

THIN SECTION LABEL ID: **366-U1491B-2H-2-MBIO1(69-89)-SED-TSB-TS_02**

TS no.: 2

Thin Section Summary Description

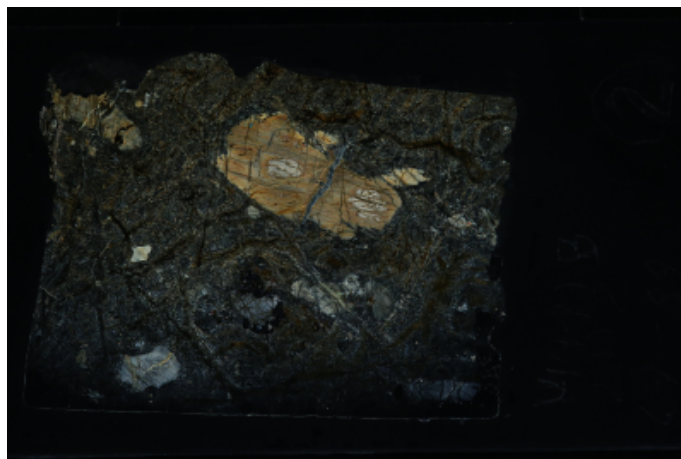
Observer(s): BD/JS

Massive serpentinite (about 100% altered into serpentine with very few relicts of mantle minerals). The olivine and orthopyroxene domains are replaced by pseudomorphic serpentine displaying mesh and bastite textures respectively. Large veins of fibrous serpentine of about 100 microns width crosscut pseudomorphic textures. JS: Bastite pseudomorphs indicate primary Opx to 11 mm long by 4 mm wide. Avg grain size Opx 4 mm. Smaller Opx may have fish shape, indicating primary porphyroclastic texture. Olivine to altered to decipher primary grains. Spinels 0.2 mm, subhedral, interstitial.



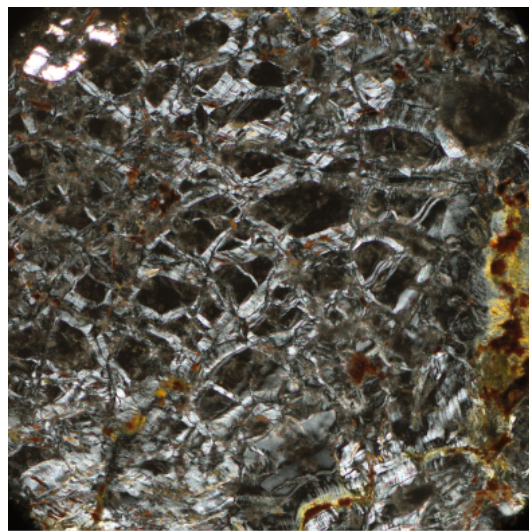
LIMS image no.: 39416301

Plane-polarized. Slide width 27mm



LIMS image no.: 39734801

Cross-polarized. Slide width 27mm



39417061

Mesh textures composed of a fibrous rim and an isotropic centre. Scale bar 0.1mm.

Intrusive MantleDomain/Rock
Comment:

Can't decipher primary olivine grain size, but the large Opx and fish-shape opx suggest strongly a primary porphyroclastic texture. Oxidative overprint on margins of clast from exposure in upper layer of mud.

Lithology: serpentinitized harzburgite

Observer: EA/JP/YI/JD/BD/JS

Texture: pseudomorphic

coarse grained [366]

Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features
Olivine	65	2	98		round	isometric		Olivine completely serpentinized, no apparent grain shapes visible.
Serpentine	NA	98	NA	NA		mesh	pseudomorphic	
Clinopyroxene	1			0.1	NA	NA		Small granules in large Opx /bastite. Probably granule exsolution.
Orthopyroxene	33			4	NA		bastite	One giant porphyroclast 11 mm long x 4 mm wide. Avg size 4 mm long. Modest undulatory extinction, no kinks. Granule exsolution of Cpx on and near grain boundaries. Smaller (4 mm) grains may have fish shapes. Altered mainly to amphibole.
Spinel	1			0.2	NA	holly-leaf	interstitial [BJ84]	NA

