

Catalogue 4: Geological samples

Sample Code: GSC1	Sampling Area: Tao River Valley, Majiayao
Material: sediment	Coordinates: LONG 103.806257 LAT 35.30938 Elevation: 2181 m
Raw material photo	Processed clay photo
	

Unfired and fired briquettes: macroscopic description and photos



UNFIRED (UF): brown, gold mica flakes and quartz

FIRED:

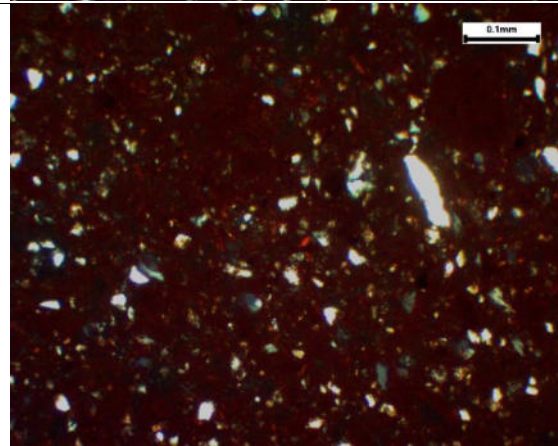
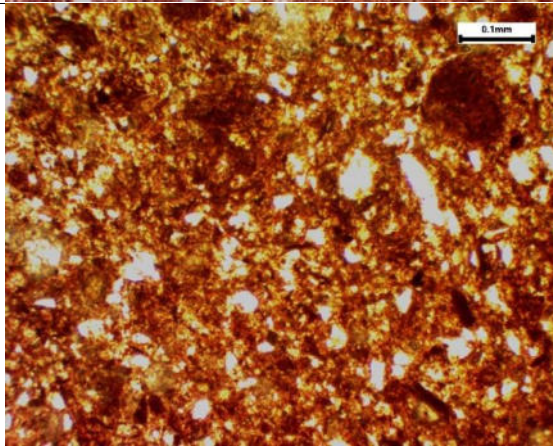
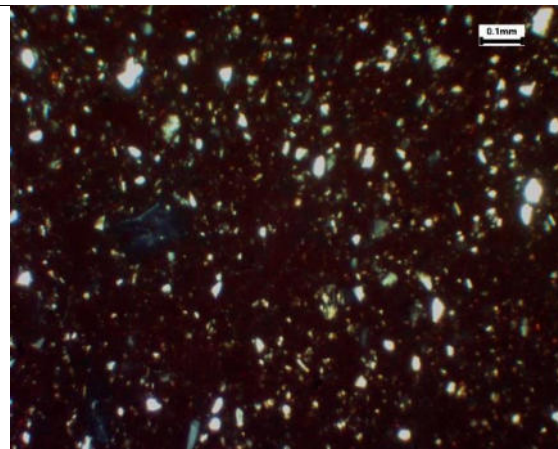
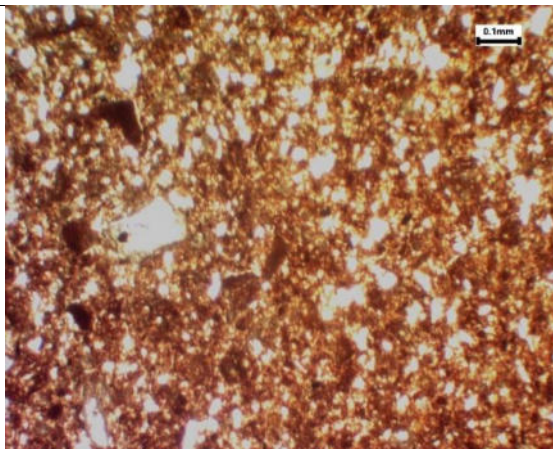
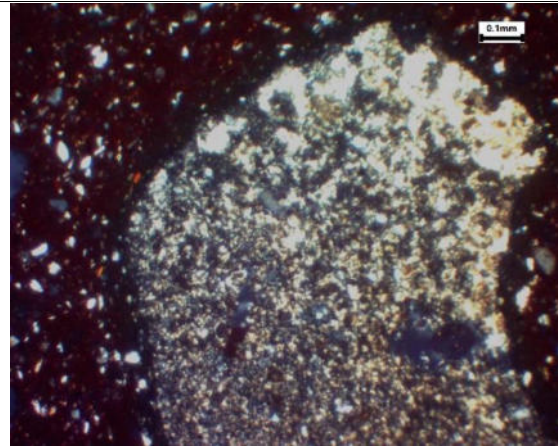
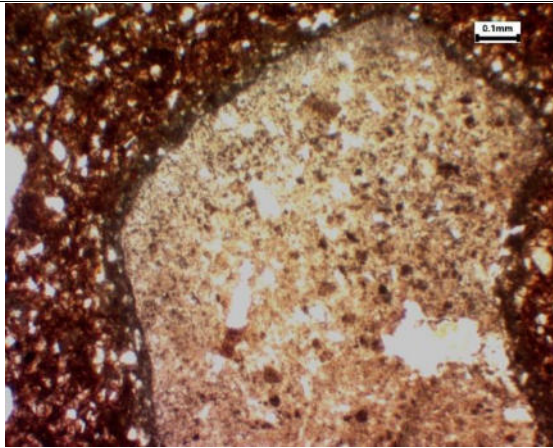
700°C: orange brown, same inclusions as UF

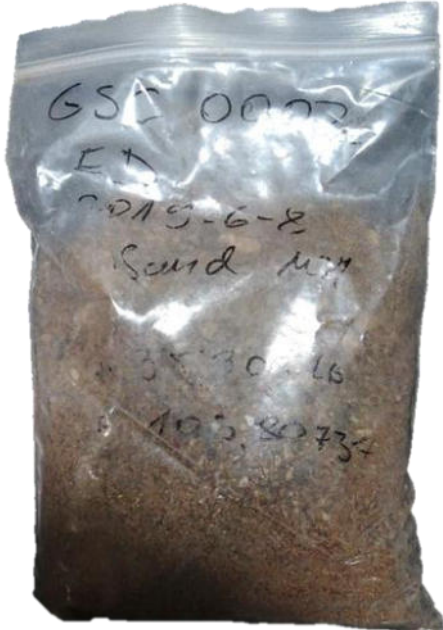
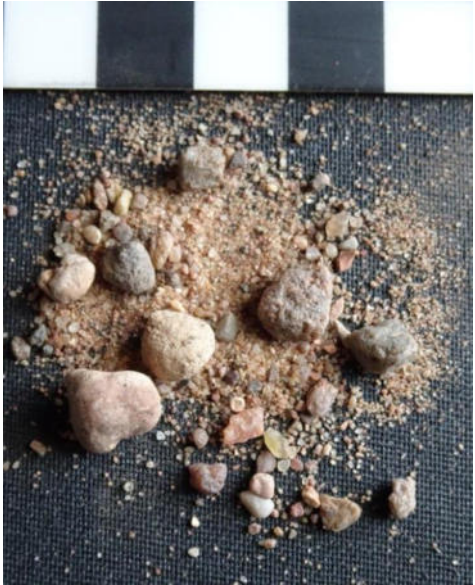
900°C: red orange, same inclusions as UF + covered in layer of fine calcium carbonate on the surface

1050°C: red brown, same inclusions as UF + covered in layer of fine calcium carbonate on the surface

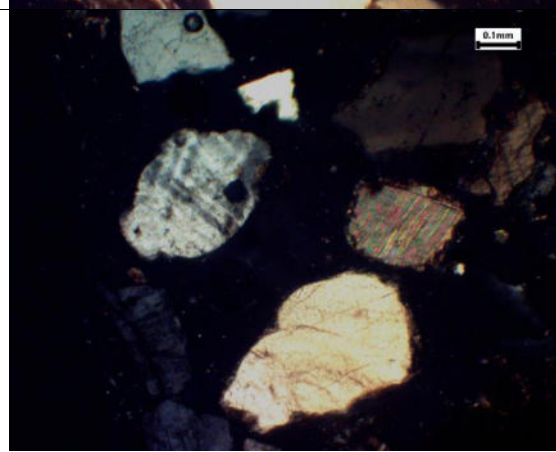
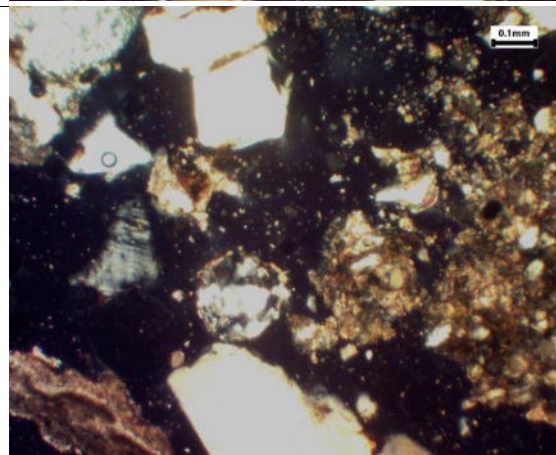
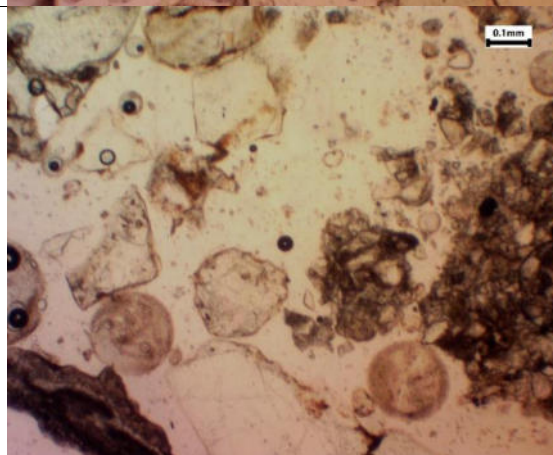
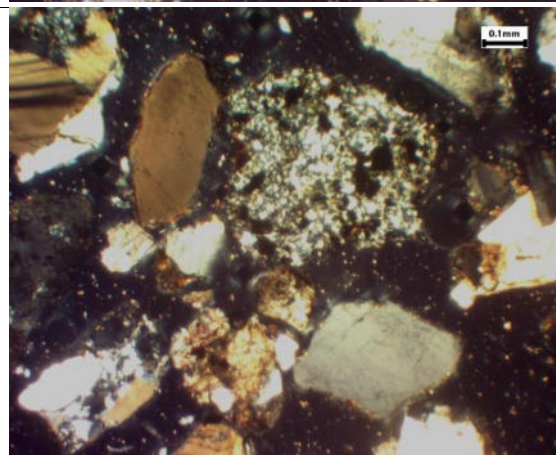
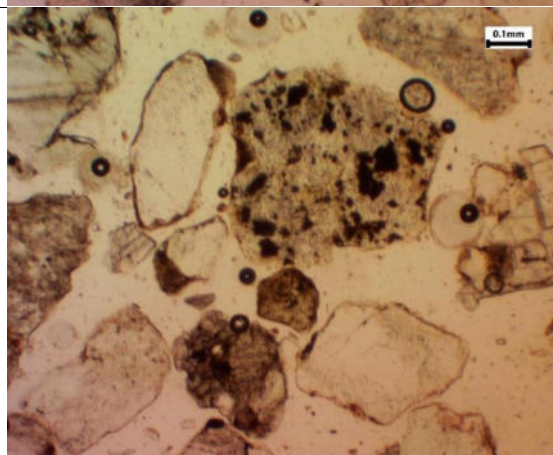
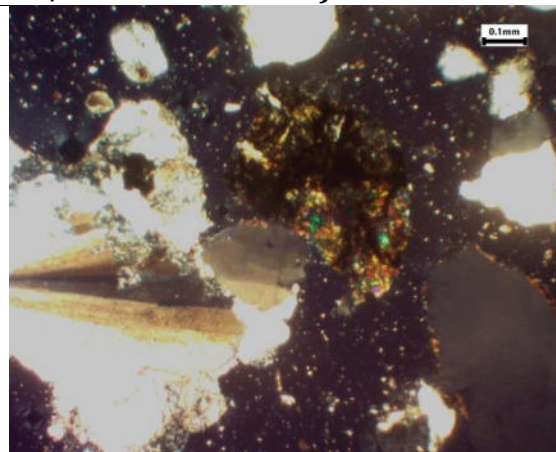
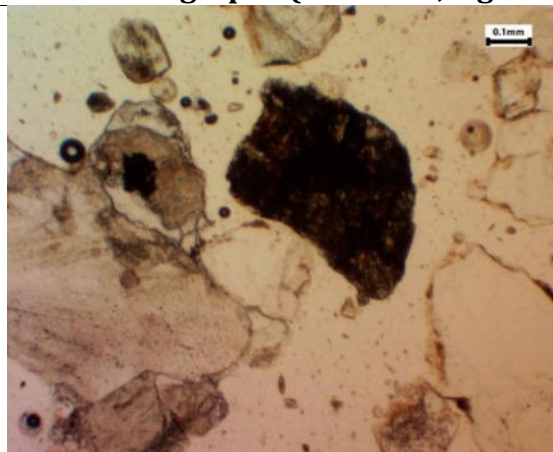
Fabric photo				
Fired at 700° C				
				
Thin section scan				
Fired at 1050° C				
				
Microscopic description			Fabric group: 1A Fine, Quartz-Mica-Feldspar	
Non-plastic inclusions 30%				
Coarse <0.1%		Fine 99.9%		
micritic calcite? (eq; s-ang; CSa) 1 inclusion		- quartz 55% - mica 40% - feldspar 5%		
Matrix 69%				
Homo-/heterogeneity	Sorting	Optical activity	Colour in PPL/ in XPL	Textural features/ comments
homogeneous	well	moderate	grey to dark brown / dark reddish brown	partially vitrified matrix; FSa-MSa clay pellets, 5-10% of the matrix
Voids 1%				
Type and size		Distinct characteristics		
macro vesicles		none		

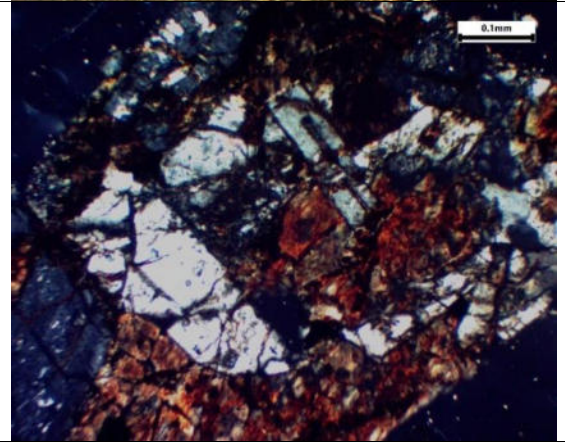
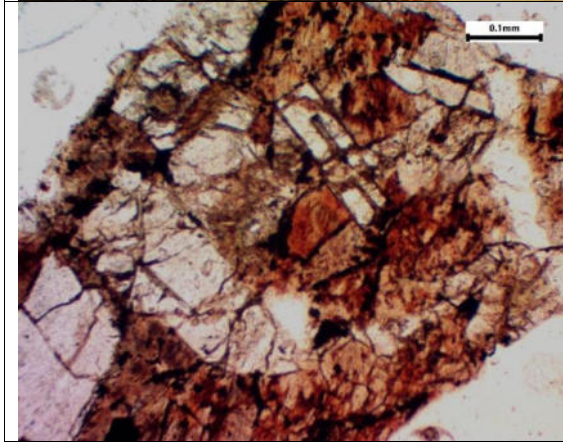
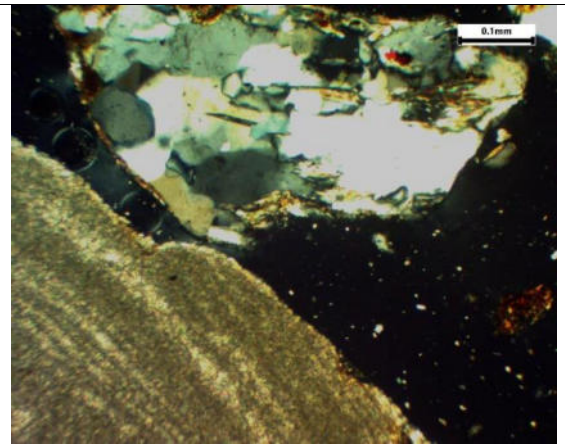
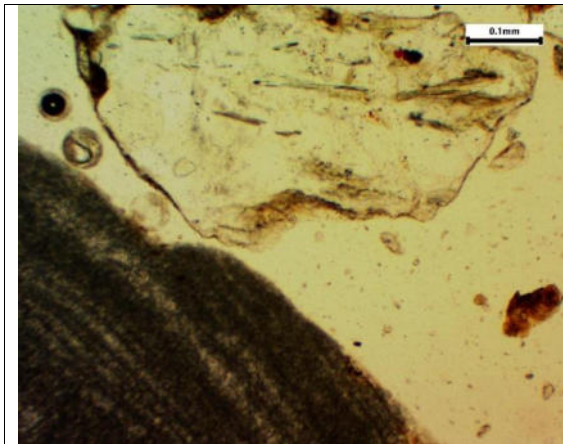
Photomicrographs (left - PPL, right - XPL; scale size 0.1 mm)



Sample Code: GSC2	Sampling Area: Tao River Valley, Majiayao
Material: sand	Coordinates: LONG 103.807363 LAT 35.308157 Elevation: 1928 m
Raw material photo	
	
Thin section scan	
	
Microscopic description	
• rounded and sub-rounded FSa and MGr grains • quartz/ quartzite • sedimentary rock fragments – sandstone, siltstone/ clay • feldspar (plagioclase and microcline) • volcanic rock fragments – black matrix with olivine?; feldspar-biotite-haematite? • metamorphic rock fragments – quartz-mica schist?; feldspar-quartz • carbonate rock fragments – calcite, micrite	

Photomicrographs (left - PPL, right - XPL; scale size 0.1 mm)





Sample Code: GSC3	Sampling Area: Tao River Valley, Majiayao
Material: rocks (9 items)	Coordinates: LONG 103.807987 LAT 35.307563 Elevation: 1909 m

GSC3-1 Gritstone/ Sandstone

Hand specimen (1 scale unit = 1cm)



