Appendix 1.1 – Maps and legends

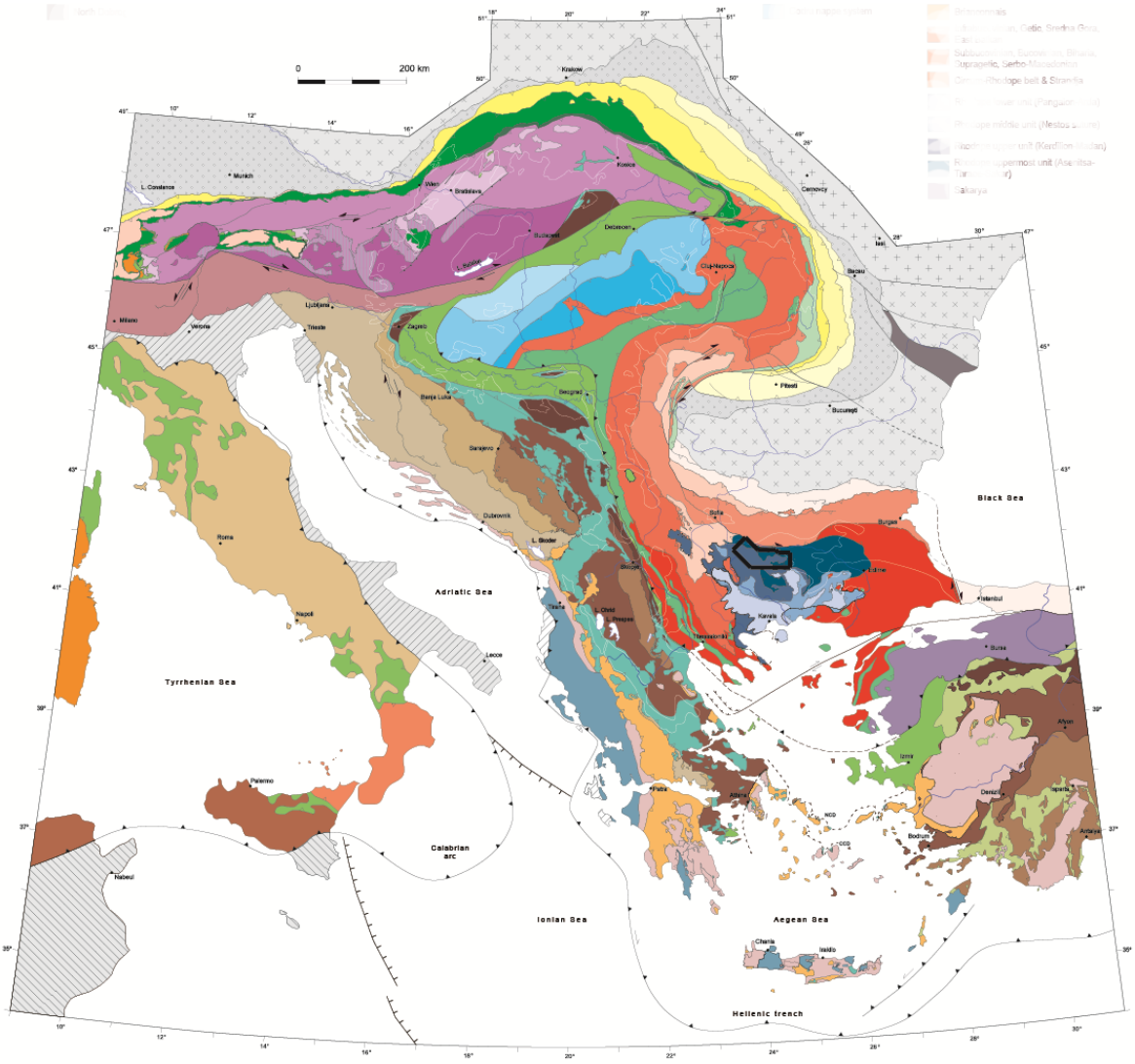


Figure 1 – The geographical location of the Rhodopes, with dark-colored polygon representing the approximate borders of the fieldwork area. The approximate fieldwork area is enlarged in figure 1-2. Figure after Schmid et al. (2011).