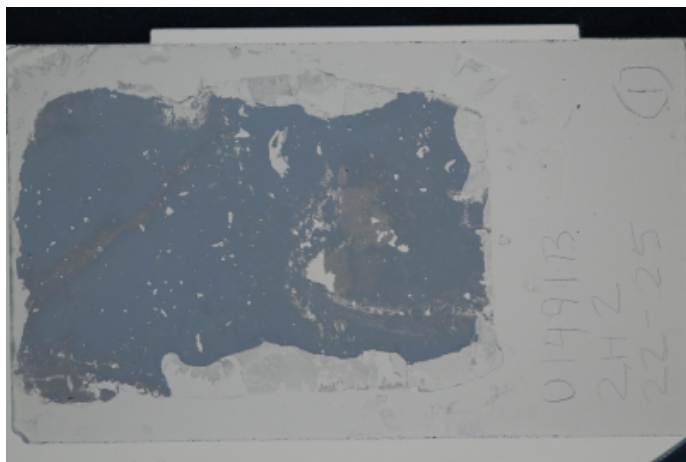
THIN SECTION LABEL ID: **366-U1491B-2H-2-W 22/25-TSB-TS_01**

TS no.: 1

Thin Section Summary Description

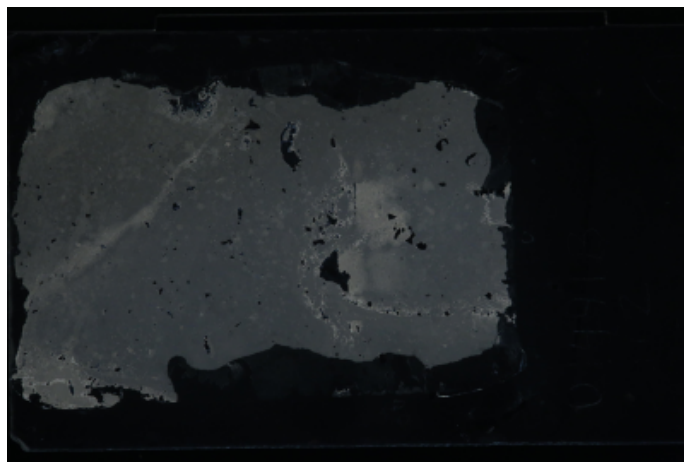
Observer(s): YI

Fossil-rich limestone. Carbonate mineral crystallizes in pore spaces. Fossils are foraminifer, shell, coral etc.



LIMS image no.: 39416261

Plane-polarized. Slide width 27mm



LIMS image no.: 39734781

Cross-polarized. Slide width 27mm

Sediment

Interval domain no:

Domain rel. abundance (%):

Domain name: carbonate clast

Domain/Rock
comment:

some micro-fossils

Lithology: shell-bearing limestone clast

Observer: EA/JP/YI/JD

Matrix composition	Present (%)
Carbonate	100
Carbonate	100

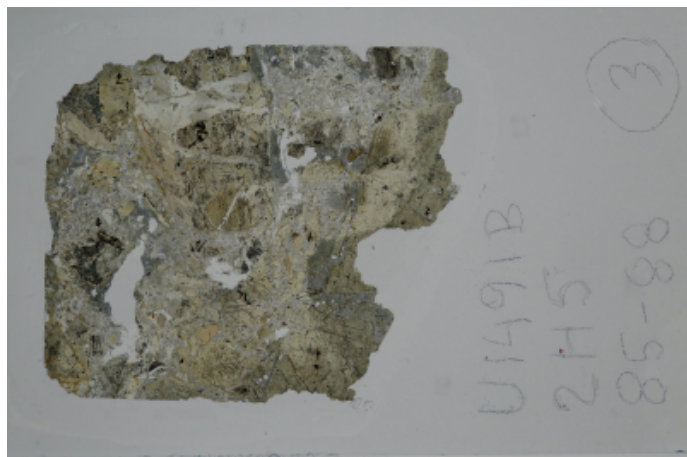
THIN SECTION LABEL ID: **366-U1491B-2H-5-W 85/88-TSB-TS_03**