MACROSCOPIC DESCRIPTION

- fine-grained sedimentary rock

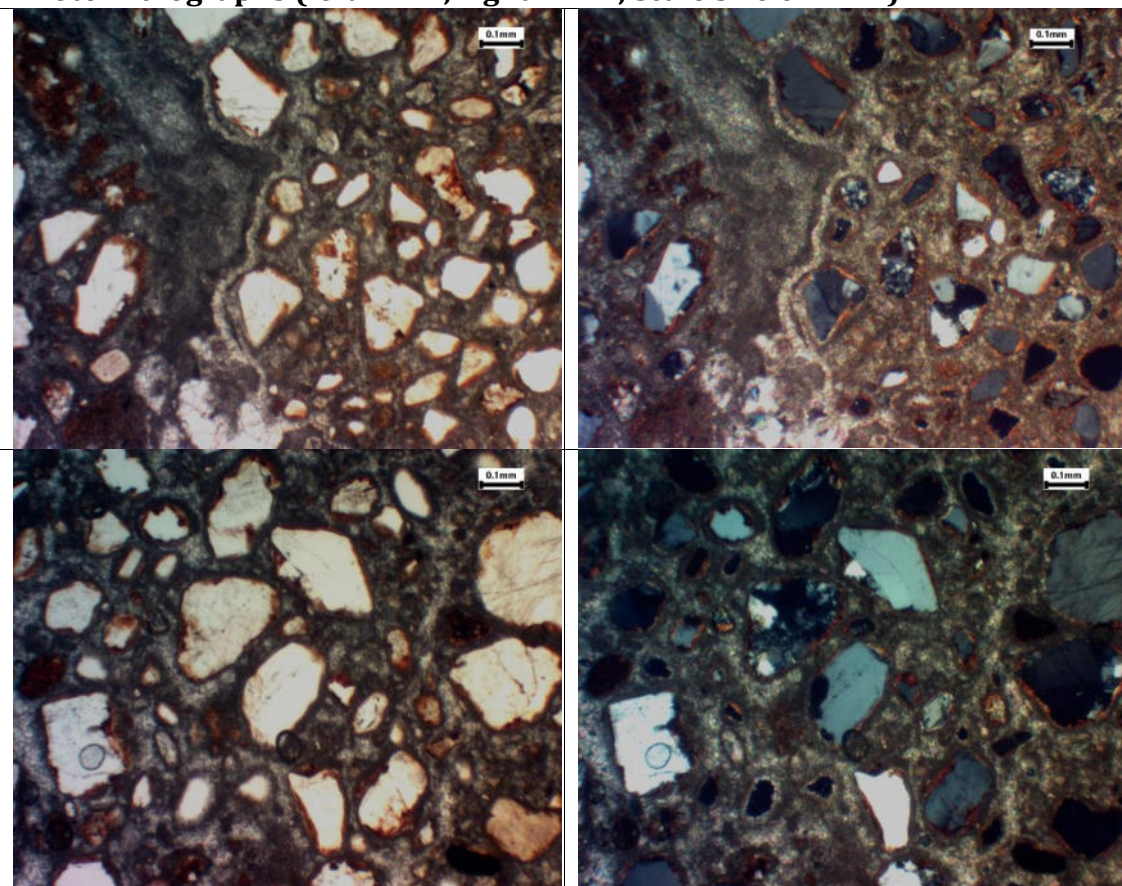
Thin-section scan



MICROSCOPIC DESCRIPTION

- 80% quartz
- 15% crystalline calcite
- 5% feldspar (plagioclase)
- carbonate cement matrix

Photomicrographs (left - PPL, right - XPL; scale size 0.1 mm)



GSC3-2 Gritstone/ Sandstone

Hand specimen (1 scale unit = 1cm)



MACROSCOPIC DESCRIPTION

- coarse-grained sedimentary rock

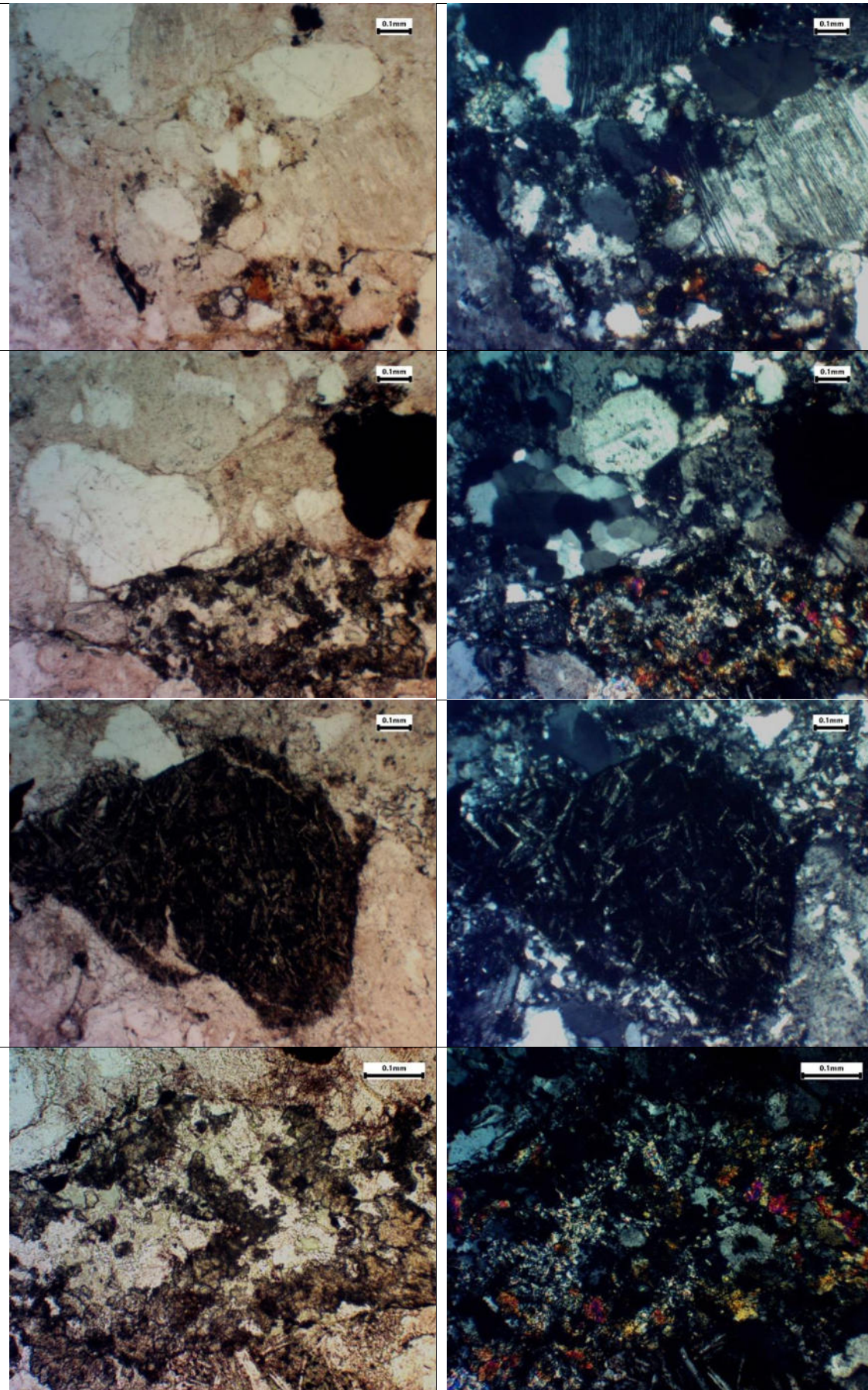
Thin-section scan



MICROSCOPIC DESCRIPTION

- 40% diffused mass of quartz and feldspar crystals
- 30% feldspar (plagioclase)
- 20% quartz
- 5-10% clinopyroxene
- 5% black opaque inclusions
- 1% olivine?
- < 1% biotite
- < 1% crystalline calcite
- < 1% volcanic rock fragments? – elongated acicular (needle-like) crystals in dark fine-grained mass – eroded volcanic ash?

Photomicrographs (left - PPL, right - XPL; scale size 0.1 mm)



GSC3-3 Igneous felsic(?) rock

Hand specimen (1 scale unit = 1cm)



MACROSCOPIC DESCRIPTION

- coarse-grained igneous rock with K-feldspar, quartz, black mica and green inclusions – amphibole?

GSC3-4 Fine grit sandstone/ sandstone

Hand specimen (1 scale unit = 1cm)



MACROSCOPIC DESCRIPTION

- fine-grained sedimentary rock

GSC3-5 Carbonate rock or claystone

Hand specimen (1 scale unit = 1cm)



MACROSCOPIC DESCRIPTION

- fine-grained sedimentary rock with conchoidal fracture

GSC3-6 Kaolinite clay and limonite(?)

Hand specimen (1 scale unit = 1cm)



MACROSCOPIC DESCRIPTION

- very fine-grained sedimentary rock

GSC3-7 Mix of chert and carbonate rock with iron oxide staining (possibly from a vein)

Hand specimen (1 scale unit = 1cm)



MACROSCOPIC DESCRIPTION

- fine-grained sedimentary rock

GSC3-8 Coarse gritstone/ sandstone with iron and aluminium

Hand specimen (1 scale unit = 1cm)



MACROSCOPIC DESCRIPTION

- coarse-grained sedimentary rock with iron and aluminium

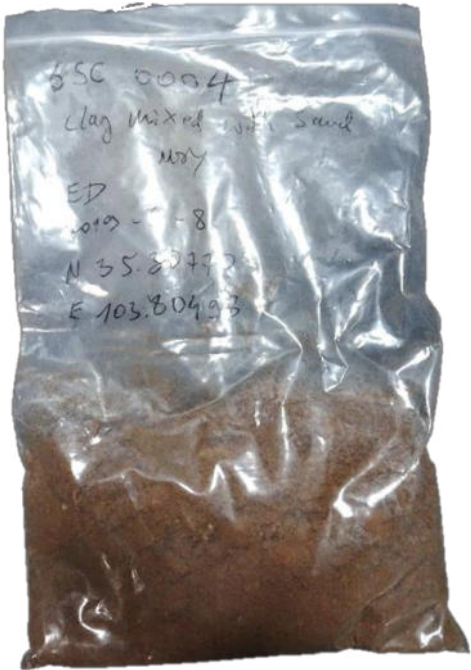
GSC3-9 Chert with rock fragments

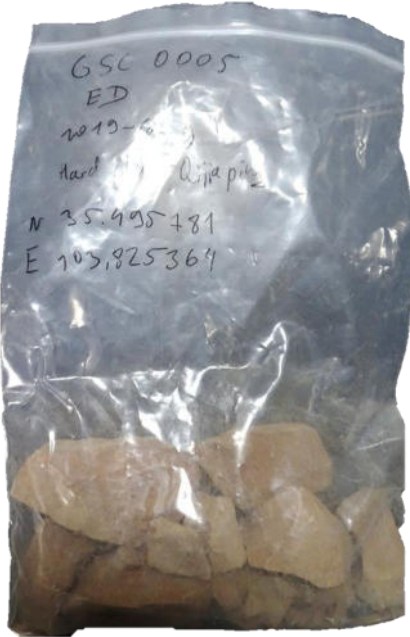
Hand specimen (1 scale unit = 1cm)



MACROSCOPIC DESCRIPTION

- fine-grained sedimentary rock

Sample Code: GSC4	Sampling Area: Tao River Valley, Majiayao
Material: sediment	Coordinates: LONG 103.804975 LAT 35.307704 Elevation: 1917 m
Raw material photo	Processed clay photo (dry)
	
Unfired and fired briquettes: macroscopic description and photos	
UNFIRED (UF): brown, quartz, very rare gold mica flakes FIRED: no fired sample because the material was deemed unsuitable for kneading and firing at first. The texture was too coarse. However, after the second assessment the material was processed successfully and unfired briquettes were made.	

Sample Code: GSC5	Sampling Area: Tao River Valley, Majiayao
Material: sediment	Coordinates: LONG 103.825364 LAT 35.495781 Elevation: 1955 m
Raw material photo	Processed clay photo
	

Unfired and fired briquettes: macroscopic description and photos



UNFIRED (UF): light brown, white and gold mica flakes, quartz

FIRED:

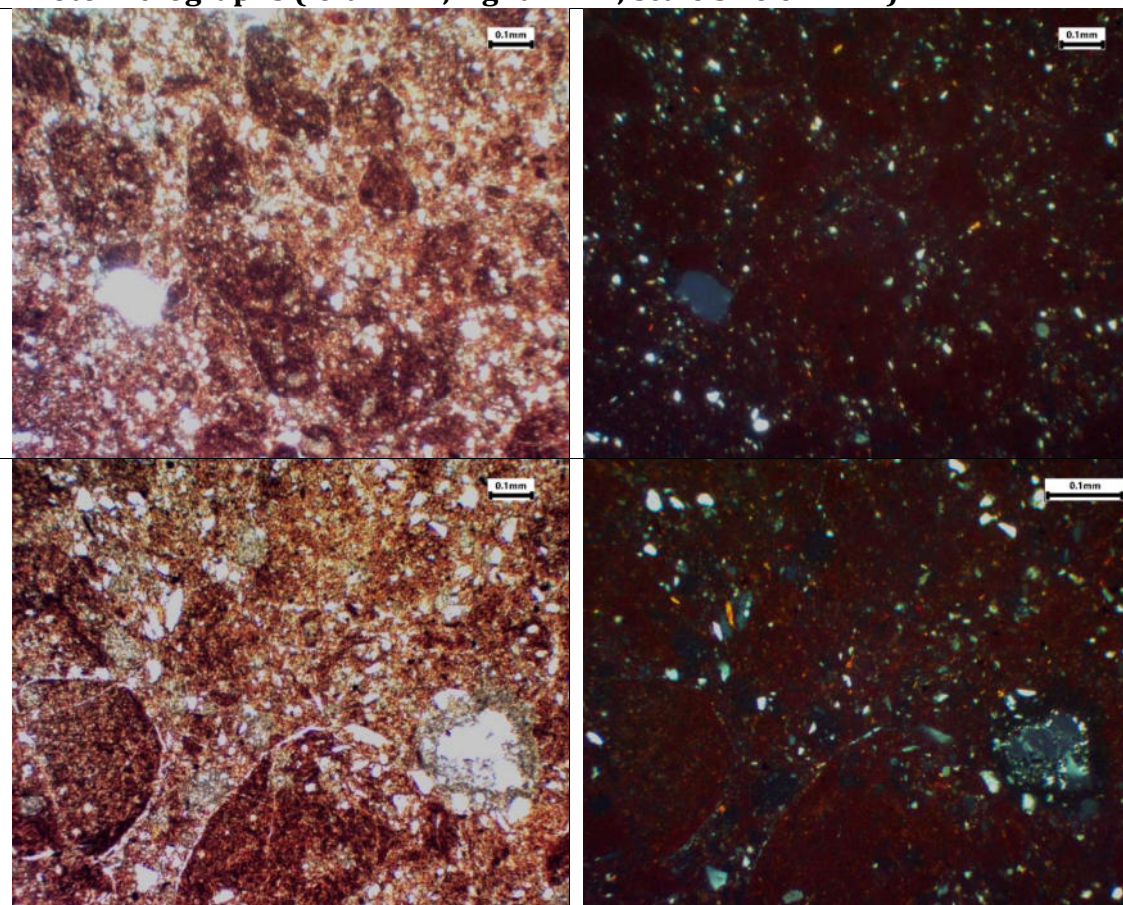
700°C: orange to light brown, same inclusions as in UF (exploded in the kiln)

900°C: orange brown, same inclusions as UF + black charred organic material (?) (exploded in the kiln)

1050°C: pale orange brown (paler than at 900°C), same inclusions as UF + light lime-spalling, layer of fine lime on the surface (exploded in the kiln)

Fabric photo				
Fired at 700° C				
				
Thin section scan				
Fired at 1050° C				
				
Microscopic description			Fabric Group: 2 Fine, Quartz-Mica, mineral inclusions MSi-sized and smaller	
Non-plastic inclusions 25%				
Coarse 0%		Fine 100%		
none		- quartz 60% - mica 39.9% - feldspar 0.1%		
Matrix 72-74%				
Homo-/heterogeneity	Sorting	Optical activity	Colour in PPL/ in XPL	Textural features/ comments
heterogeneous	well	moderate	brown/ dark red brown	partially vitrified; FSa-CSa clay pellets, >10% of the matrix
Voids 1%				
Type and size			Distinct characteristics	
macro/ meso vesicles, channels			none	

Photomicrographs (left - PPL, right - XPL; scale size 0.1 mm)



Sample Code: GSC6	Sampling Area: Tao River Valley, Majiayao
Material: sediment	Coordinates: LONG 103.825367 LAT 35.495688 Elevation: 1954 m
Raw material photo	Processed clay photo
	

Unfired and fired briquettes: macroscopic description and photos



UNFIRED (UF): light brown (similar to GSC5 UF), gold and white mica flakes

FIRED:

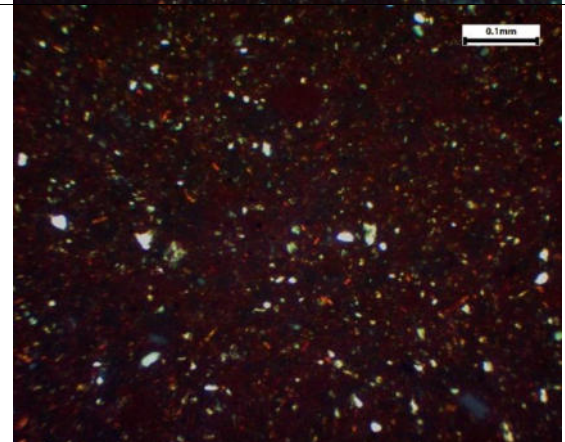
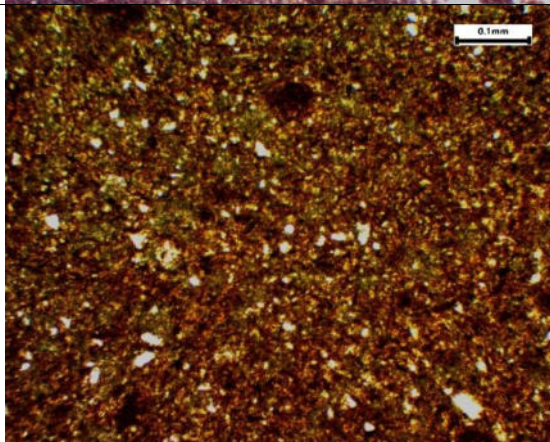
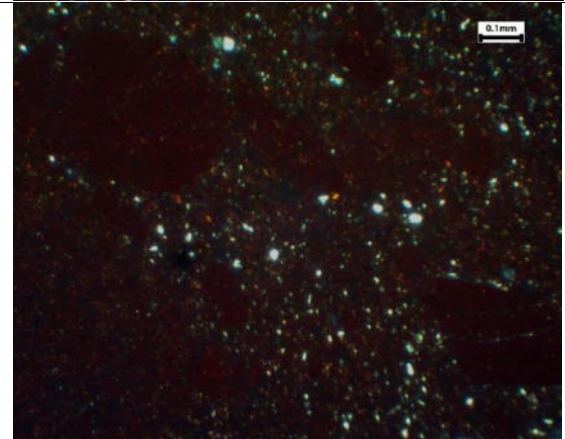
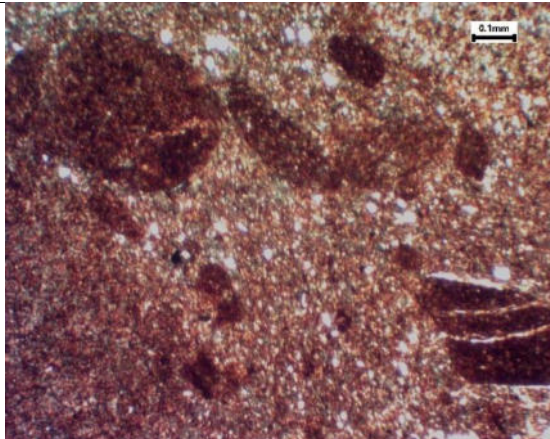
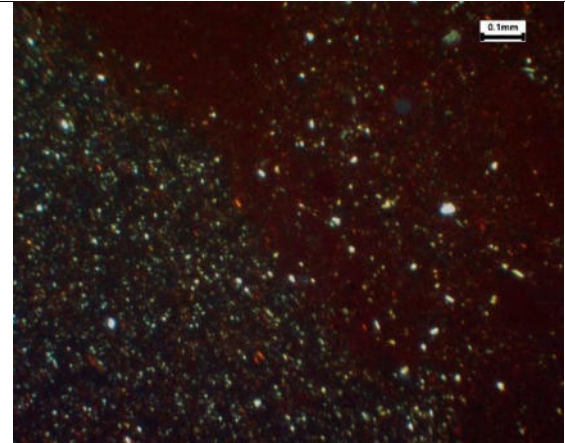
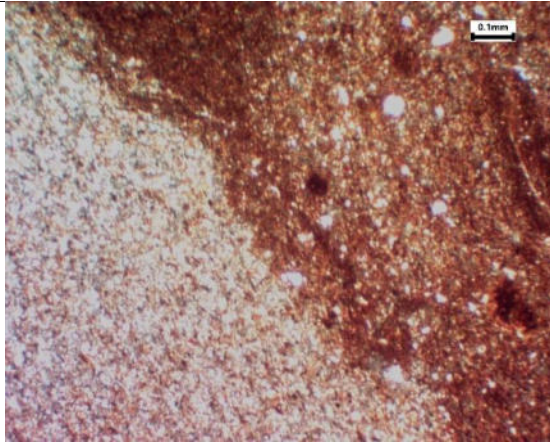
700°C: orange brown, same inclusions as UF, clay pellets

900°C: orange brown (brighter shade of orange than at 700°C), abundant white mica

1050°C: orange brown (almost like at 700°C but paler), abundant white mica

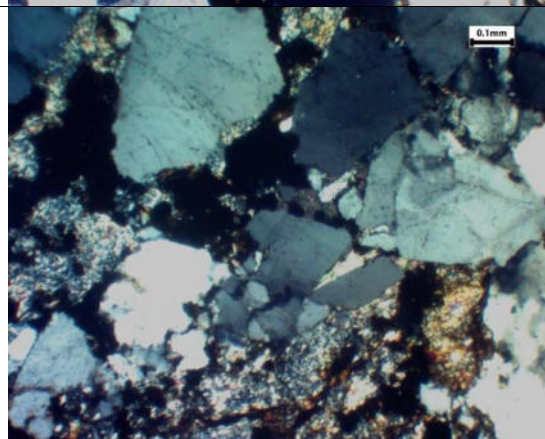
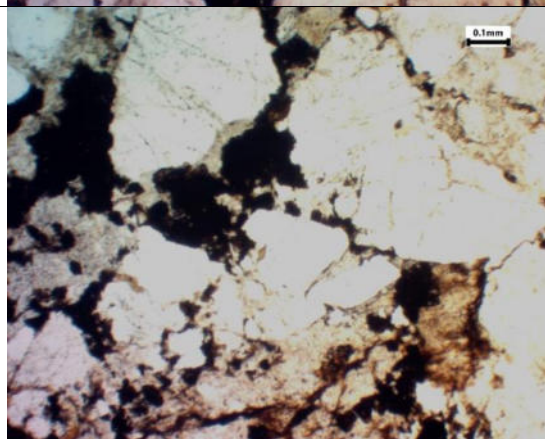
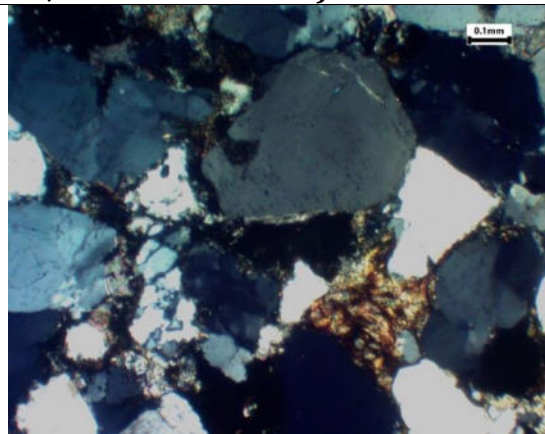
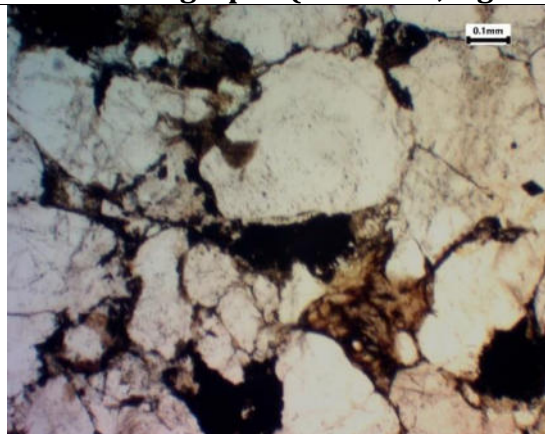
Fabric photo				
Fired at 700° C				
				
Thin section scan				
Fired at 1050° C				
				
Microscopic description			Fabric Group: 2 Fine, Quartz-Mica, mineral inclusions MSi-sized and smaller	
Non-plastic inclusions 20-25%				
Coarse 0%		Fine 100%		
none		- quartz 50% - mica 49.9% - feldspar 0.1%		
Matrix 74-79%				
Homo-/heterogeneity	Sorting	Optical activity	Colour in PPL/ in XPL	Textural features/ comments
heterogeneous	well	moderate	brown/ dark red brown	partially vitrified; MSa-FGr clay pellets, >10% of the matrix
Voids 1%				
Type and size			Distinct characteristics	
macro/ meso vughs, planar voids			none	

Photomicrographs (left - PPL, right - XPL; scale size 0.1 mm)



Sample Code: GSC7	Sampling Area: Tao River Valley, Majiayao
Material: rocks (4 items)	Coordinates: LONG 103.825845 LAT 35.343292 Elevation: 1926 m
GSC7-1 Gritstone/ sandstone with black inclusions – oxides or organic matter? Arkosic sandstone?	
<u>Hand specimen (1 scale unit = 1cm)</u> 	
MACROSCOPIC DESCRIPTION coarse-grained sedimentary rock	
<u>Thin-section scan</u> 	
MICROSCOPIC DESCRIPTION 90% quartz 6% black opaque inclusions 2% siltstone? 1% muscovite 1% quartz mica schist - carbonate-clay cement matrix	

Photomicrographs (left - PPL, right - XPL; scale size 0.1 mm)



GSC7-2 Fine gritstone/ sandstone

Hand specimen (1 scale unit = 1cm)



MACROSCOPIC DESCRIPTION

- fine-grained sedimentary rock

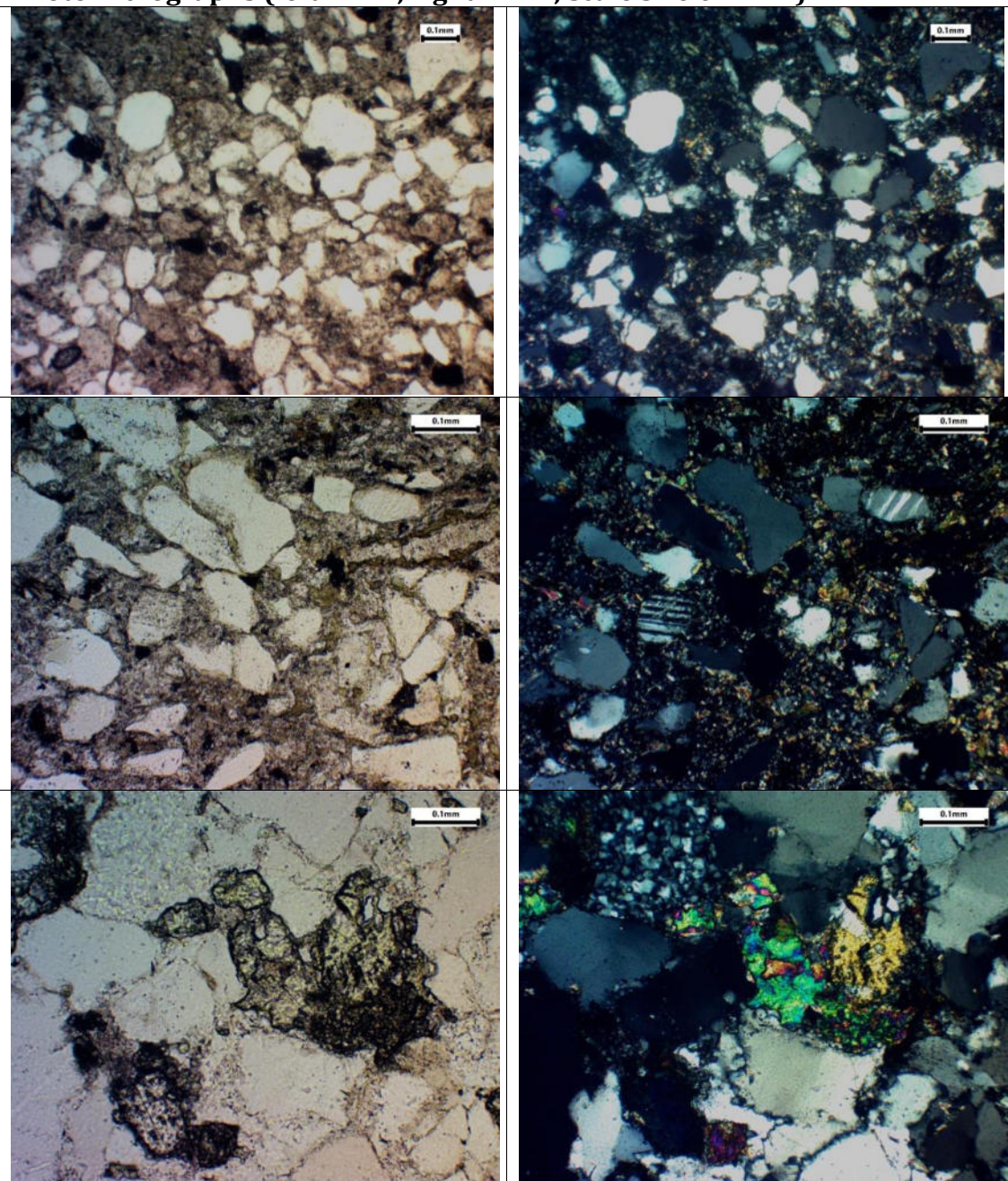
Thin-section scan



MICROSCOPIC DESCRIPTION

- 85% quartz
- 10% feldspar (plagioclase)
- 5% olivine?
- micaceous very fine-grained matrix

Photomicrographs (left - PPL, right - XPL; scale size 0.1 mm)



GSC7-3 Chert with iron oxide staining

Hand specimen (1 scale unit = 1cm)

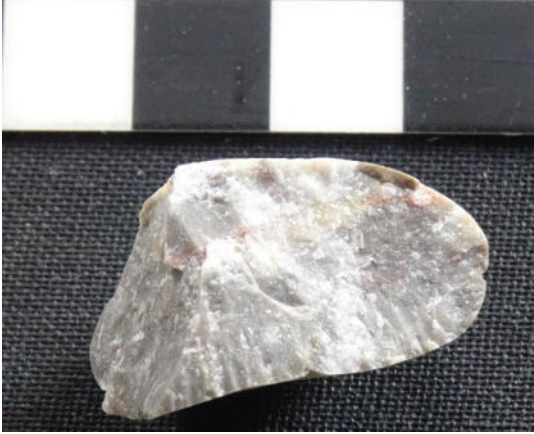


MACROSCOPIC DESCRIPTION

- fine-grained sedimentary rock with iron oxide staining

GSC7-4 Chert

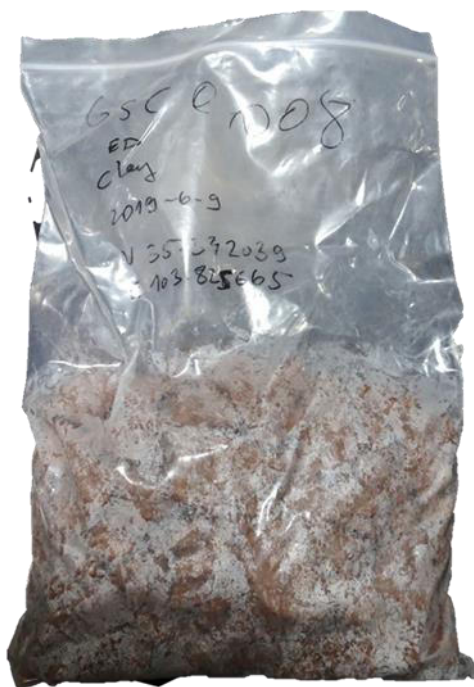
Hand specimen (1 scale unit = 1cm)



MACROSCOPIC DESCRIPTION

- fine-grained sedimentary rock

Sample Code: GSC8	Sampling Area: Tao River Valley, Majiayao
Material: sediment	Coordinates: LONG 103.825665 LAT 35.342039 Elevation: 1909 m
Raw material photo	Processed clay photo



Unfired and fired briquettes: macroscopic description and photos



UNFIRED (UF): brown; white and gold mica flakes

FIRED:

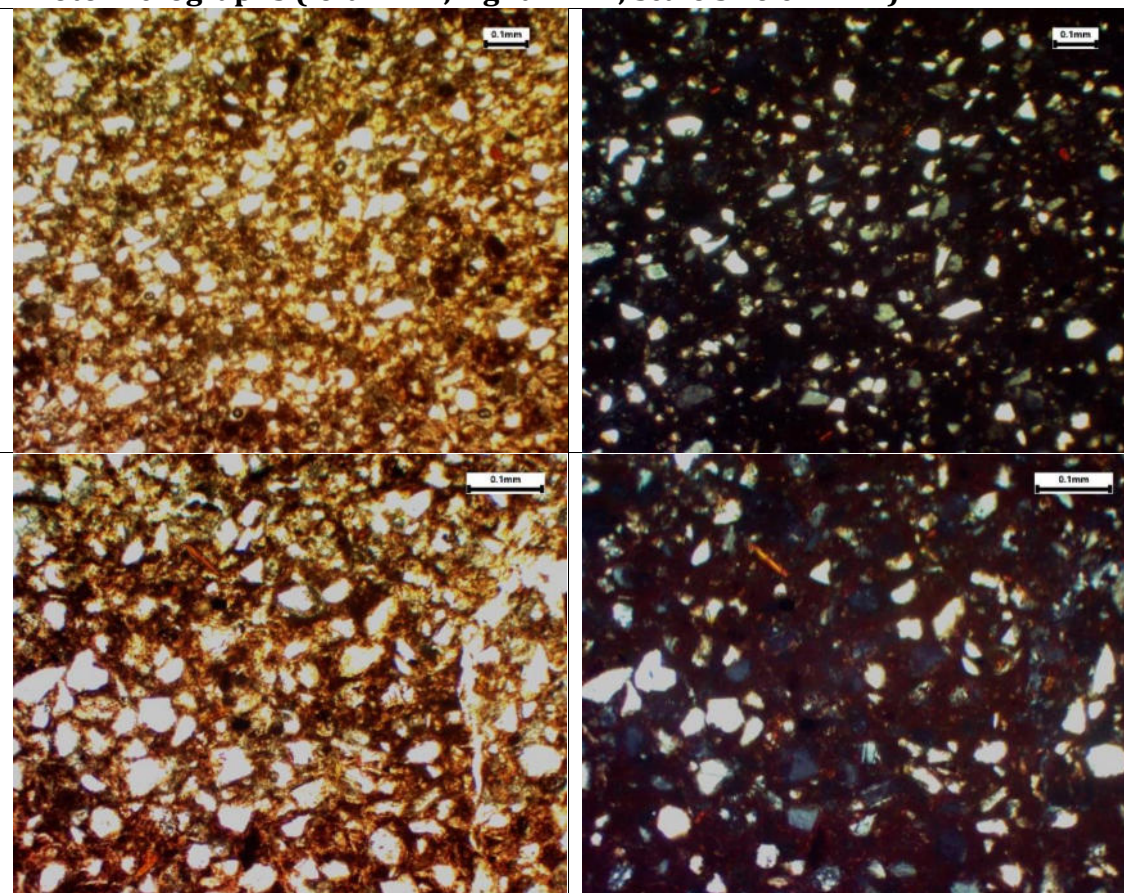
700°C: orange brown; same inclusions as UF + quartz

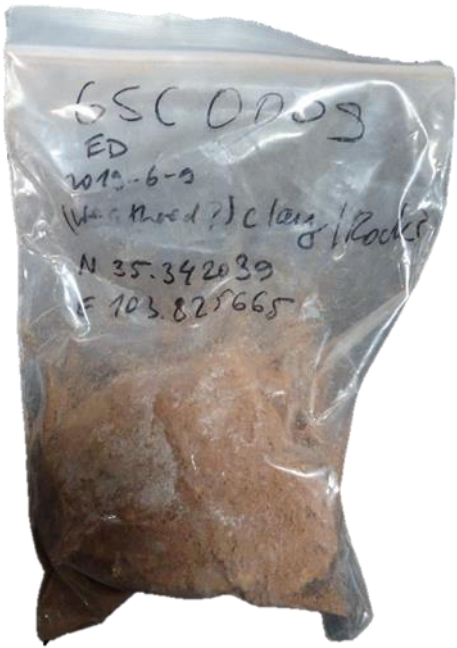
900°C: orange/reddish brown, same inclusions as UF + light lime-spalling

