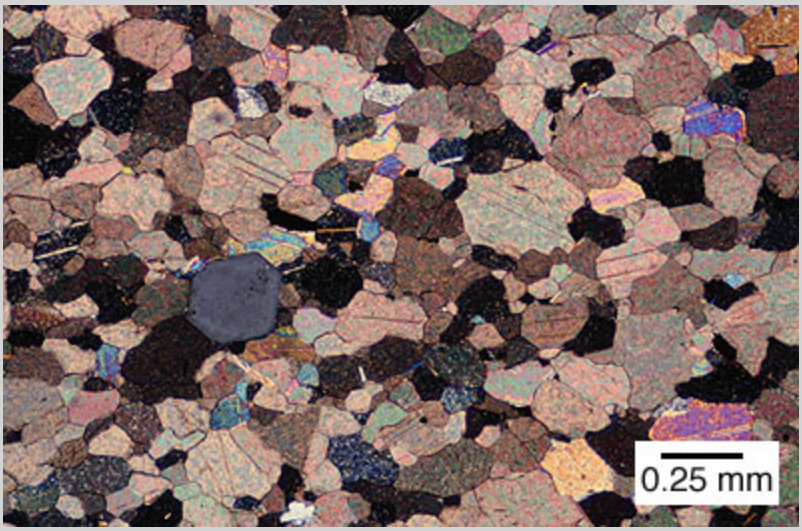
Rock type

spotted hornfels

Locality

?

Marble



Note the dominance of calcite in this rock.

UNC sample

W-95

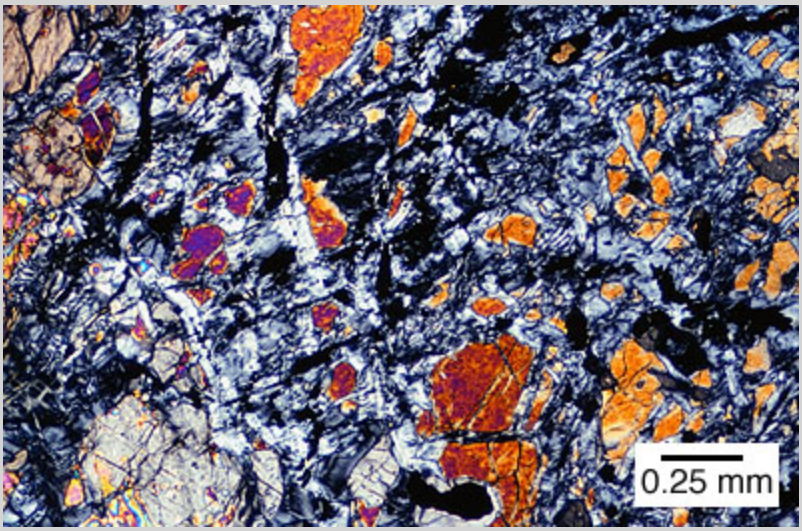
Rock type

marble

Locality

?

Mesh texture



Serpentine is surrounding and veining relict clinopyroxene in this low grade meta-mafic rock.

UNC sample

P-2 9 (ultramafic rocks card)