TS no.: 3

Thin Section Summary Description

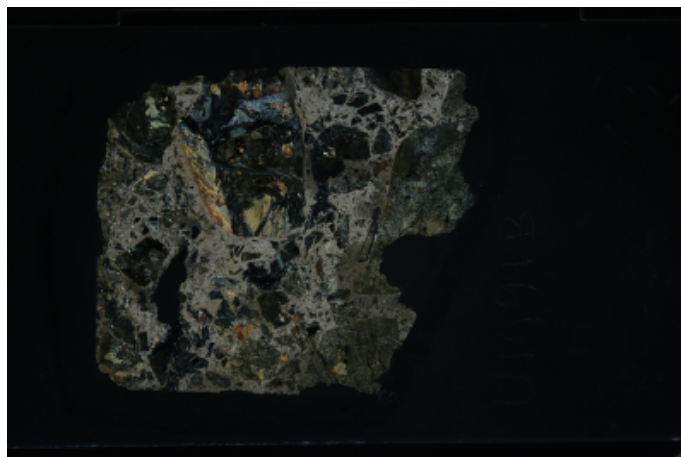
Observer(s): BD/JS

Ultramafic breccia with carbonated matrix. The matrix is composed of carbonate embedding serpentine minerals. The ultramafic breccia is a massive serpentinite (100% altered to serpentine). The serpentine displays pseudomorphic and non-pseudomorphic (interpenetrating) textures.



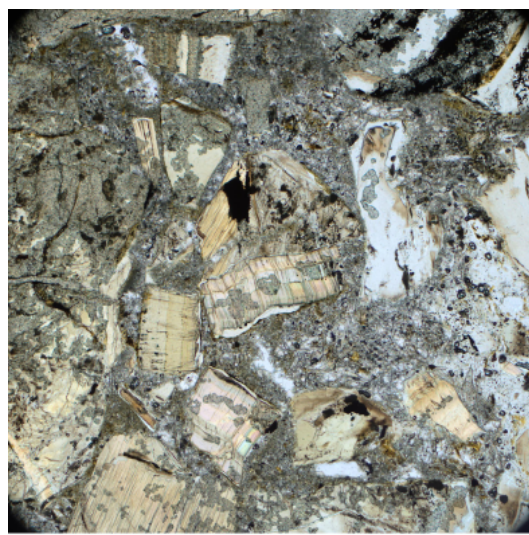
LIMS image no.: 39433541

Plane-polarized. Slide width 27mm



LIMS image no.: 39734821

Cross-polarized. Slide width 27mm



39441651

Fibrous serpentines embedded in a carbonate matrix.
Scale bar 1mm.

Alteration

Interval domain no: 1

Domain rel. abundance (%): 50

Domain name: matrix

Alteration/Domain comment:

Carbonate matrix containing serpentine minerals

Total rock alteration estimate (%): 80

Observer(s): BD

Replacement Minerals	Groundmass	OL replaced (%)	CPX replaced (%)	OPX replaced (%)
Serpentine	NA	100		

Interval domain no: 2 Domain rel. abundance (%): 40 Domain name: ultramafic clast

Alteration/Domain comment: serpenitnized harzburgite replaced by serpentine with interpenetrating textures

Total rock alteration estimate (%): 100

Observer(s): BD

Replacement Minerals	Groundmass	OL replaced (%)	CPX replaced (%)	OPX replaced (%)
Serpentine	NA	80		20

Mineral	Alteration comment
Olivine	Olivine replaced by serpentine with interpenetrating textures
Orthopyroxene	Orthopyroxene replaced by serpentine with bastite texture

Interval domain no: 3 Domain rel. abundance (%): 10 Domain name: ultramafic clast

Alteration/Domain comment: serpenitnized harzburgite replaced by serpentine with pseudomorphic textures

Total rock alteration estimate (%): 100

Observer(s): BD

Replacement Minerals	Groundmass	OL replaced (%)	CPX replaced (%)	OPX replaced (%)
Serpentine	NA	100		

Mineral	Alteration comment
Olivine	Olivine replaced by serpentine with mesh textures

THIN SECTION LABEL ID: **366-U1491B-3H-2-W 10/15-TSB-TS_04**

TS no.: 4

Thin Section Summary Description

Observer(s): BD/JS

Serpentinized harzburgite. Primary mode about 70% olivine, 30% Opx, 1% spinel. Opx porphyroclasts 3-4 mm long by 0.6 to 1.2 mm wide. May have fish shapes, commonly kinked, undulatory; some have severe kink folds. Primary texture = porphyroclastic. Massive serpentinite (100% altered into serpentine). The olivine domain is replaced by non-pseudomorphic serpentine displaying interpenetrating textures. The orthopyroxene domain is replaced by serpentine with bastite texture. The serpentine textures are crosscut by zones composed of brownish and fibrous serpentine associated with carbonate and magnetite. Few late fibrous small (< 10 microns width) serpentine veins are observed.