1050°C: orange brown; same inclusions as UF + various rock fragments

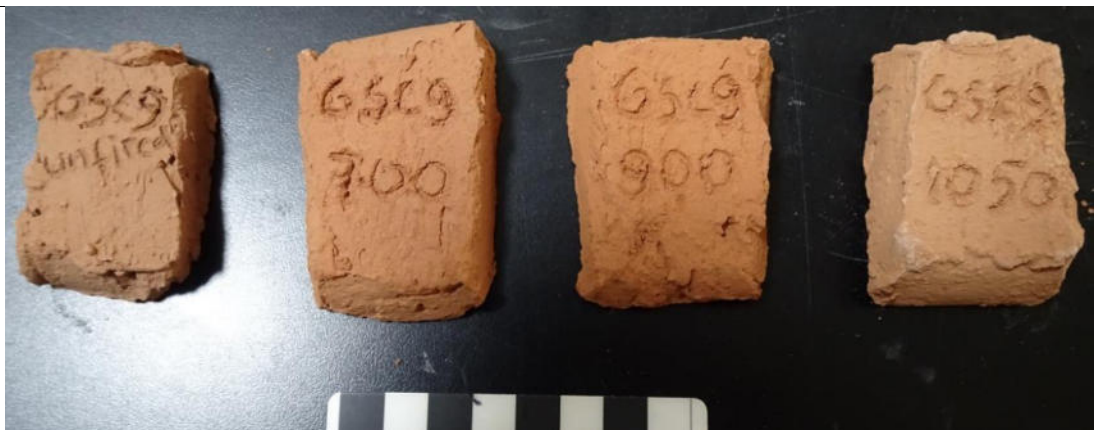
Fabric photo				
Fired at 700° C				
				
Thin section scan				
Fired at 1050° C				
				
Microscopic description		Fabric Group: 1B Fine, Quartz-Mica-Feldspar with higher inclusion frequency than Fabric group 1A		
Non-plastic inclusions 50%				
Coarse 0%		Fine 100%		
none		- quartz 55% - mica 35% - feldspar 10%		
Matrix 47-49%				
Homo-/ heterogeneity	Sorting	Optical activity	Colour in PPL/ in XPL	Textural features/ comments
homogeneous	well	inactive	grey brown/ dark grey brown	partially vitrified; matrix poorly mixed but not heterogeneous – the distribution of the inclusions is even, - only one CSa clay pellet without inclusions; the lumps seen in plain light could be the result of poor hydration of the clay body
Voids 1-3%				
Type and size			Distinct characteristics	
mega/ macro vesicles, channels			none	

Photomicrographs (left - PPL, right - XPL; scale size 0.1 mm)



Sample Code: GSC9	Sampling Area: Tao River Valley, Majiayao
Material: sediment	Coordinates: LONG 103.825665 LAT 35.342039 Elevation: 1909 m
Raw material photo	Processed clay photo
	

Unfired and fired briquettes: macroscopic description and photos



UNFIRED (UF): brown; white and gold mica flakes

FIRED:

700°C: orange brown; same inclusions as UF + quartz, dark rock fragments and soft carbonate rock

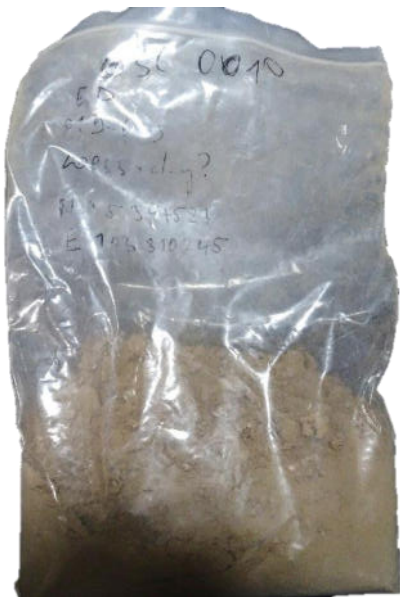
900°C: orange brown; same inclusions as UF + quartz, dark rock fragments and soft carbonate rock

1050°C: pale orange brown; same inclusions as UF + quartz, dark rock fragments and soft carbonate rock

Fabric photo

Fired at 700° C



Sample Code: GSC10	Sampling Area: Tao River Valley, Majiayao
Material: sediment	Coordinates: LONG 103.810245 LAT 35.347527 Elevation: 2076 m
Raw material photo	Processed clay photo
	

Unfired and fired briquettes: macroscopic description and photos



UNFIRED (UF): pale greenish brown; white and gold mica flakes

FIRED:

700°C: brown; same inclusions as UF + quartz, shell (?) black rock fragments

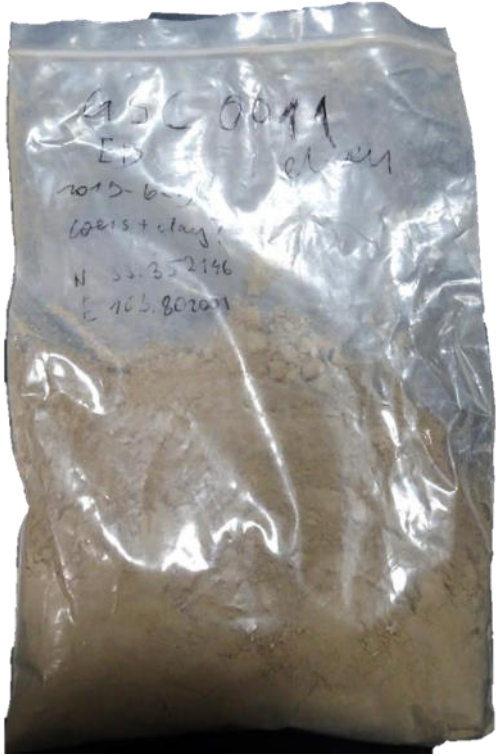
900°C: brown; same inclusions as UF + quartz, calcite

1050°C: buff pale yellow; same inclusions as UF + quartz, black rock fragments

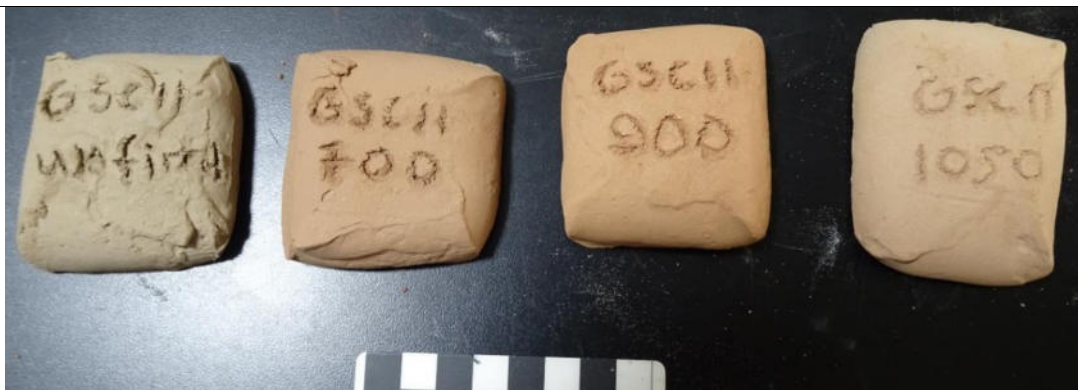
Fabric photo

Fired at 700° C



Sample Code: GSC11	Sampling Area: Tao River Valley, Majiayao
Material: sediment	Coordinates: LONG 103.802001 LAT 35.352146 Elevation: 2161 m
Raw material photo	Processed clay photo
	

Unfired and fired briquettes: macroscopic description and photos



UNFIRED (UF): pale greenish brown (similar to GSC10 UF); white and gold mica flakes, black unidentified inclusions, crumbly

FIRED:

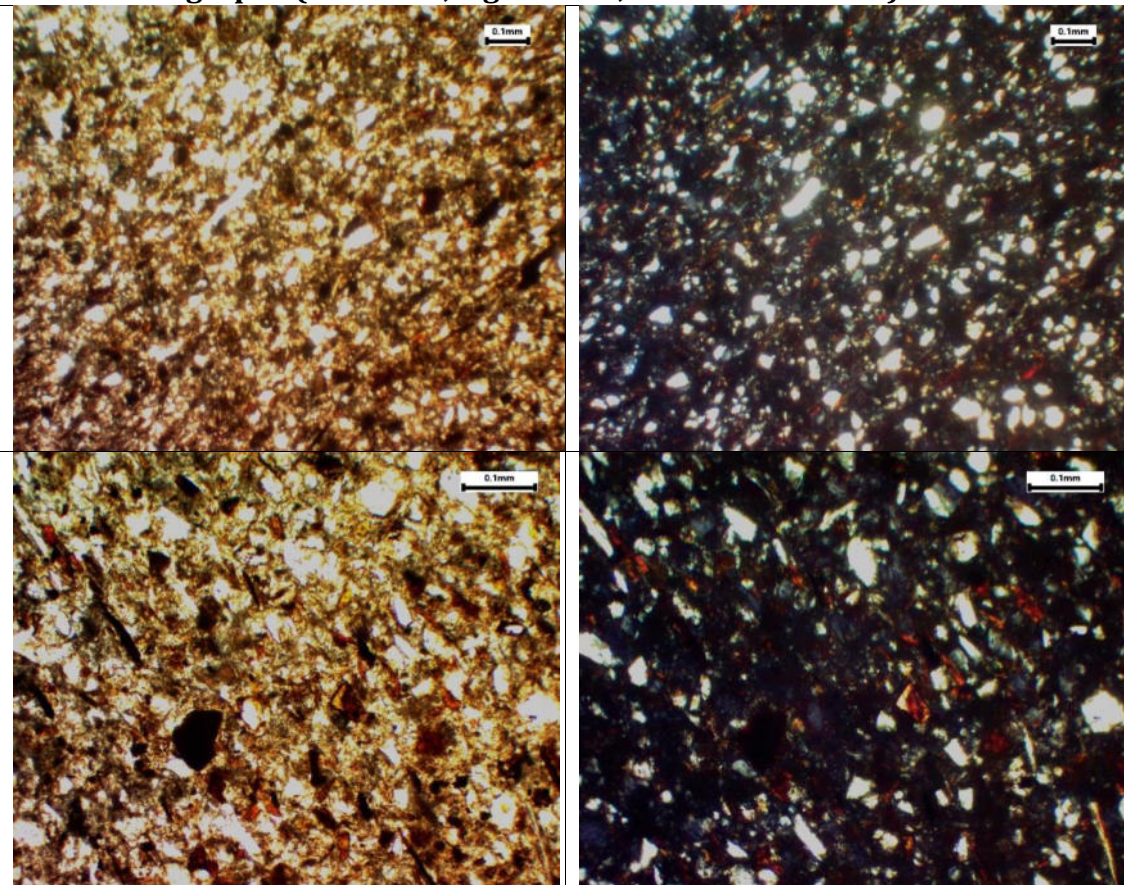
700°C: orange brown, same inclusions as UF, crumbly

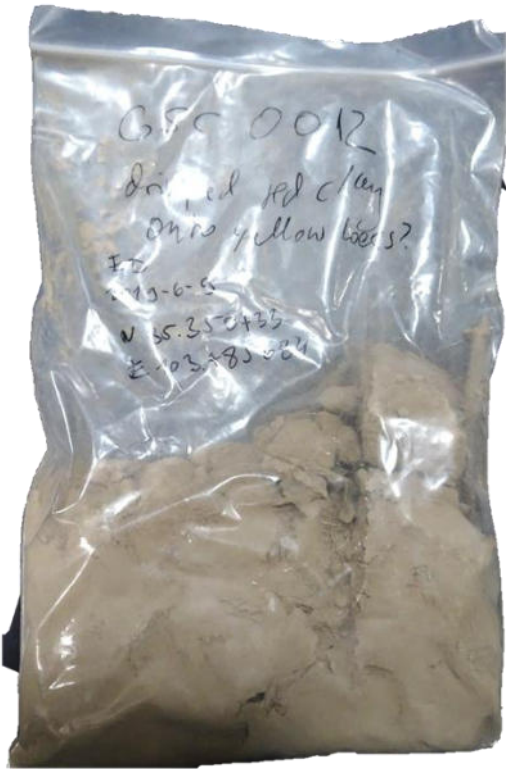
900°C: orange brown, same inclusions as UF + calcite? crumbly

1050°C: buff yellow brown, same inclusions as UF, less crumbly

Fabric photo				
Fired at 700° C				
				
Thin section scan				
Fired at 1050° C				
				
Microscopic description		Fabric Group: 1B Fine, Quartz-Mica-Feldspar with higher inclusion frequency than Fabric group 1A		
Non-plastic inclusions 40-50%				
Coarse 0%		Fine 100%		
none		• mica 45% • quartz 45% • feldspar 10%		
Matrix 49-59%				
Homo-/heterogeneity	Sorting	Optical activity	Colour in PPL/ in XPL	Textural features/ comments
homogeneous	well	inactive	grey/ dark grey brown	none
Voids 1%				
Type and size		Distinct characteristics		
macro/ meso vesicles		none		

Photomicrographs (left - PPL, right - XPL; scale size 0.1 mm)



Sample Code: GSC12	Sampling Area: Tao River Valley, Majiayao
Material: sediment	Coordinates: LONG 103.785684 LAT 35.350733 Elevation: 2160 m
Raw material photo	Processed clay photo
	

Unfired and fired briquettes: macroscopic description and photos



UNFIRED (UF): pale greenish brown (similar to GSC10 and GSC11 UF); white and gold mica flakes, black unidentified inclusions

FIRED:

700°C: pale brown, same inclusions as UF, crumbly like GSC11 at 1050°C

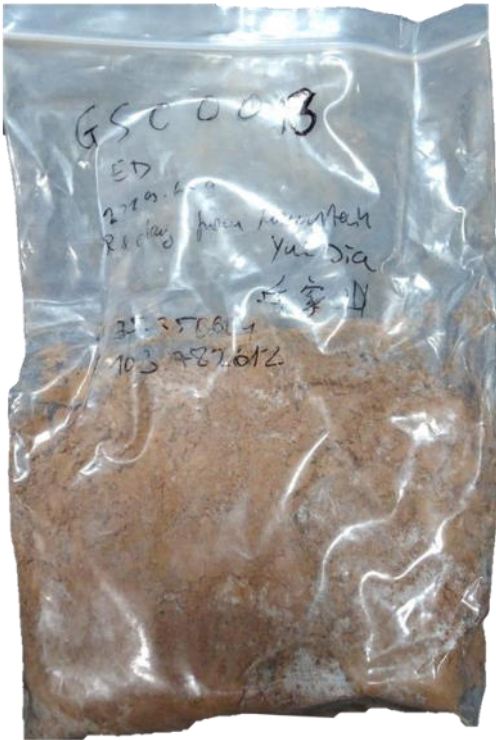
900°C: pale brown, same inclusions as UF, crumbly like GSC11 at 1050°C

1050°C: pale green, same inclusions as UF, crumbly like GSC11 at 1050°C

Fabric photo

Fired at 700° C



Sample Code: GSC13	Sampling Area: Tao River Valley, Majiayao
Material: sediment	Coordinates: LONG 103.782612 LAT 35.350604 Elevation: 2181 m
Raw material photo	Processed clay photo
	

Unfired and fired briquettes: macroscopic description and photos



UNFIRED (UF): brown; white and gold mica flakes, quartz

FIRED:

700°C: orange brown, same inclusions as UF + calcite(?)

900°C: orange brown, same inclusions as UF + calcite, completely pulverised due to lime-spalling after a month in a sealed bag

1050°C: orange brown, same inclusions as UF, friable

Fabric photo

Fired at 700° C



Sample Code: GSC14	Sampling Area: Tao River Valley, Majiayao
Material: sediment	Coordinates: LONG 103.768071 LAT 35.338178 Elevation: 2093 m
Raw material photo	Processed clay photo
	

Unfired and fired briquettes: macroscopic description and photos



UNFIRED (UF): brown; quartz, calcite(?), gold mica(?)