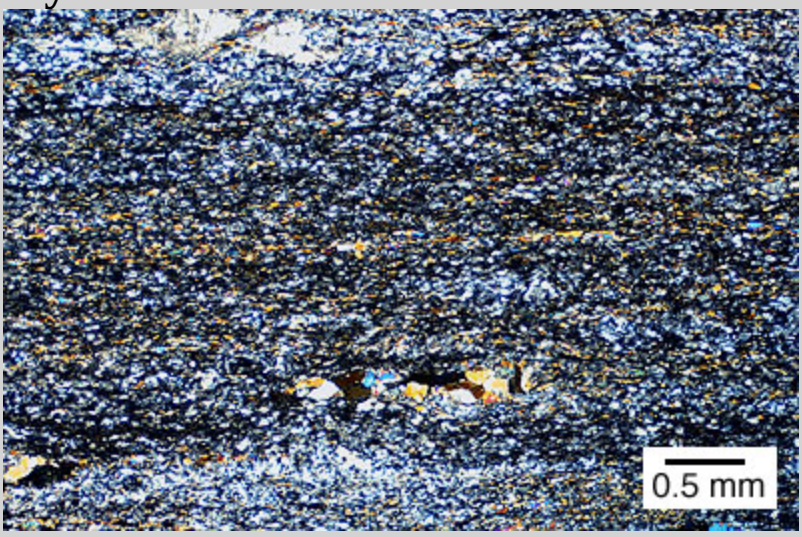
Rock type

meta-mafic rock

Locality

unknown

Mylonite



Note the extremely fine grain size and strong foliation in this mylonite. These features were probably caused by intense shearing.

UNC sample

not in collection

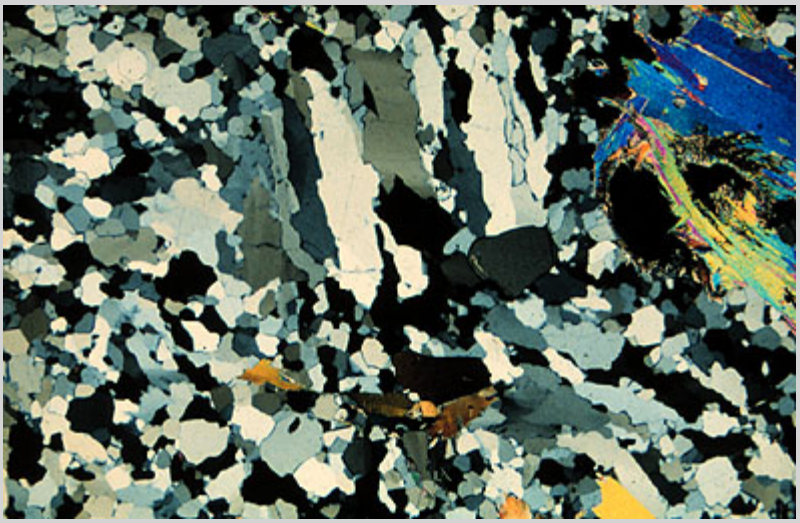
Rock type

mylonite

Locality

Ragged Ridge, NC

Palisades texture



The region of coarser-grained quartz in the upper center portion of this photomicrograph was probably originally occopied by coesite, the high-pressure polymorph of quartz.

UNC sample

TS-42

(K. Stewart)

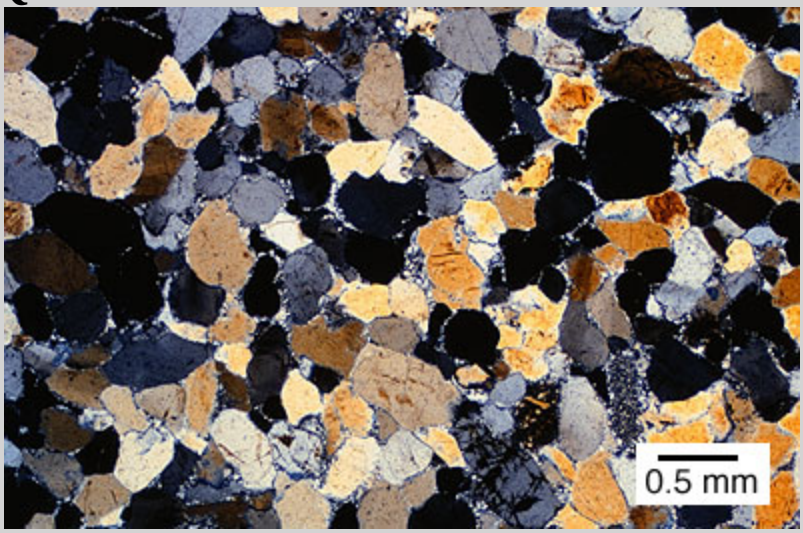
Rock type

qtz-ky-gt-musc schist

Locality

Dora Maira Massif, Parigi, Italy

Quartzite



Note the sutured grain boundaries between the quartz grains in this rock.