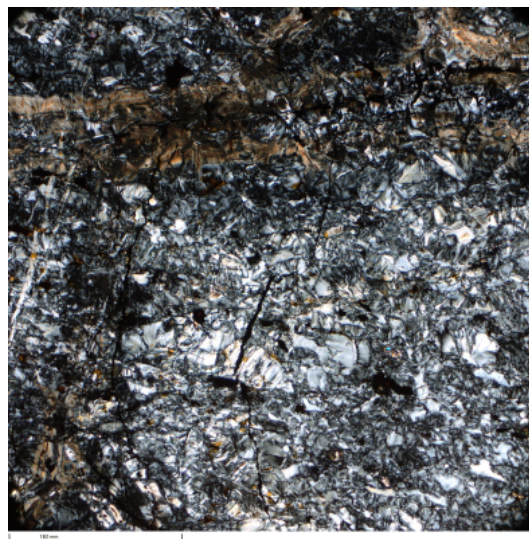
LIMS image no.: 39416341

Plane-polarized. Slide width 27mm



LIMS image no.: 39734841

Cross-polarized. Slide width 27mm



39417011

Serpentine with interpenetrating textures crossed by veins of fibrous and brownish serpentine. Scale bar 1mm.

Intrusive Mantle

Interval domain no: 2

Domain rel. abundance (%): 10

Domain name: vein

Lithology: serpentinite vein

Observer: GROUP/BD

Texture: fibrous

Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features
Serpentine	NA	10	NA	NA			fibrous	carbonate patches associated

Interval domain no: 1 Domain rel. abundance (%): 90 Domain name: matrix

Domain/Rock Comment: Large Opx porphyroclasts in matrix of completely serpentinized olivine. Primary texture = porphyroclastic.

Lithology: serpentinized harzburgite

Observer: GROUP/BD/JS

Texture: nonpseudomorph

coarse grained [366]

Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features
Olivine	70	0	100					
Serpentine	NA	90	NA	NA			interpenetrating	
Orthopyroxene	29.5			1	NA		bastite	Opx porphyroclasts 3-4 mm long by 0.6 to 1.2 mm wide. May have fish shapes, commonly kinked, undulatory; some have severe kink folds.
Spinel	0.5			0.02	NA			NA

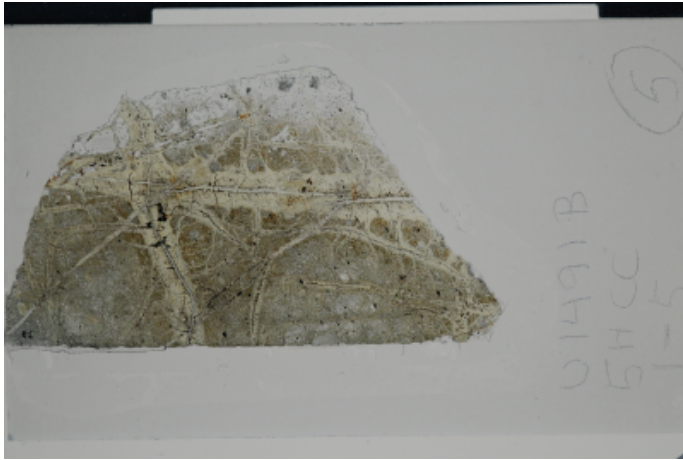
THIN SECTION LABEL ID: **366-U1491B-5H-CC-W 1/5-TSB1-TS_05**