FIRED:

700°C: orange brown, same inclusions as UF, clay pellets(?), rock fragments

900°C: orange brown, same inclusions as UF + calcite, completely pulverised due to lime-spalling

1050°C: red brown, same inclusions as UF, fell apart into chunks because of the lime-spalling

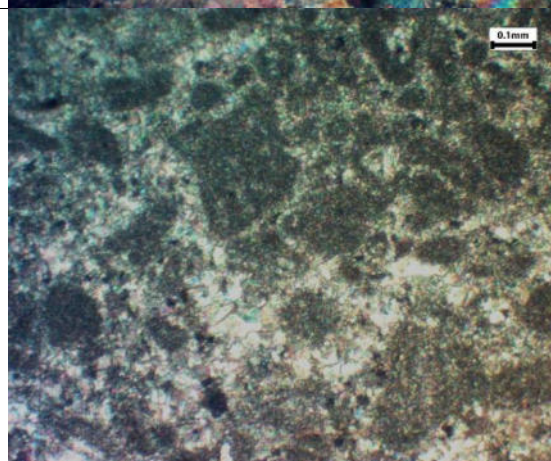
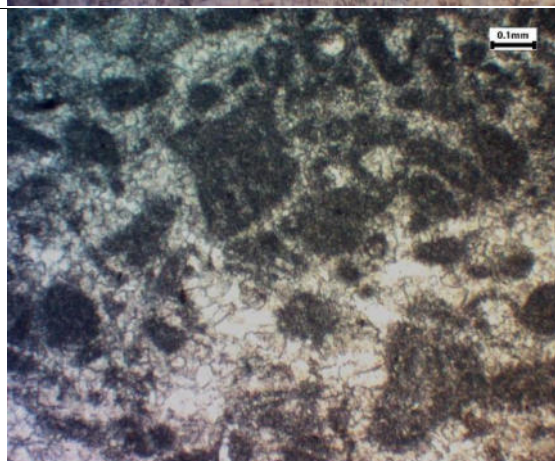
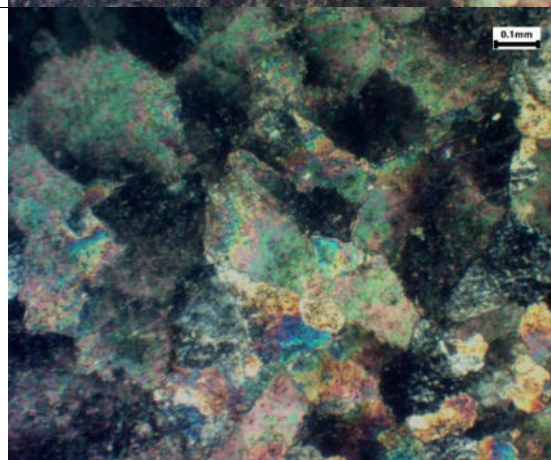
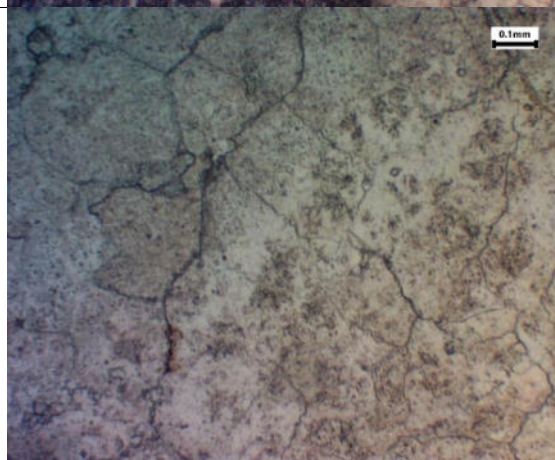
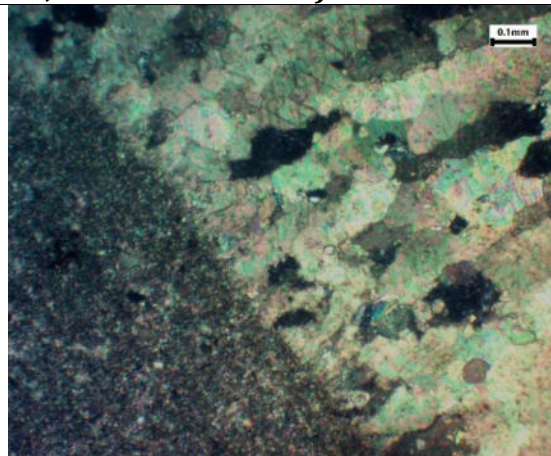
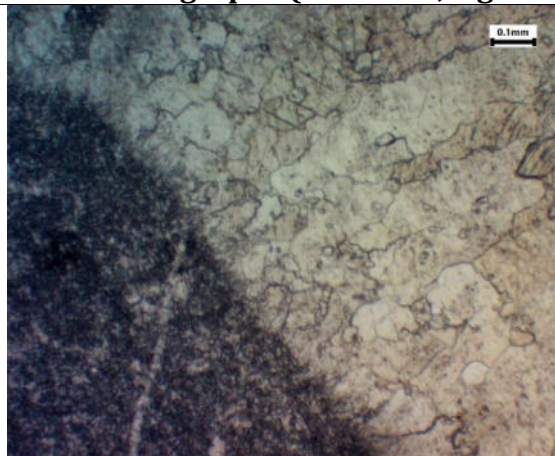
Fabric photo

Fired at 700° C



Sample Code: GSC15	Sampling Area: Tao River Valley, Majiayao
Material: rocks (3 items)	Coordinates: LON 103.768071 LAT 35.338178 Elevation: 2093 m
GSC15-1 Carbonate intraclastic rock (from shallow marine environment)	
<u>Hand specimen (1 scale unit = 1cm)</u>  A photograph of a hand specimen of carbonate intraclastic rock. The rock is irregularly shaped, with a light tan to yellowish-brown color. It has a rough, crystalline texture. A white scale bar is visible at the top of the image, and a white ruler is placed horizontally across the middle of the rock specimen for scale.	
MACROSCOPIC DESCRIPTION • fine-grained carbonate rock	
<u>Thin-section scan</u>  A thin-section scan of the carbonate intraclastic rock. The image shows a complex, interlocking crystalline texture. The color is a mix of light gray, white, and dark gray, indicating different mineral phases or grain boundaries. The texture is highly irregular and non-uniform.	
MICROSCOPIC DESCRIPTION 100% calcium carbonate	

Photomicrographs (left - PPL, right - XPL; scale size 0.1 mm)



GSC15-2 Chert with reduced iron (green coloration)

Hand specimen (1 scale unit = 1cm)



MACROSCOPIC DESCRIPTION

- fine-grained sedimentary rock with reduced iron

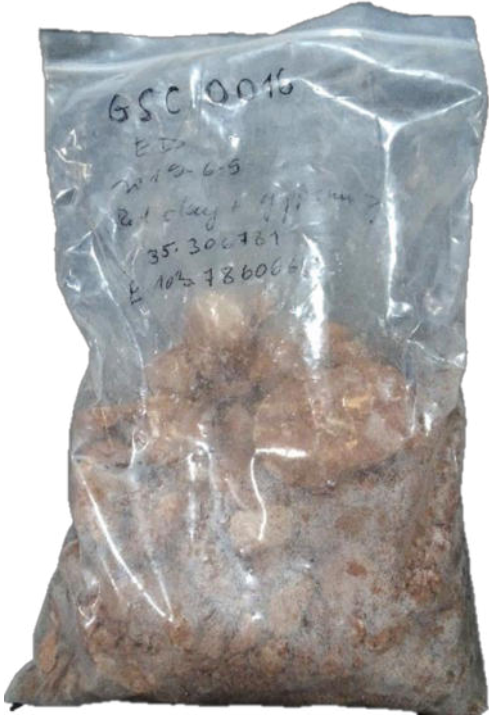
GSC15-3 Fault breccia

Hand specimen (1 scale unit = 1cm)



MACROSCOPIC DESCRIPTION

- coarse-grained sedimentary rock with haematite clasts in a fine-grained matrix of iron oxides

Sample Code: GSC16	Sampling Area: Tao River Valley, Majiayao
Material: sediment	Coordinates: LONG 103.786066 LAT 35.306781 Elevation: 1968 m
Raw material photo	Processed clay photo
	

Unfired and fired briquettes: macroscopic description and photos



UNFIRED (UF): orange brown, calcite – limestone?, quartz, mica

FIRED:

700°C: orange brown, same inclusions as UF, large fragments of limestone?

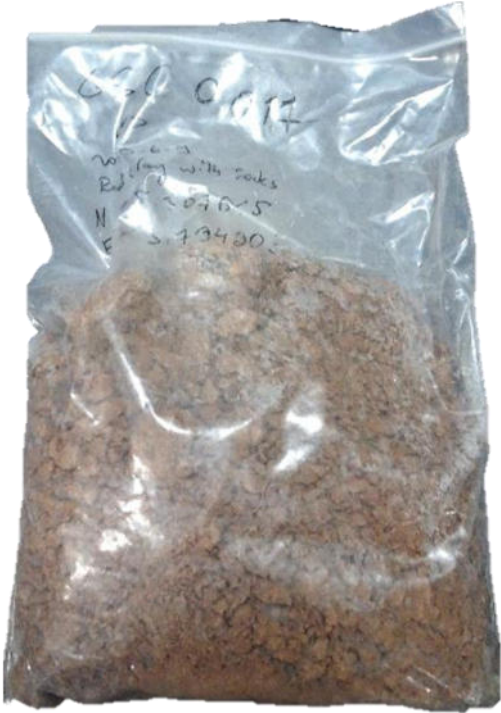
900°C: orange brown but mostly white due to lime-spalling, sample completely pulverised after a few days (though grains not as fine as GSC13 900° C)

1050°C: red brown, same inclusions as UF, fell apart into chunks due to lime-spalling

Fabric photo

Fired at 700° C



Sample Code: GSC17	Sampling Area: Tao River Valley, Majiayao
Material: sediment	Coordinates: LONG 103.794006 LAT 35.307615 Elevation: 1954 m
Raw material photo	Processed clay photo
	

Unfired and fired briquettes: macroscopic description and photos



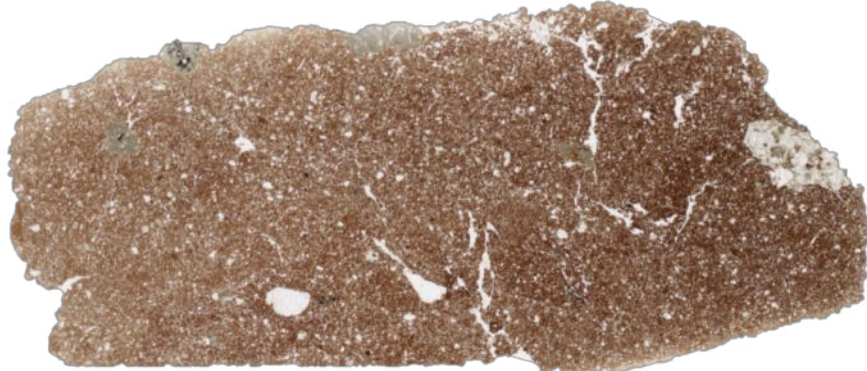
UNFIRED (UF): brown; gold mica, quartz

FIRED:

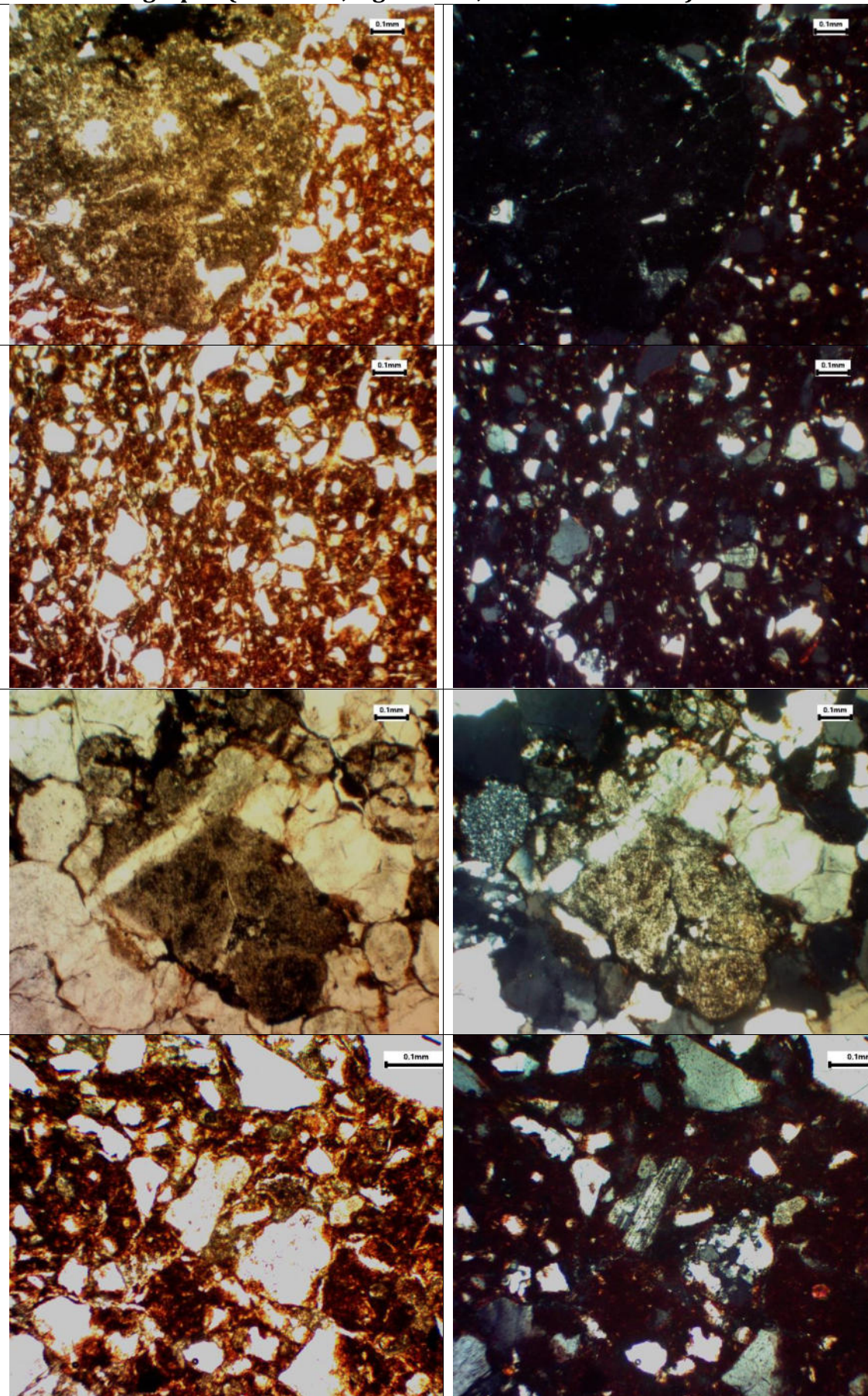
700°C: orange brown; same inclusions as UF + dark rock fragments

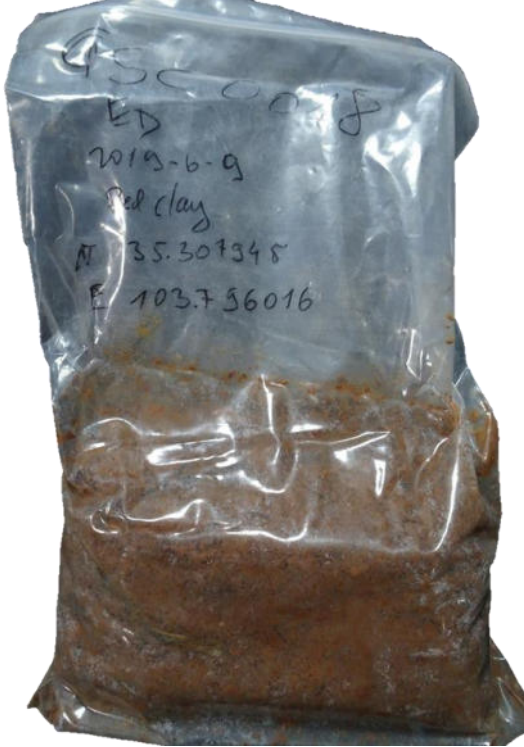
900°C: orange; same inclusions as UF + calcite, black soft inclusion – charcoal? light lime-spalling

1050°C: red; same inclusions as UF + calcite, light lime-spalling, hardest sample so far, almost un-scratchable with a razor

Fabric photo				
Fired at 700° C				
				
Thin section scan				
Fired at 1050° C				
				
Microscopic description		Fabric group: 3 Semi-coarse, Quartz dominant		
Non-plastic inclusions 40-45%				
Coarse 30-40%		Fine 60-70%		
- quartz (eq, el; ang – s-rnd; FSa-MSa) 69.4% - plagioclase and microcline feldspar (eq; ang – s-rnd; FSa-MSa) 30% - vitrified inclusions with quartz fragments – volcanic ash? (eq, el; rnd; MSa-FGr) 0.5% - sedimentary rock fragments – sandstone (eq; s-rnd - rnd; MSa-FGr) 0.1 %		- quartz 60% - mica 25% - feldspar 15%		
Matrix 50-55%				
Homo-/heterogeneity	Sorting	Optical activity	Colour in PPL/ in XPL	Textural features/ comments
homogeneous	well	inactive	brown/ dark brown	partially vitrified; well sorted with a sandstone phenocryst
Voids 5%				
Type and size		Distinct characteristics		
mega/ macro channels, macro/meso vughs, vesicles		none		

Photomicrographs (left - PPL, right - XPL; scale size 0.1 mm)



Sample Code: GSC18	Sampling Area: Tao River Valley, Majiayao
Material: sediment	Coordinates: LONG 103.796016 LAT 35.307945 Elevation: 1936 m
Raw material photo	Processed clay photo
	

Unfired and fired briquettes: macroscopic description and photos



UNFIRED (UF): brown; mica, quartz

FIRED:

700°C: orange brown, same inclusions as UF + rock fragments

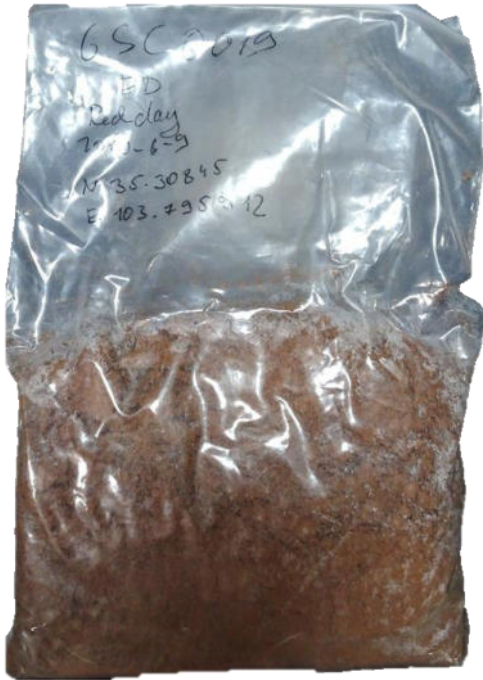
900°C: orange, same inclusions as UF, fell apart into chunks due to lime-spalling

1050°C: orange, same inclusions as UF, fell apart into chunks due to lime-spalling

Fabric photo

Fired at 700° C



Sample Code: GSC19	Sampling Area: Tao River Valley, Majiayao
Material: sediment	Coordinates: LONG 103.795912 LAT 35.30845 Elevation: 1939 m
Raw material photo	Processed clay photo
	

Unfired and fired briquettes: macroscopic description and photos



UNFIRED (UF): brown; mica, quartz

FIRED:

700°C: orange; same inclusions as UF + rock fragments

900°C: orange; same inclusions as UF, fell apart into chunks due to lime-spalling

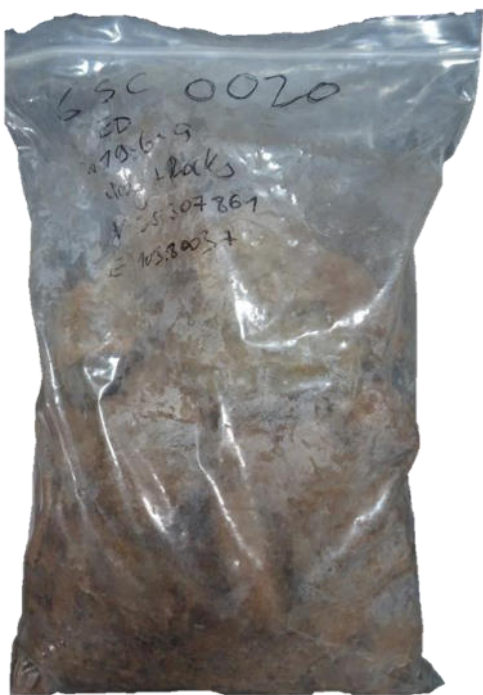
1050°C: orange; same inclusions as UF, fell apart into chunks due to lime-spalling