UNC sample

?

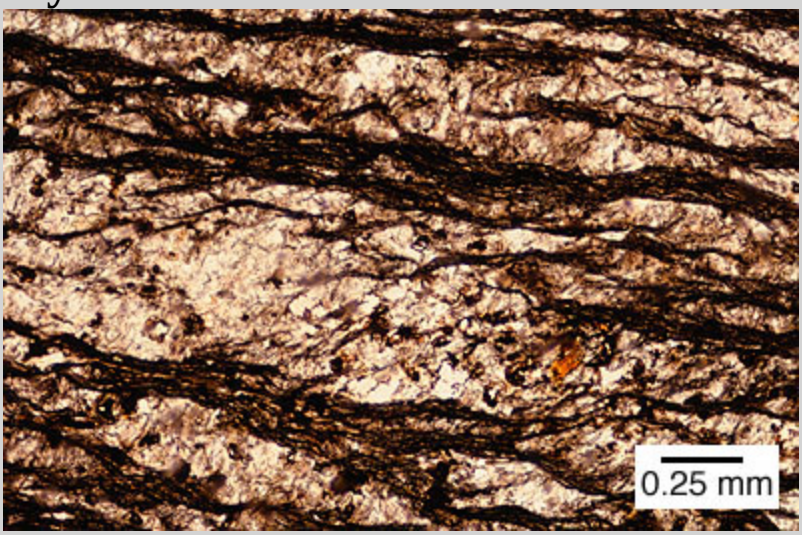
Rock type

quartzite

Locality

unknown

Phyllite



This is a sample of the Ira Phyllite. Note the wavy foliation and the overall fine-grain size of this rock.

UNC sample

VT-4b

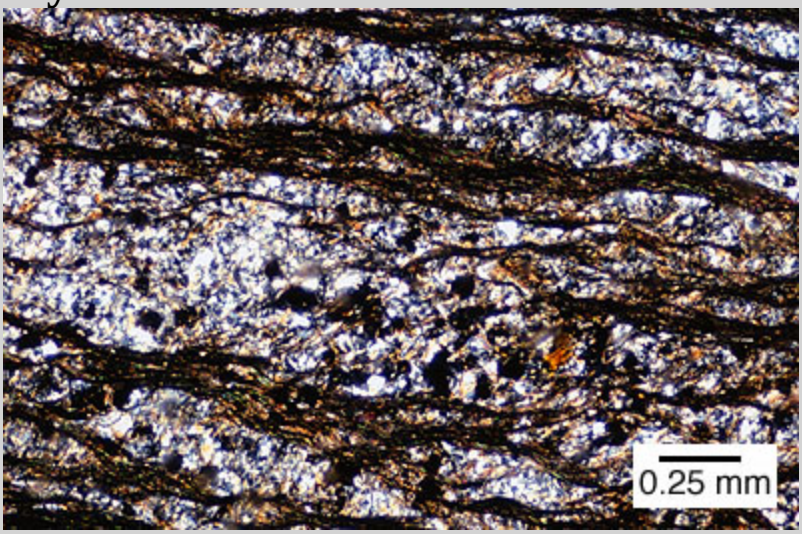
Rock type

phyllite

Locality

Vermont

Phyllite



This is a sample of the Ira Phyllite. Note the wavy foliation and the overall fine-grain size of this rock.