TS no.: 5

Thin Section Summary Description

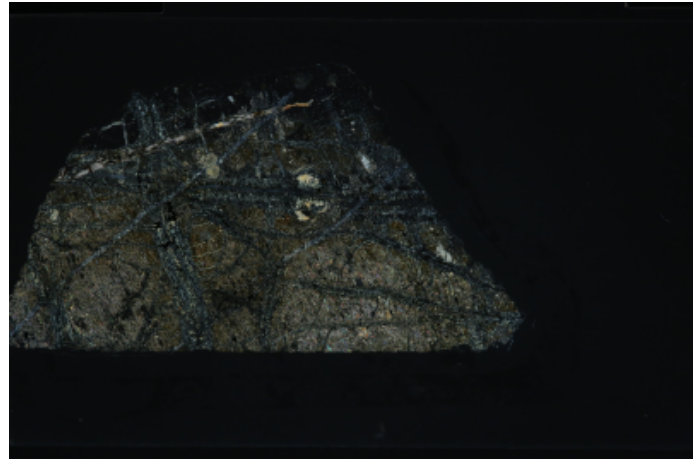
Observer(s): BD/JS

Massive serpentinized harzburgite (about 50% altered into serpentine). The thin section contains two domains: one fully serpentinized with mesh and bastite textures, another one with mantle olivine and pyroxenes crosscut by small serpentine veins of about 10 microns width. These domains are crosscut by larger veins, up to 100 microns width, displaying pseudomorph mesh textures with magnetite or non-pseudomorph serpentine with interpenetrating textures. JS: Olivine strongly foliated fabric, with relic grains 0.8 mm x 0.2 mm to 0.4 mm x 0.1 mm aligned in foliation. Spinels flattened in foliation plane. Opx forms relic porphyroclasts with sizes from 0.6 mm to 2.4 mm long. Inferred primary texture equigranular tabular (foliated equigranular).



LIMS image no.: 39416381

Plane-polarized. Slide width 27mm



LIMS image no.: 39734861

Cross-polarized. Slide width 27mm

Intrusive MantleInterval domain no: **3**

Domain rel. abundance (%): 5

Domain name: vein

Lithology: serpentinite vein

Observer: BD

Texture: nonpseudomorph

Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features
Serpentine	NA	5	NA	NA			interpenetrating	

Interval domain no: **1**

Domain rel. abundance (%): 80

Domain name: matrix

Lithology: serpentinized harzburgite

Observer: GROUP/BD

Texture: pseudomorph

fine grained [366]

Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features
Olivine	85	50	50	0.3	elongate			Olivine strongly foliated fabric, with relic grains 0.8 mm x 0.2 mm to 0.4 mm x 0.1 mm aligned in foliation. Spinels flattened in foliation plane. Inferred primary texture equigranular tabular (foliated equigranular). Opx forms relic porphyroclasts with sizes from 0.6 mm to 2.4 mm long.
Serpentine	NA	40	NA	NA		mesh	pseudomorph	
Orthopyroxene	15			0.8	NA		bastite	Opx forms relic porphyroclasts with sizes from 0.6 mm to 2.4 mm long.
Spinel	0.5			0.05	NA	flattened		NA

Interval domain no: 2	Domain rel. abundance (%): 15	Domain name: vein
Lithology: serpentinite vein	Observer: GROUP/BD	
Texture: pseudomorphic		

Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features
Serpentine	NA	15	NA	NA				

THIN SECTION LABEL ID: **366-U1491B-5H-CC-W 1/5-TSB1-TS_05-TS_49**

TS no.: 49

Thin Section Summary Description

Observer(s): EF

Massive serpentinized harzburgite (about 50% altered into serpentine). The thin section contains two domains: one fully serpentinized with mesh and bastite textures, another one with mantle olivine and pyroxenes crosscut by small serpentine veins of about 10 microns width. These domains are crosscut by larger veins, up to 100 microns width, displaying pseudomorph mesh textures with magnetite or non-pseudomorph serpentine with interpenetrating textures.



LIMS image no.: 39576391

Plane-polarized. Slide width 27mm



LIMS image no.: 39735871

Cross-polarized. Slide width 27mm

THIN SECTION LABEL ID: **366-U1491B-5H-CC-W 1/5-TSB1-TS_05-TS_50**

TS no.: 50

Thin Section Summary Description

Observer(s): EF

Massive serpentinized harzburgite (about 50% altered into serpentine). The thin section contains two domains: one fully serpentinized with mesh and bastite textures, another one with mantle olivine and pyroxenes crosscut by small serpentine veins of about 10 microns width. These domains are crosscut by larger veins, up to 100 microns width, displaying pseudomorph mesh textures with magnetite or non-pseudomorph serpentine with interpenetrating textures.