Fabric photo

Fired at 700° C



Sample Code: GSC20	Sampling Area: Tao River Valley, Majiayao
Material: sediment	Coordinates: LONG 103.80037 LAT 35.307861 Elevation: 1934 m
Raw material photo	Processed clay photo



Unfired and fired briquettes: macroscopic description and photos



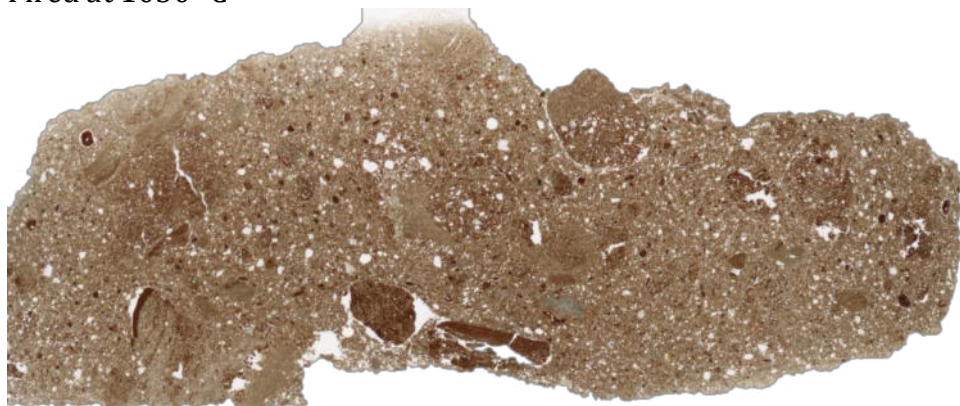
Unfired (UF): brown; quartz, mica

FIRED:

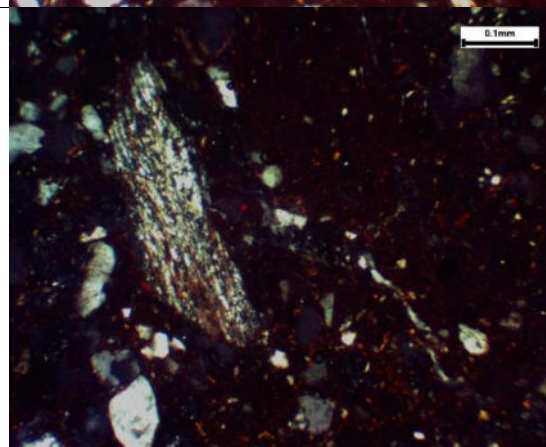
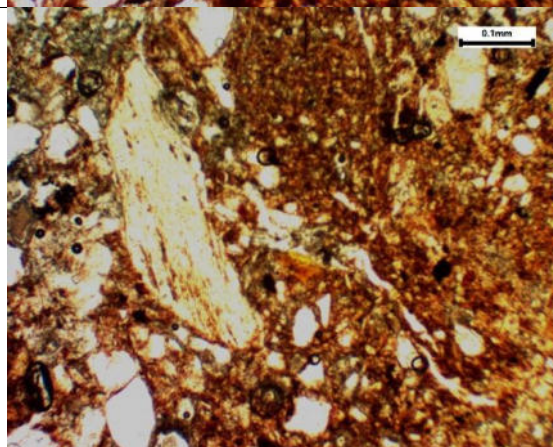
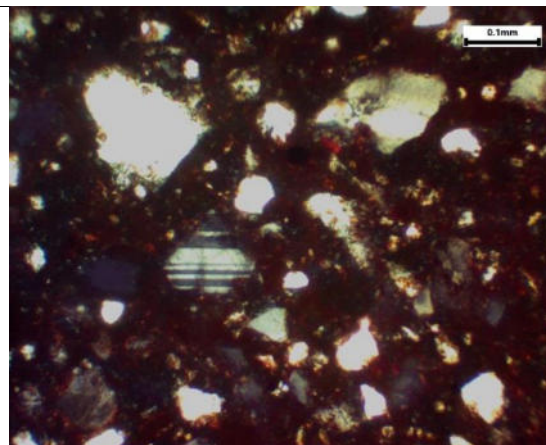
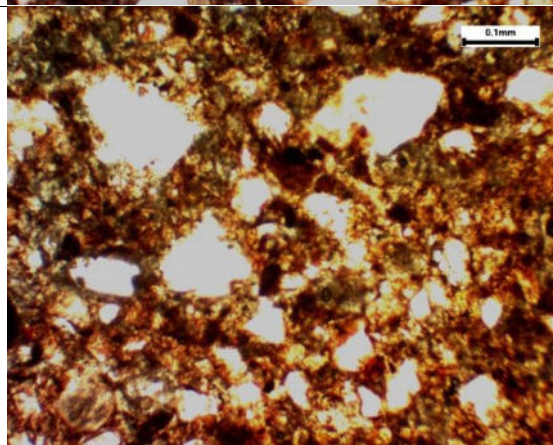
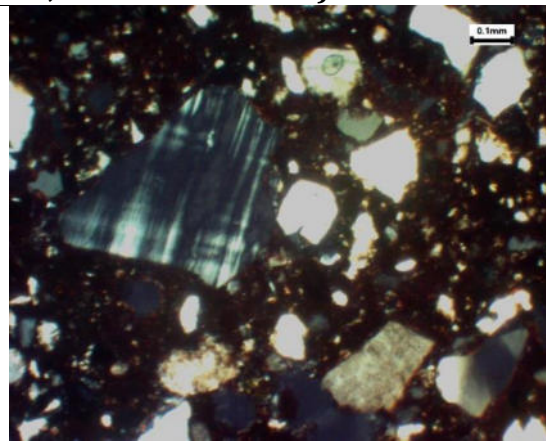
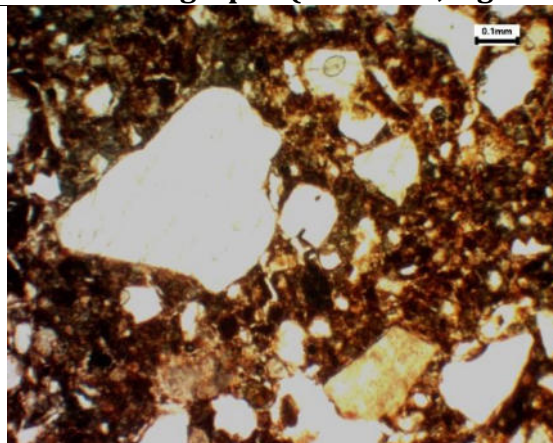
700°C: orange brown, same inclusions as UF + rock fragments, calcite?

900°C: orange brown, same inclusions as UF + calcite, moderate lime-spalling, briquette still in one piece

1050°C: pale orange brown, same inclusions as UF + calcite, sample fell apart into two pieces due to lime-spalling

Fabric photo				
Fired at 700° C				
				
Thin section scan				
Fired at 1050° C				
				
Microscopic description		Fabric Group: 3 Semi-coarse, Quartz dominant		
Non-plastic inclusions 40-45%				
Coarse 30%		Fine 70%		
- quartz (eq; el; ang – rnd; FSa-MSa) 80% - plagioclase and microcline feldspar (eq, el; FSa-MSa) 20% - quartz-mica schist (el; s-ang; MSa) one inclusion		- quartz 50% - mica 35% - feldspar 15%		
Matrix 50-55%				
Homo-/heterogeneity	Sorting	Optical activity	Colour in PPL/ in XPL	Textural features/ comments
heterogeneous	well	inactive	grey brown/ dark grey	MSa-FGr clay pellets, >10% of the matrix
Voids 5%				
Type and size		Distinct characteristics		
macro channels, meso vughs, vesicles		none		

Photomicrographs (left - PPL, right - XPL; scale size 0.1 mm)



Sample Code: GSC21	Sampling Area: Tao River Valley, Majiayao
Material: sediment	Coordinates: LONG 103.832407 LAT 35.363078 Elevation: 1871 m
Raw material photo	Processed clay photo
	

Unfired and fired briquettes: macroscopic description and photos



UNFIRED (UF): brown; quartz, mica

FIRED: (most cracks occurred already during drying)

700°C: orange brown, no visible mica flakes, but quartz, sample cracked in halves during firing

900°C: orange brown, calcite, poorly hydrated clay inclusions without any calcite or other visible inclusions – clay pellets in thin-section? moderate lime-spalling – sample broke into large pieces

1050°C: light red, gold mica flakes, calcite, poorly hydrated clay inclusions without any calcite or other visible inclusions – clay pellets in thin-section? moderate lime-spalling – sample broke into large pieces

Fabric photo

Fired at 700° C

Thin section scan

Fired at 1050° C

Microscopic description

Fabric Group: 3 Semi-coarse, Quartz dominant

Non-plastic inclusions 40%

Coarse 30%

- quartz (eq, el; ang – rnd; FSa-MSa) 70%
- plagioclase feldspar (eq; s-ang; FSa-MSa) 30%

Fine 70%

- quartz 70%
- feldspar 30%
- mica 10%

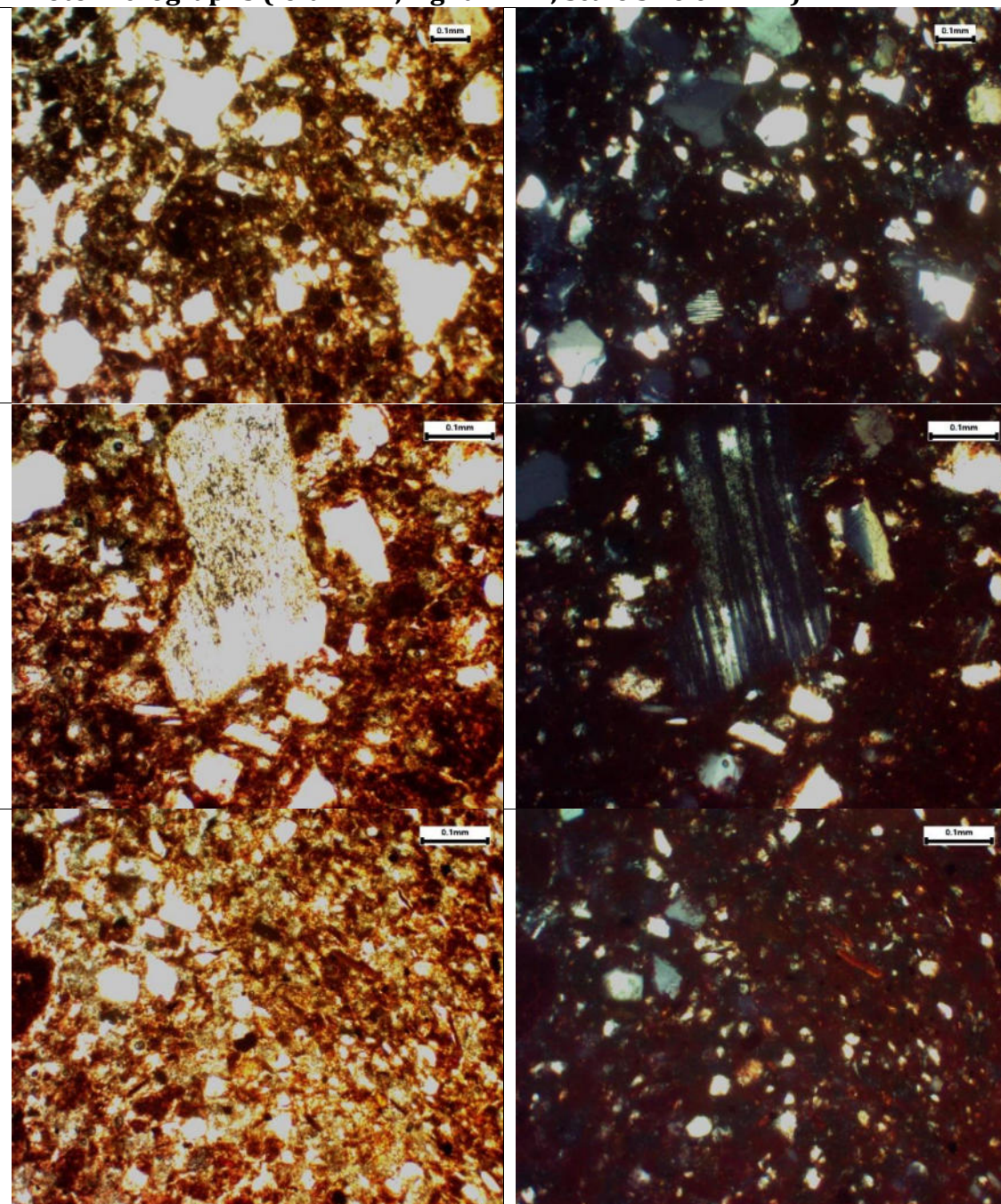
Matrix 50-55%

Homo-/heterogeneity	Sorting	Optical activity	Colour in PPL/ in XPL	Textural features/ comments
heterogeneous	well	inactive	grey brown/ dark grey brown	partially vitrified; MSa-FGr clay pellets, >10% of the matrix

Voids 5-10%

Type and size	Distinct characteristics
mega/ macro channels, vughs, meso vesicles	none

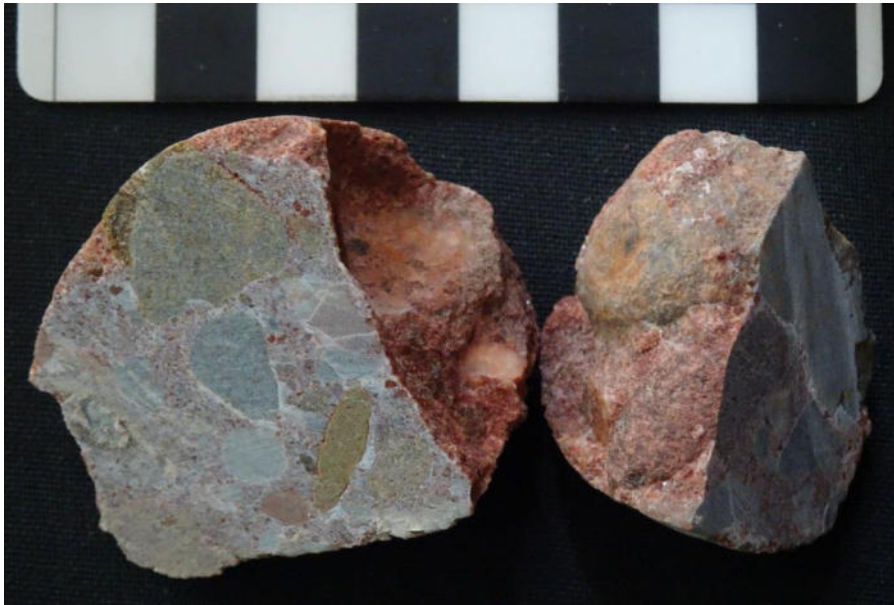
Photomicrographs (left - PPL, right - XPL; scale size 0.1 mm)



Sample Code: GSC22	Sampling Area: Tao River Valley, Majiayao
Material: rocks (13 items)	Coordinates: LONG 103.832407 LAT 35.363078 Elevation: 1871 m

GSC22-1 Conglomerate

Hand specimen (1 scale unit = 1cm)



MACROSCOPIC DESCRIPTION

- conglomerate sedimentary rock with chert, mica, gneiss, bioclastic carbonates

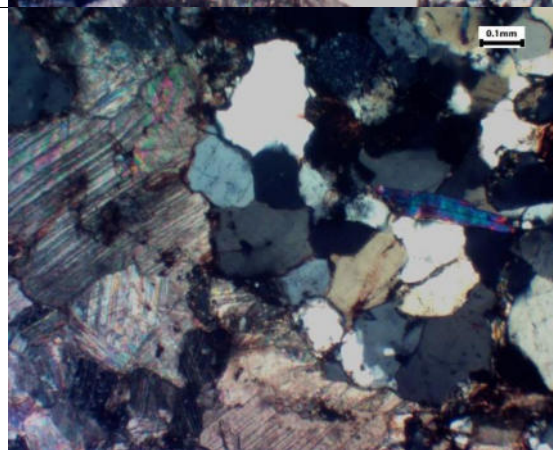
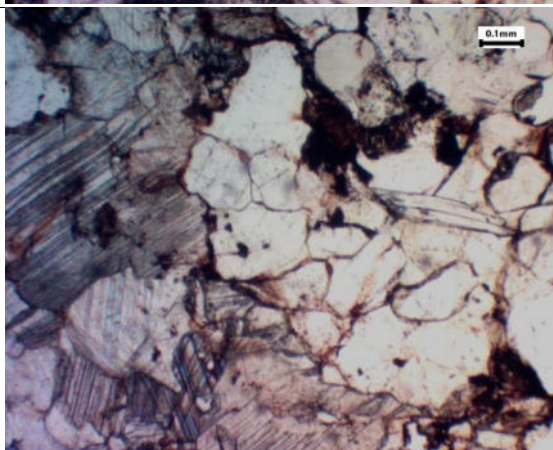
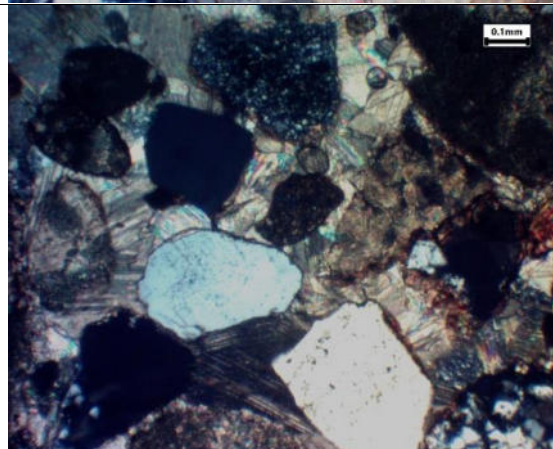
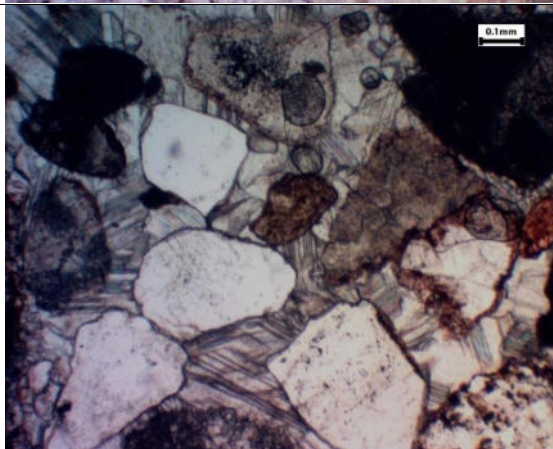
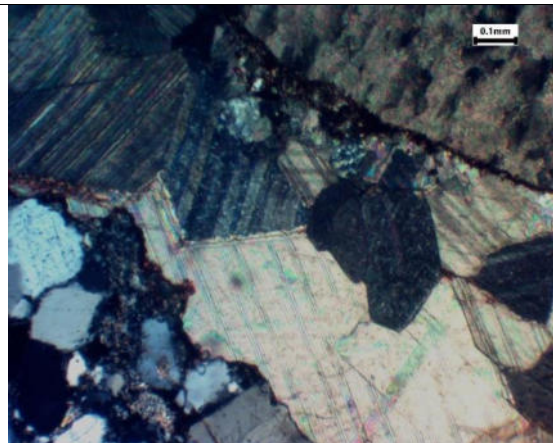
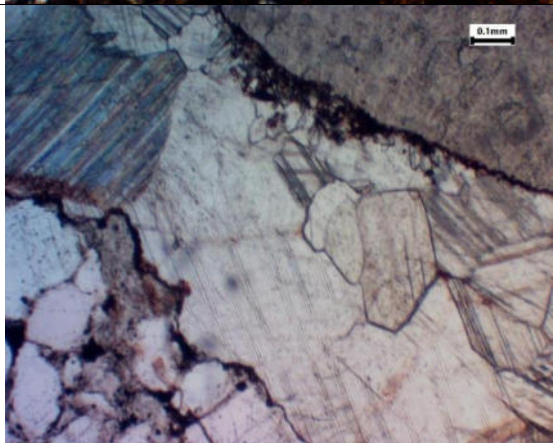
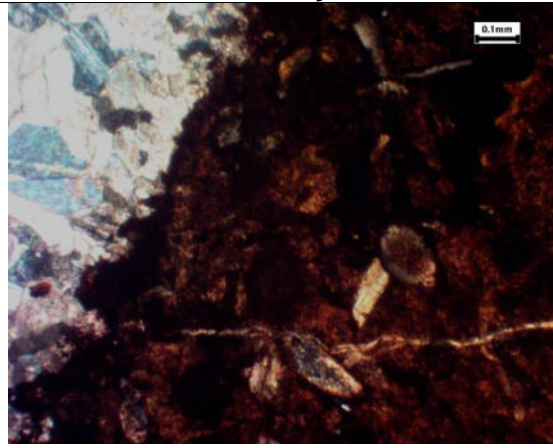
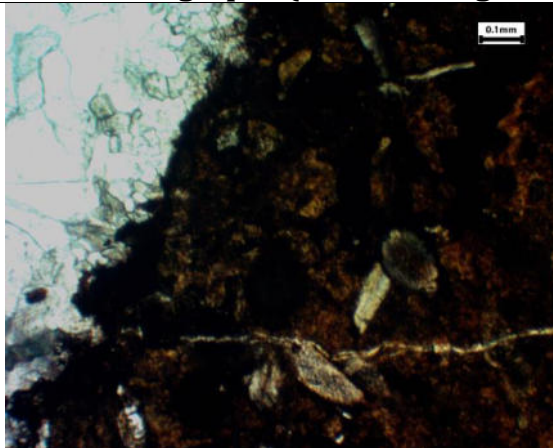
Thin-section scan