UNC sample

VT-4b

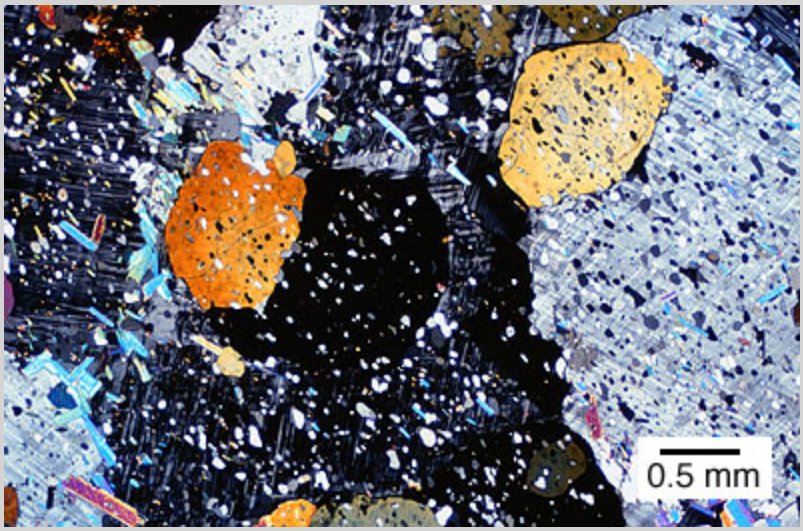
Rock type

phyllite

Locality

Vermont

Poikiloblastic texture



Poikiloblastic texture describes porphyroblasts which are riddled with finer grained inclusions of other minerals. Here, orange tourmaline and gray K-feldspar include numerous, fine- grained quartz and muscovite mica grains.

UNC sample

W-89

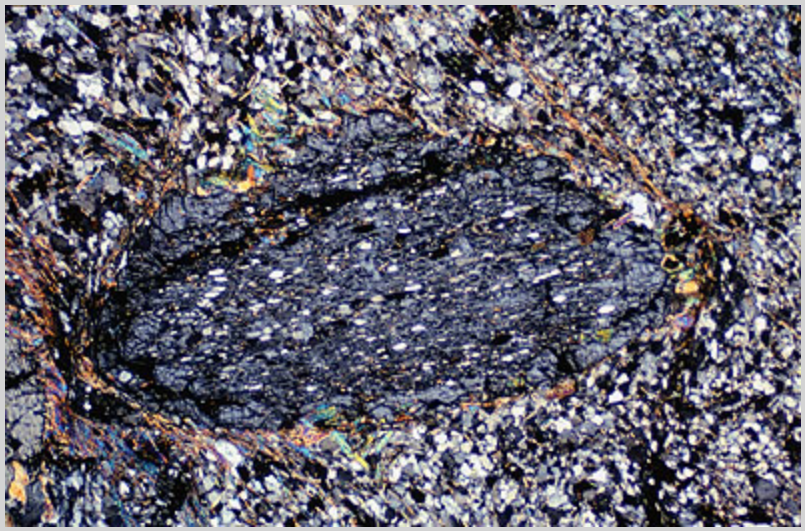
Rock type

tourmaline-mica schist

Locality

?

Poikiloblastic texture



This is an andalusite porphyroblast with poikiloblastic texture. Also note how the foliation (oriented roughly N-S in this view) is wrapped around the left and right corners of this grain, suggesting synkinematic growth of the andalusite porphyroblast.

UNC sample

NM-1

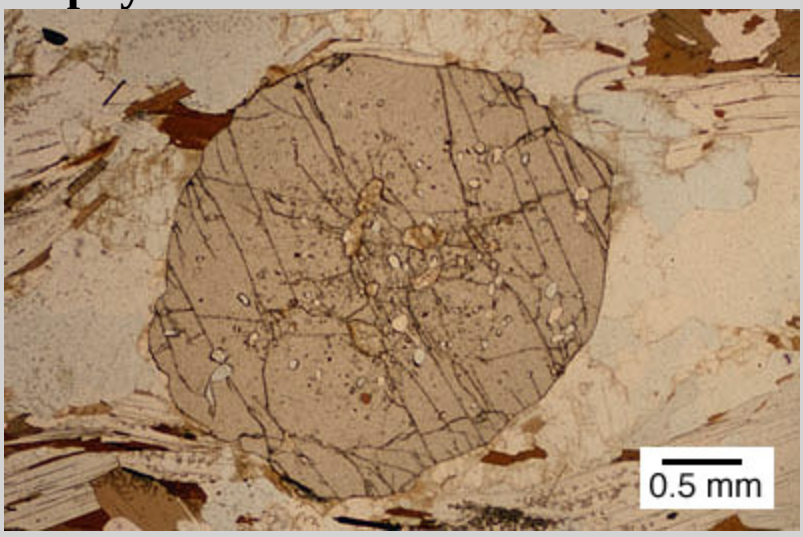
Rock type

andalusite-biotite schist

Locality

New Mexico

Porphyroblastic texture



Note the zonal distribution of quartz inclusions in this garnet porphyroblast.