LIMS image no.: 39576431

Plane-polarized. Slide width 27mm



LIMS image no.: 39735891

Cross-polarized. Slide width 27mm

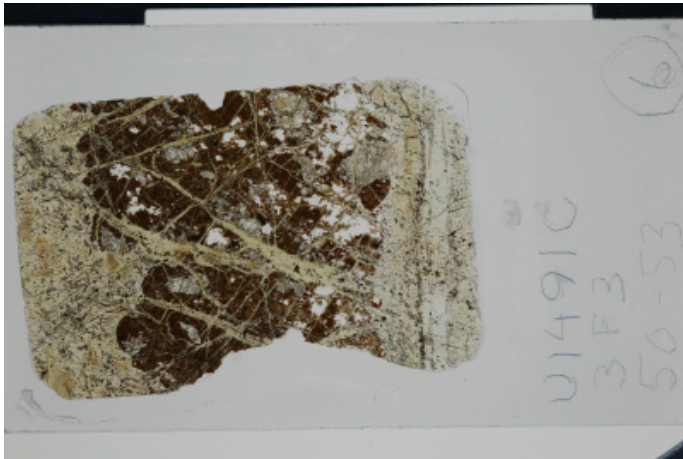
THIN SECTION LABEL ID: **366-U1491C-3F-3-W 50/53-TSB-TS_06**

TS no.: 6

Thin Section Summary Description

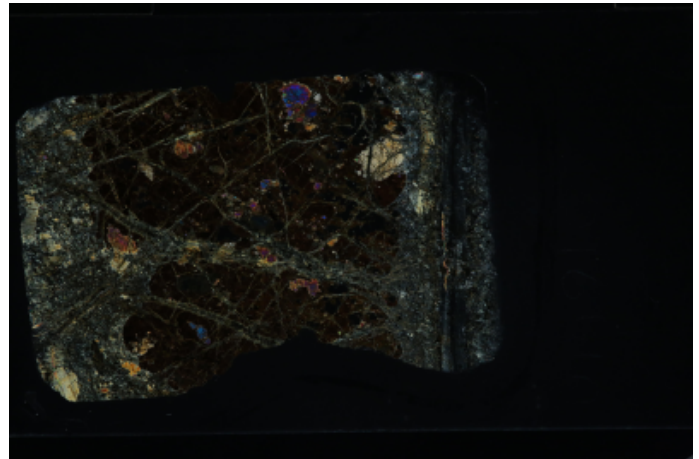
Observer(s): JP/BD/JS

Massive serpentinized harzburgite (about 90 % altered into serpentine and reddish alteration). This thin section has three domains: i) 20% serpentinized harzburgite with interpenetrating texture, ii) 60% partly altered harzburgite composed of primary pyroxene and reddish alteration mineral and iii) 20% serpentine 'crackseal' veins with width of 3 mm. Highly deformed Opx fish, highly elongate: e.g., 2 x 1.4 mm, 2 x 0.7 mm; kinked, undulatory. May be some relic Cpx inclusions in bastite. Primary texture was likely porphyroclastic.



LIMS image no.: 39433581

Plane-polarized. Slide width 27mm



LIMS image no.: 39734881

Cross-polarized. Slide width 27mm

Intrusive MantleInterval domain no: **3**

Domain rel. abundance (%): 20

Domain name: vein

Lithology: serpentinite vein

Observer: JP/BD

Texture: fibrous

Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features
Serpentine	NA	20	NA	NA			fibrous	

Interval domain no: **1**

Domain rel. abundance (%): 20

Domain name: matrix

Domain/Rock Comment: Highly deformed Opx fish, elongate 2 x 1.4 mm, 2 x 0.7 mm; kinked, undulatory. May be some relic Cpx inclusions in bastite. Primary texture was likely porphyroclastic.

Lithology: massive serpentinite

Observer: JP/BD/JS

Texture: interpenetrating

Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features
Olivine	80	5	95	0.1			interpenetrating	
Serpentine	NA	19	NA	NA			interpenetrating	
Orthopyroxene	20			2	NA		bastite	Highly deformed Opx fish, elongate 2 x 1.4 mm, 2 x 0.7 mm; kinked, undulatory. May be some relic Cpx inclusions in bastite.