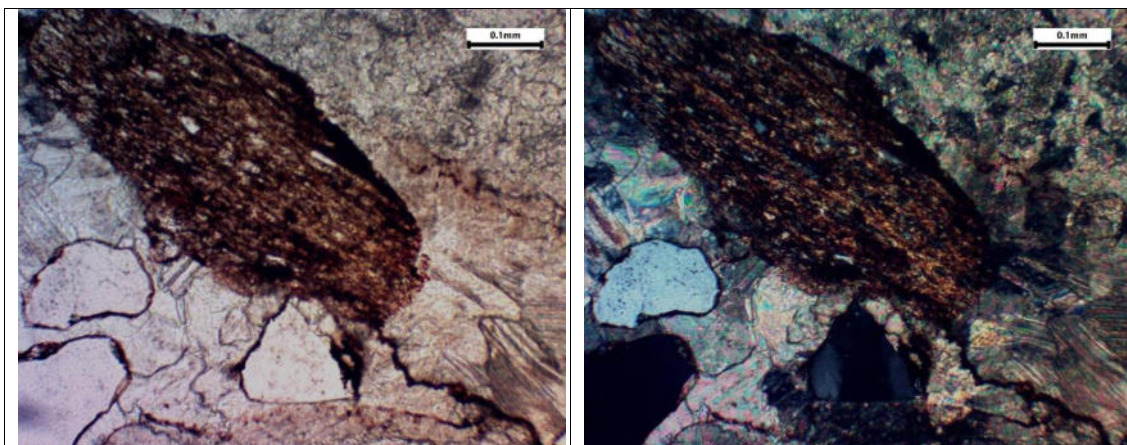


MICROSCOPIC DESCRIPTION

- 60% carbonate rock and carbonate cement, calcite crystals
- 30% quartz
- 5% shale? clay-matrix-like brown inclusion with carbonate nannofossils
- 5% mica schist, sandstone fragments, chert

Photomicrographs (left - PPL, right - XPL; scale size 0.1 mm)





GSC22-2 Gabbro

Hand specimen (1 scale unit = 1cm)



MACROSCOPIC DESCRIPTION

- coarse-grained igneous rock

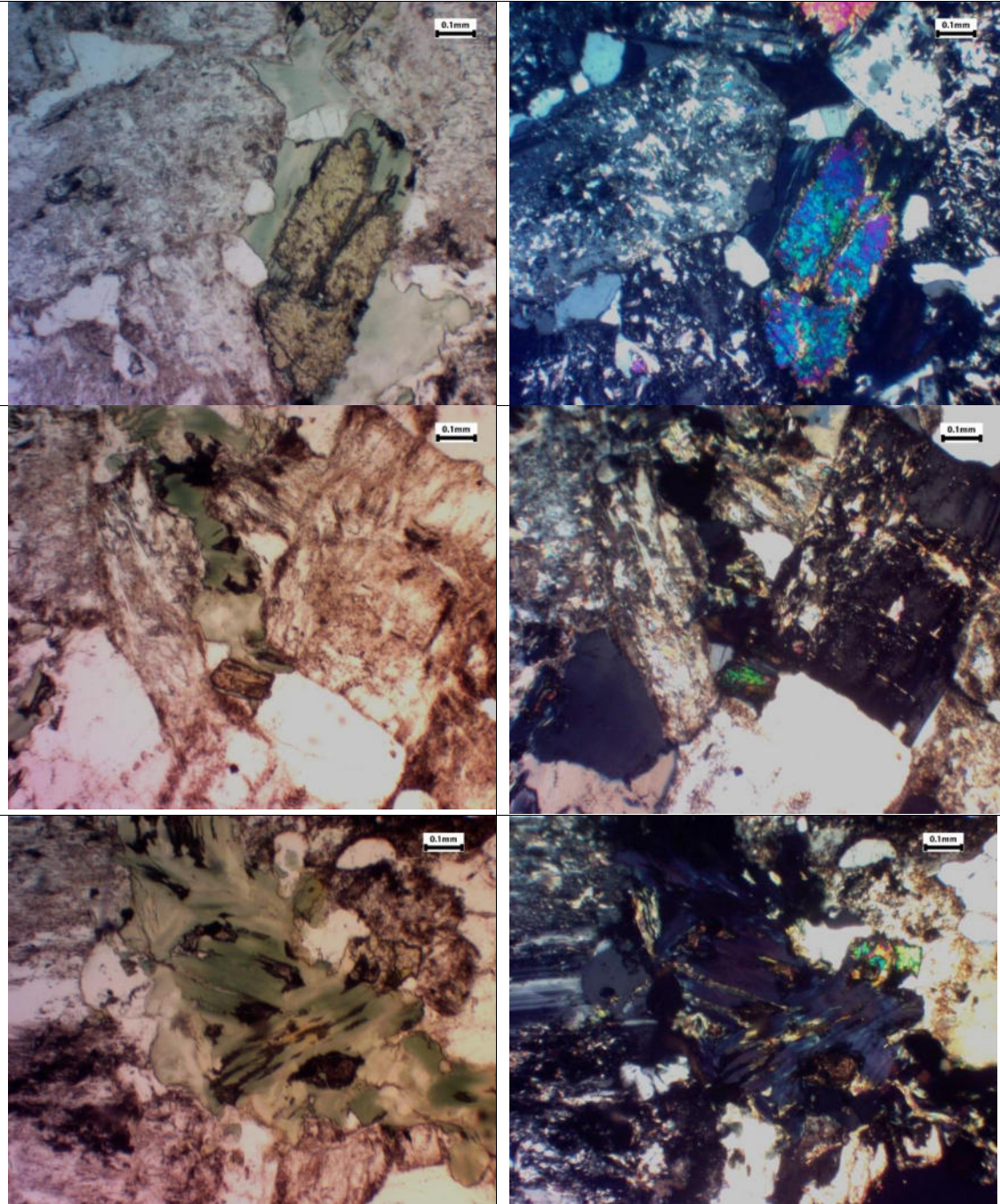
Thin-section scan



MICROSCOPIC DESCRIPTION

- 60% feldspar altered by sericite
- 30% quartz
- 5% calcite
- 3% biotite turning chlorite
- 1-2% pyroxene?

Photomicrographs (left – PPL, right – XPL; scale size 0.1 mm)



GSC22-3 Intraclastic limestone

Hand specimen (1 scale unit = 1cm)



MACROSCOPIC DESCRIPTION

- fine-grained carbonate rock with mature micrite, microcrystalline chert(?), kaolinite and limonite impurities, chlorite in schist, green coloration – reduced iron

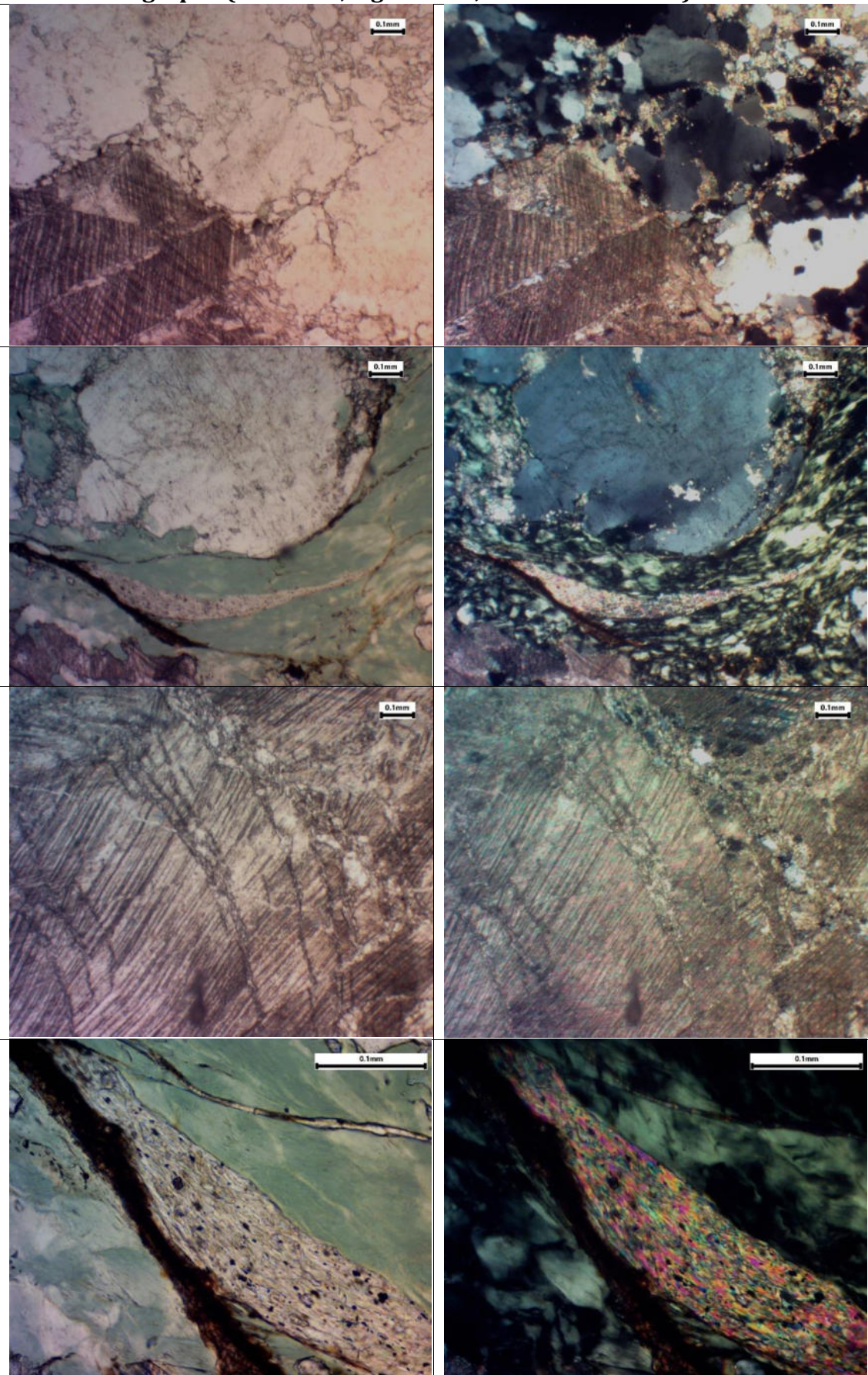
Thin-section scan



MICROSCOPIC DESCRIPTION

- 70% calcite
- 29% quartz
- 1% schist-like inclusion, light green in PPL, 1st order interference colour in XPL, with a mica schist vein

Photomicrographs (left - PPL, right - XPL; scale size 0.1 mm)



GSC22-4 Andesite

Hand specimen (1 scale unit = 1cm)



MACROSCOPIC DESCRIPTION

- coarse-grained igneous rock with large feldspar and hornblende crystals

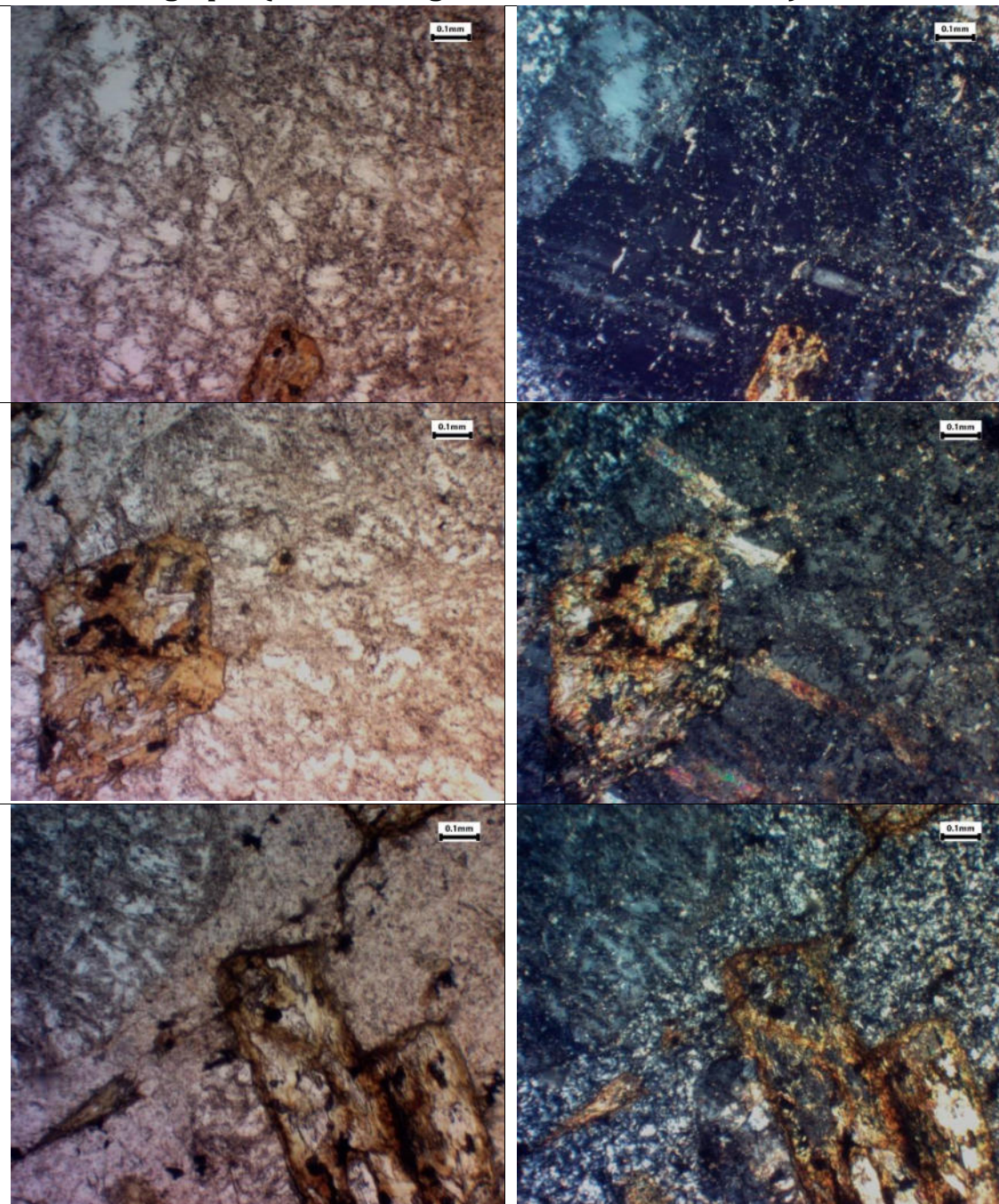
Thin-section scan



MICROSCOPIC DESCRIPTION

- 50% fine-grained mineral matrix
- 29% hornblende
- 20% feldspar altered by sericite
- 1% black opaque inclusions

Photomicrographs (left - PPL, right - XPL; scale size 0.1 mm)



GSC22-5 Marine limestone with iron staining

Hand specimen (1 scale unit = 1cm)