UNC sample

GSR X0720

Rock type

garnet-mica schist

Locality

unknown

Porphyroblastic texture

Note the zonal distribution of quartz inclusions in this garnet porphyroblast.

Contrast this with porphyro**clastic** texture.

UNC sample

GSR X0720

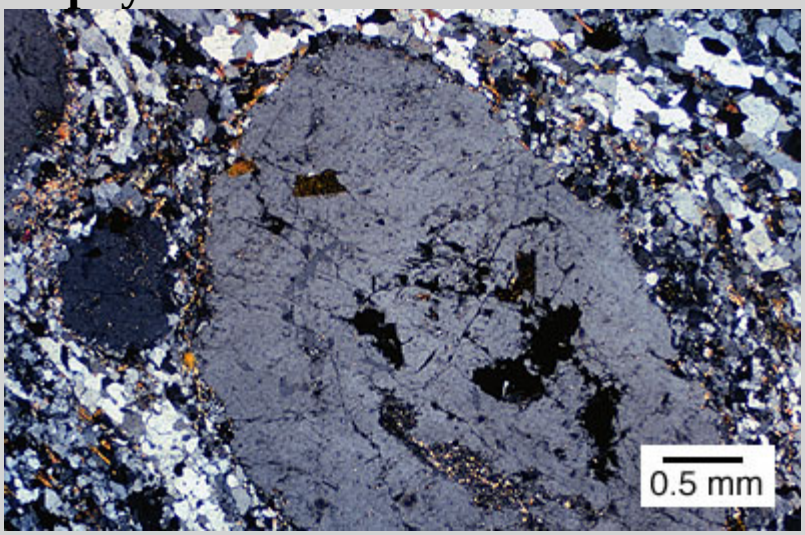
Rock type

garnet-mica schist

Locality

unknown

Porphyroclastic texture



This large grain is a K-feldspar porphyroclast. Unlike porphyro**blasts**, porphyro**clasts** are not grown in-situ, but rather are fragments of pre-existing minerals which were broken up during the process of metamorphism.

UNC sample

MT-34

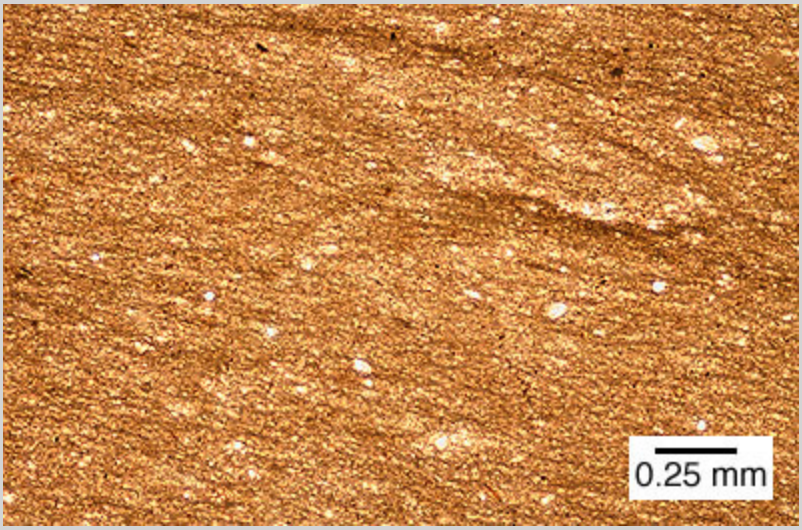
Rock type

blastomylonite in granitic gneiss

Locality

Montana

Slate



Note the fine grain size and the unimpressive foliation in this weakly-metamorphosed rock.