Interval domain no: **2**

Domain rel. abundance (%): 60

Domain name: matrix

Domain/Rock Comment: Highly deformed Opx fish, elongate 2 x 1.4 mm, 2 x 0.7 mm; kinked, undulatory. May be some relic Cpx inclusions in bastite. Primary texture was likely porphyroclastic.

Lithology: serpentized harzburgite

Observer: JP/BD/JS

Texture: pseudomorphic

Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features
Olivine	85		100			mesh		
Orthopyroxene	15			2	NA		bastite	Highly deformed Opx fish, elongate 2 x 1.4 mm, 2 x 0.7 mm; kinked, undulatory. May be some relic Cpx inclusions in bastite.


THIN SECTION LABEL ID: 366-U1491C-4F-1-W 92/97-TSB-TS_07

TS no.: 7


Thin Section Summary Description

Observer(s): JP/BD

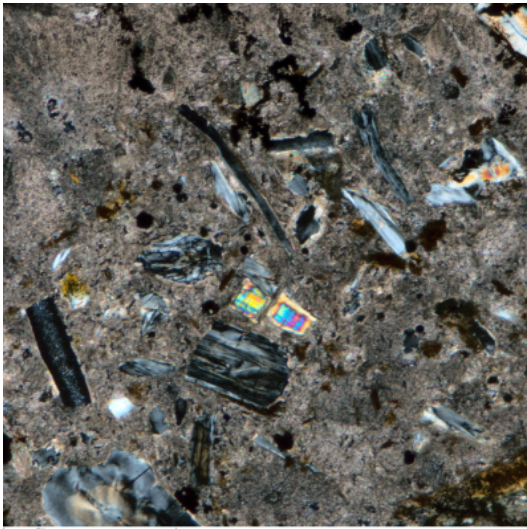
Breccia consists of a carbonate matrix and various lithic clasts. The lithic clasts are dominantly serpentized ultramafic rocks with serpentine pseudomorphic textures partly to fully recrystallized into serpentine with interpenetrating textures.



LIMS image no.: 39453261Plane-polarized. Slide width 27mm



LIMS image no.: 39734901Cross-polarized. Slide width 27mm



39461361

Breccia composed of a carbonated matrix with serpentinites. Scale bar 1mm.

Intrusive Mantle

Interval domain no: 1Domain rel. abundance (%): 35Domain name: ultramafic clast

Lithology: serpentized duniteObserver: JP/BD

Texture: pseudomorphic

Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features
Olivine	100	2	98			mesh		
Serpentine	NA	33	NA	NA			pseudomorphic	

Alteration

Interval domain no: 2 Domain rel. abundance (%): 100 Domain name: matrix

Alteration/Domain comment: carbonate veins crossing ultramafic clast and embedding serpentine minerals

Total rock alteration estimate (%): 65 Observer(s): JP/BD

Mineral	Alteration comment
Groundmass	carbonate displaying radial texture

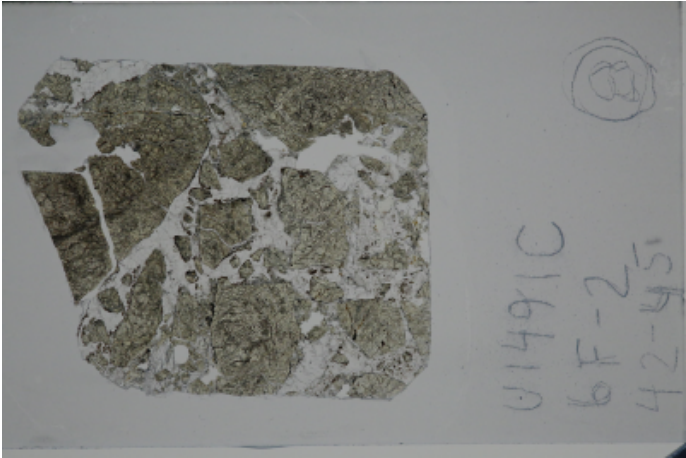
THIN SECTION LABEL ID: 366-U1491C-6F-2-W 42/45-TSB-TS_08