MACROSCOPIC DESCRIPTION

- fine-grained carbonate rock with iron oxide staining

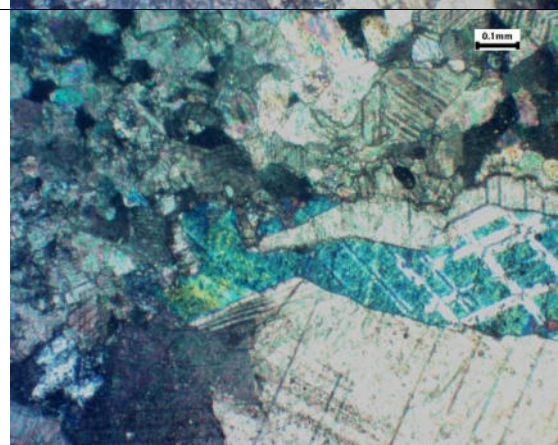
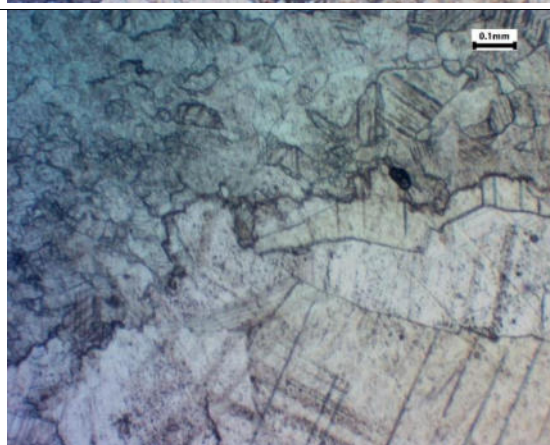
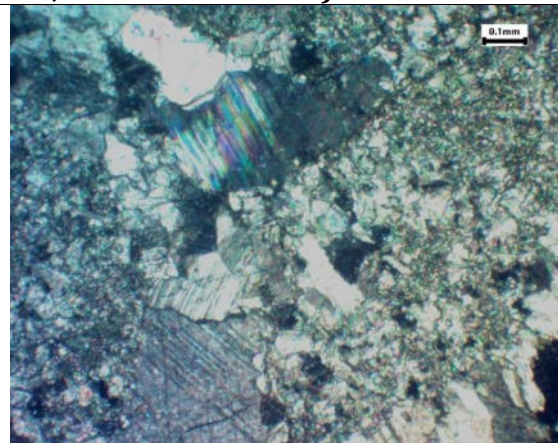
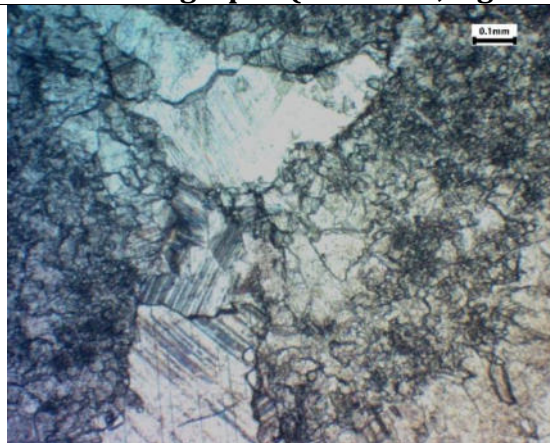
Thin-section scan



MICROSCOPIC DESCRIPTION

- 100% calcium carbonate

Photomicrographs (left - PPL, right - XPL; scale size 0.1 mm)



GSC22-6 Gritstone/ sandstone

Hand specimen (1 scale unit = 1cm)



MACROSCOPIC DESCRIPTION

- coarse-grained sedimentary rock in carbonate cement

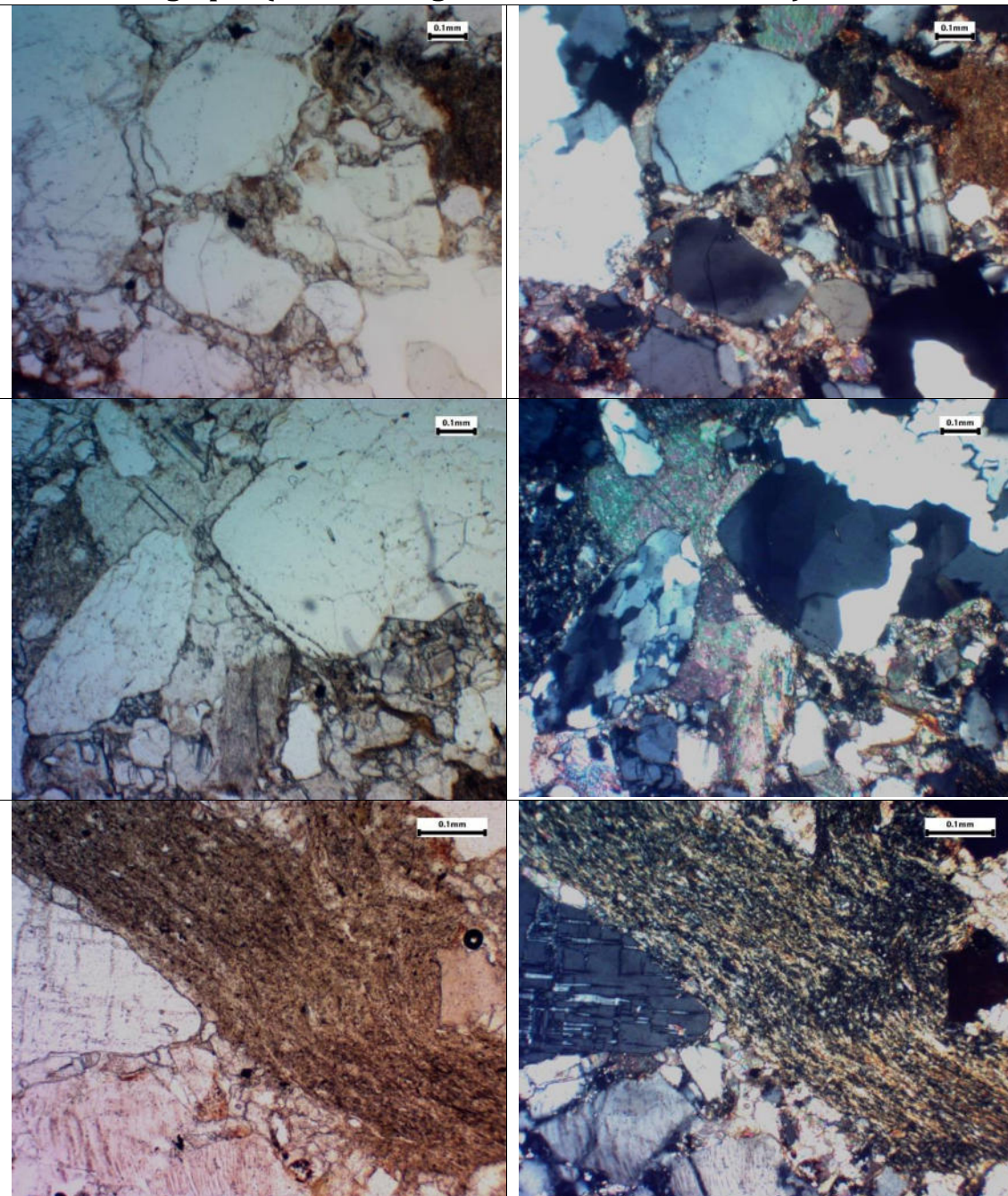
Thin-section scan



MICROSCOPIC DESCRIPTION

- 50% carbonate cement and calcite crystals
- 45% quartz
- 5% feldspar (plagioclase and microcline), mica schist, chert(?), siltstone

Photomicrographs (left - PPL, right - XPL; scale size 0.1 mm)



GSC22-7 Intraclastic carbonate rock (from shallow marine environment)

Hand specimen (1 scale unit = 1cm)



MACROSCOPIC DESCRIPTION

- coarse-grained carbonate rock with organic matter(?)

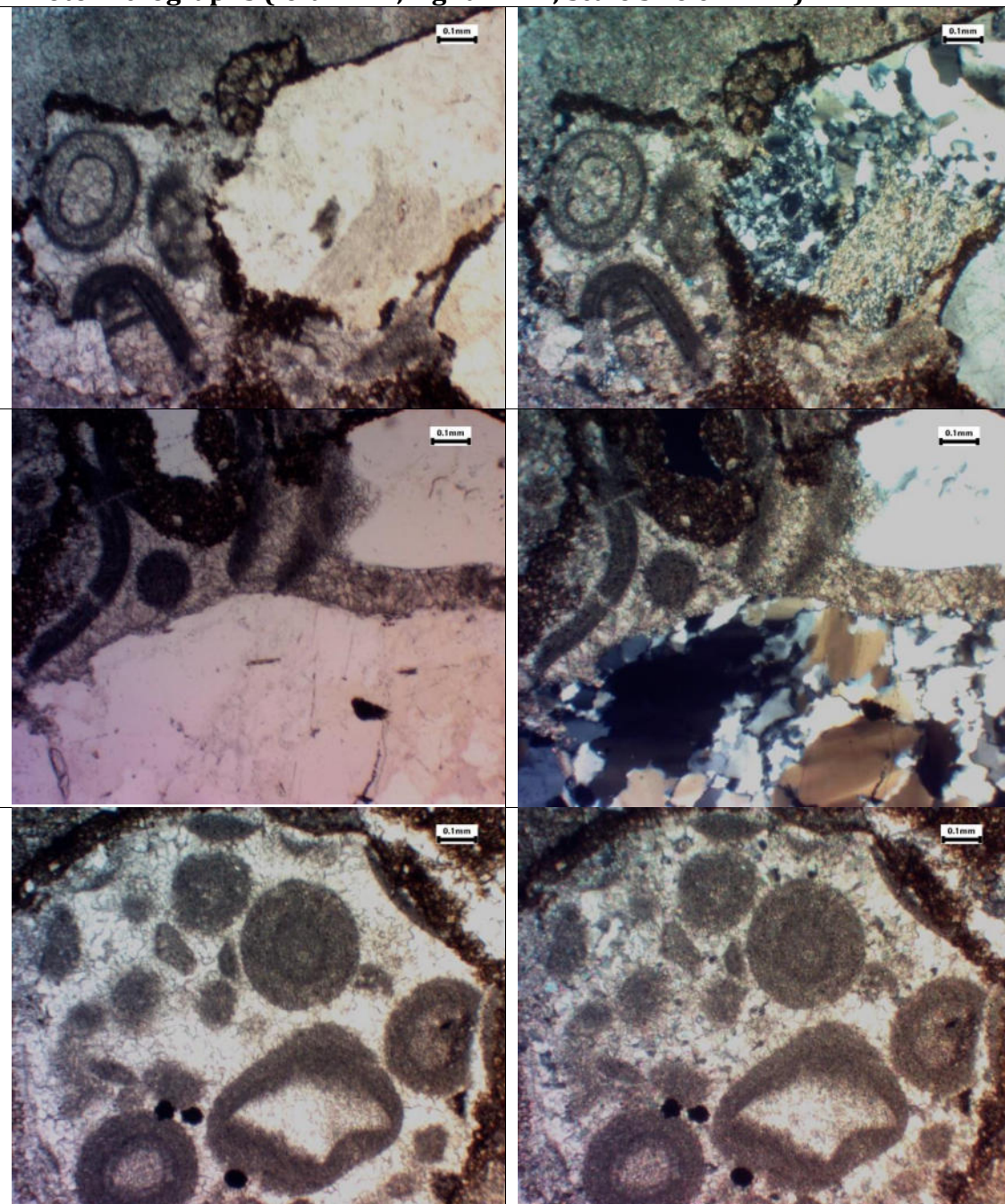
Thin-section scan



MICROSCOPIC DESCRIPTION

- 80% micritic calcite with and without ooid structure, calcite crystals
- 19.9% quartz
- 0.1 % feldspar with mica

Photomicrographs (left - PPL, right - XPL; scale size 0.1 mm)



GSC22-8 Granodiorite

Hand specimen (1 scale unit = 1cm)



MACROSCOPIC DESCRIPTION

- coarse-grained igneous rock

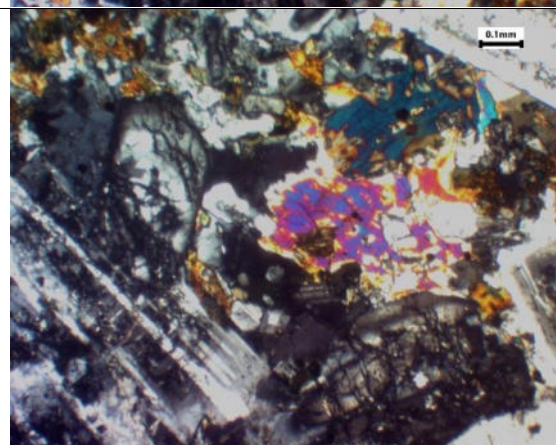
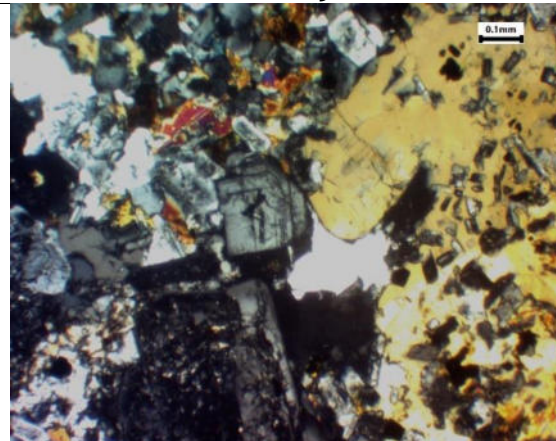
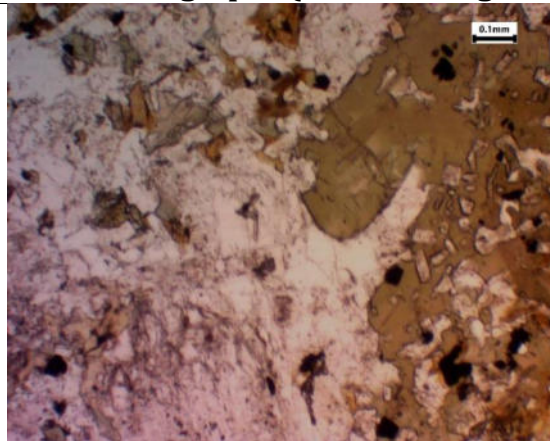
Thin-section scan



MICROSCOPIC DESCRIPTION

- 60% feldspar
- 20% quartz
- 15% biotite to chlorite?
- 5% hornblende

Photomicrographs (left - PPL, right - XPL; scale size 0.1 mm)



GSC22-9 Fine-grained sandstone

Hand specimen (1 scale unit = 1cm)



MACROSCOPIC DESCRIPTION

- fine-grained sedimentary rock

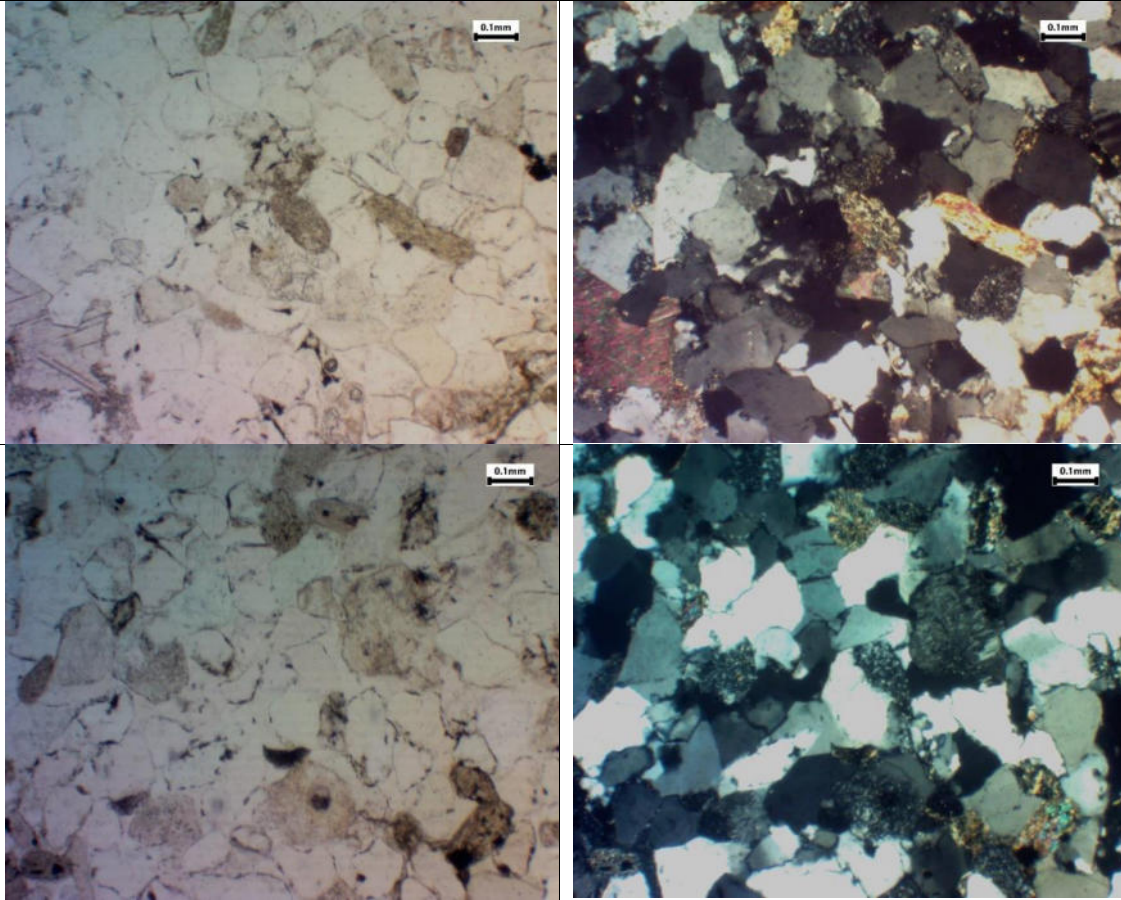
Thin-section scan



MICROSCOPIC DESCRIPTION

- 80% quartz
- 5% feldspar
- 1-3% muscovite
- 1-2% calcite

Photomicrographs (left - PPL, right - XPL; scale size 0.1 mm)



GSC22-10 Sandstone

Hand specimen (1 scale unit = 1cm)



MACROSCOPIC DESCRIPTION

- coarse-grained sedimentary rock

GSC22-11 Fine-grained sandstone

Hand specimen (1 scale unit = 1cm)



MACROSCOPIC DESCRIPTION

- coarse-grained sedimentary rock

GSC22-12 Shale/ siltstone?

Hand specimen (1 scale unit = 1cm)



MACROSCOPIC DESCRIPTION

- fine-grained sedimentary rock

GSC22-13 Chert (from a vein?)

Hand specimen (1 scale unit = 1cm)



MACROSCOPIC DESCRIPTION

- fine-grained sedimentary rock, possibly from a vein