UNC sample

VT-2 b

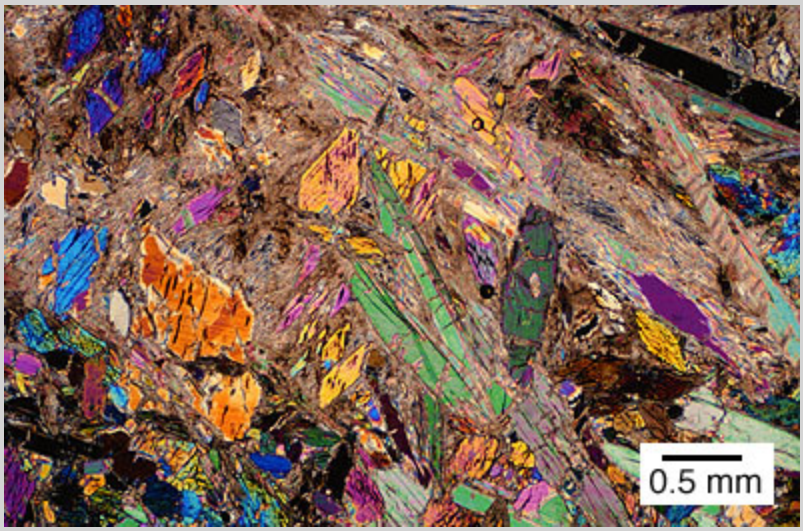
Rock type

slate

Locality

Vermont

Talc-tremolite schist



Talc forms the fine-grained matrix between the prismatic crystals of tremolite in this rock. Note the ~120 degree cleavages in some of the tremolite sections.

UNC sample

W-88

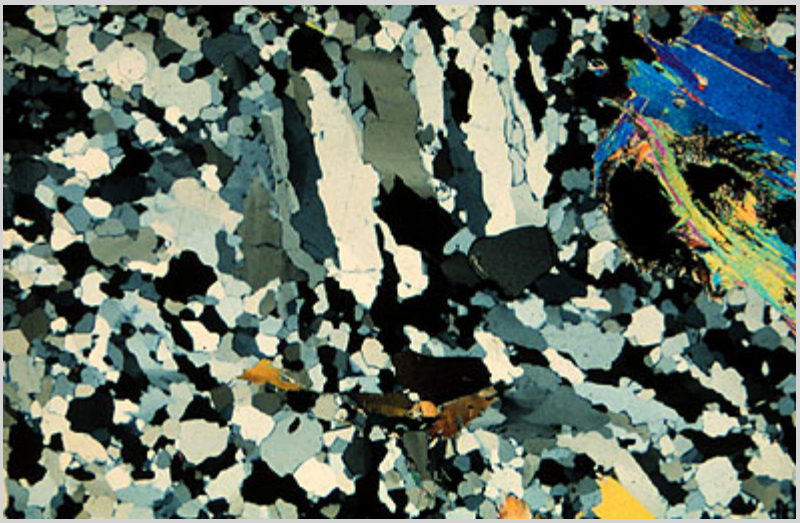
Rock type

talc-tremolite schist

Locality

unknown

Whiteschist



This is a photomicrograph of a high-pressure schist from the famour Dora Maira massif in Italy. The region of coarser-grained quartz in the upper center portion of this photomicrograph was probably originally occopied by coesite, the high-pressure polymorph of quartz. Metamorphic rocks from the Dora Maira Massif show other evidence of being exhumed from EXTREMELY deep levels in thickened crust (>28 kbar), including...

* ellenbergerite inclusions in garnet

* coesite inclusions in garnet

UNC sample

TS-42

(K. Stewart)

Rock type

qtz-ky-gt-musc schist

Locality

Dora Maira Massif, Parigi, Italy