TS no.: 8

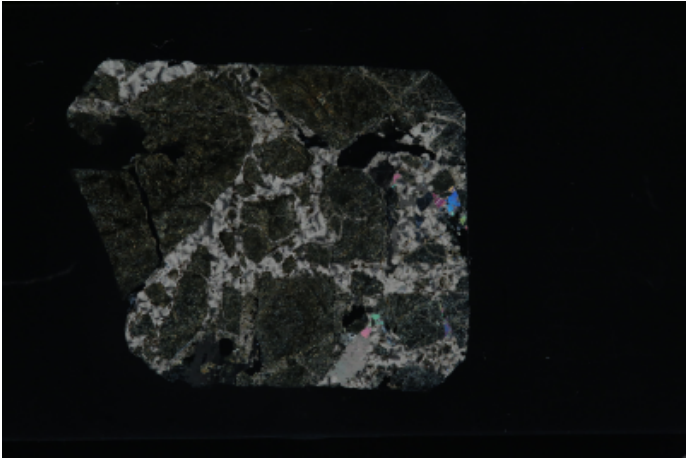
Thin Section Summary Description

Observer(s): JP/BD/KJ

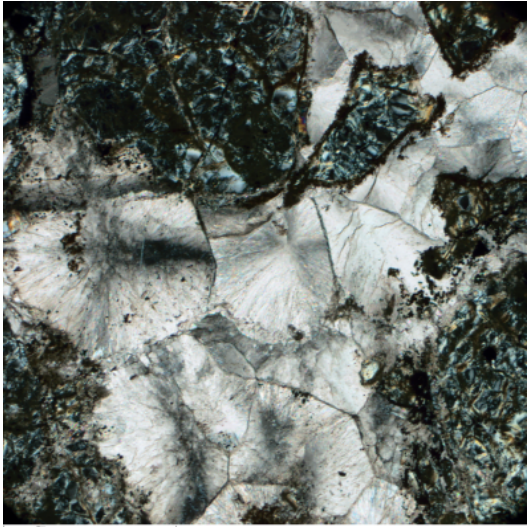
Brecciated serpentinite with carbonate veins. Veins consist of radial aragonite and calcite. Abundant very fine-grained sulfide mineralization (pyrrhotite or pyrite?) concentrated along contacts of carbonate veins and serpentinized domains and dispersed in carbonate veins



LIMS image no.: 39453331Plane-polarized. Slide width 27mm

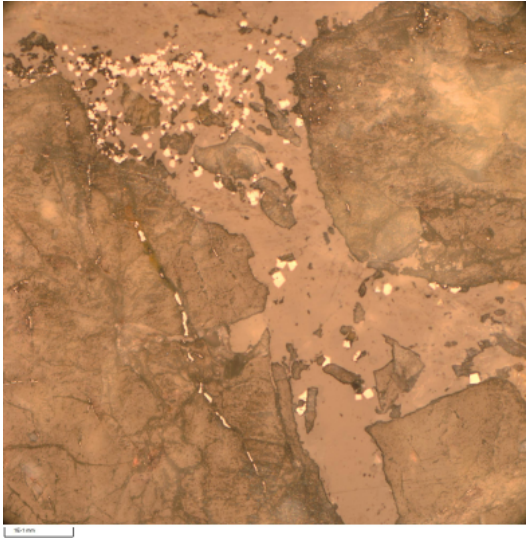


LIMS image no.: 39734921Cross-polarized. Slide width 27mm



39459631

Fully serpentinized harzburgite and radial aragonite veins.
Scale bar 1mm.



39574801

distribution of opaque minerals in carbonate veins near
contacts with serpentinite domains

Intrusive Mantle

Interval domain no: 1

Domain rel. abundance (%): 60

Domain name: ultramafic clast

Lithology: serpentinitized dunite

Observer: JP/BD/KJ

Texture: pseudomorphic

Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features
Olivine	100	0	100			mesh		
Serpentine	NA	100	NA	NA			pseudomorphic	

Alteration

Interval domain no: 2 Domain rel. abundance (%): 100 Domain name: matrix

Total rock alteration estimate (%): 40 Observer(s): JP/BD

Mineral	Alteration comment
Groundmass	carbonate displaying radial texture