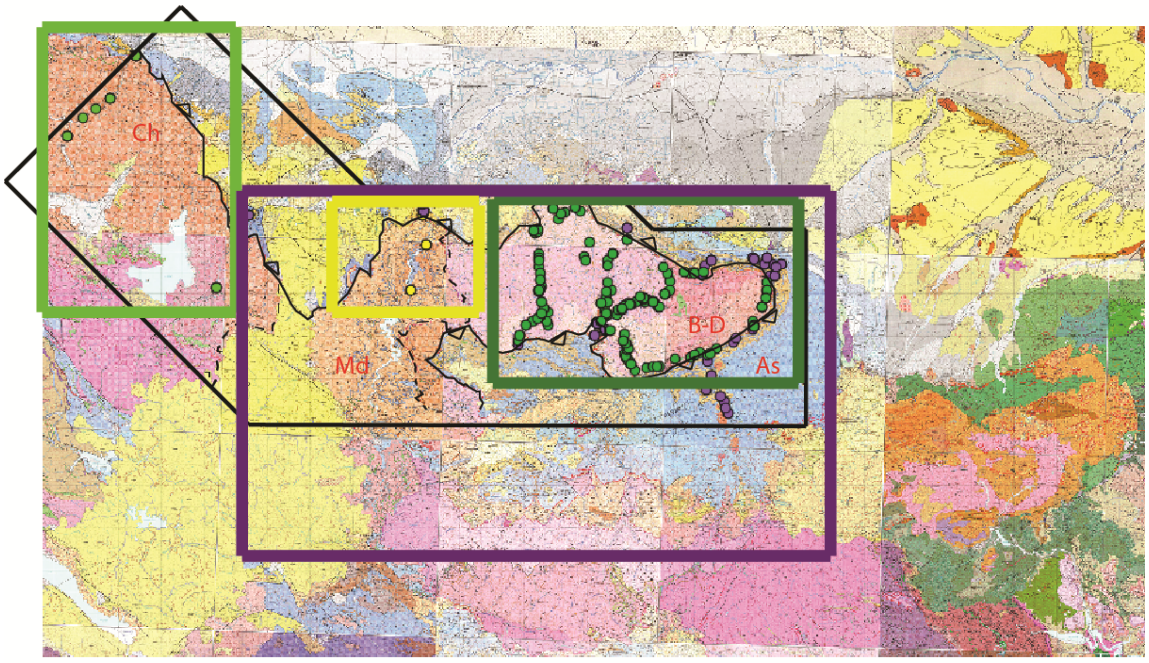


Figure 2 – The approximate fieldwork area associated with this study, is denoted by a black outline. The black outline is identical to the example shown in figure 1-1. Dashed lines serve as contours, separating the Chepinska (Ch) unit from the Madan (Md), and the Madan from the Bachkovo-Dobralak (B-D). The Bachkovo-Dobralak is separated from the Asenitsa (As) by the former thrust indicated: the North-Rhodopean detachment fault. These 4 different lithotectonic units have been indicated with their abbreviation. The colored spots indicated on the map represent placemarks of all locations that have been described infield as part of this study. The 4 colored rectangles assembles the bulk of the placemarks associated with this study. The light green rectangle assembles the placemarks associated with the Chepinska unit, yellow with the Madan unit, dark green with the Bachkovo-Dobralak unit and the purple rectangle with the Asenitsa unit. These rectangles are further treated in the following appendix figures. In this treatment, the placemarks have been labeled with a specific number. Note that these numbers do not necessarily form a consistent series; some numbers are missing from the figures, in which case these are not used to label placemarks.

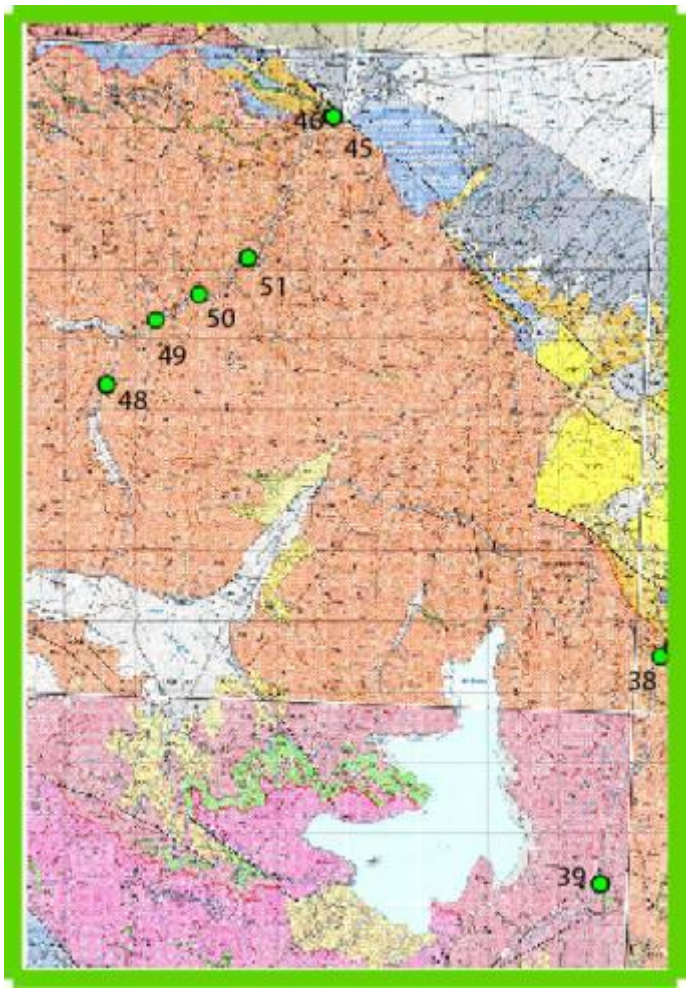


Figure 3 – Enlarged version of the light green rectangle previously shown in figure 2, assembling the bulk of the placemarks associated with the Chepinska lithotectonic unit. The numbers attached to the placemarks are as registered in the field book, associated with this study.

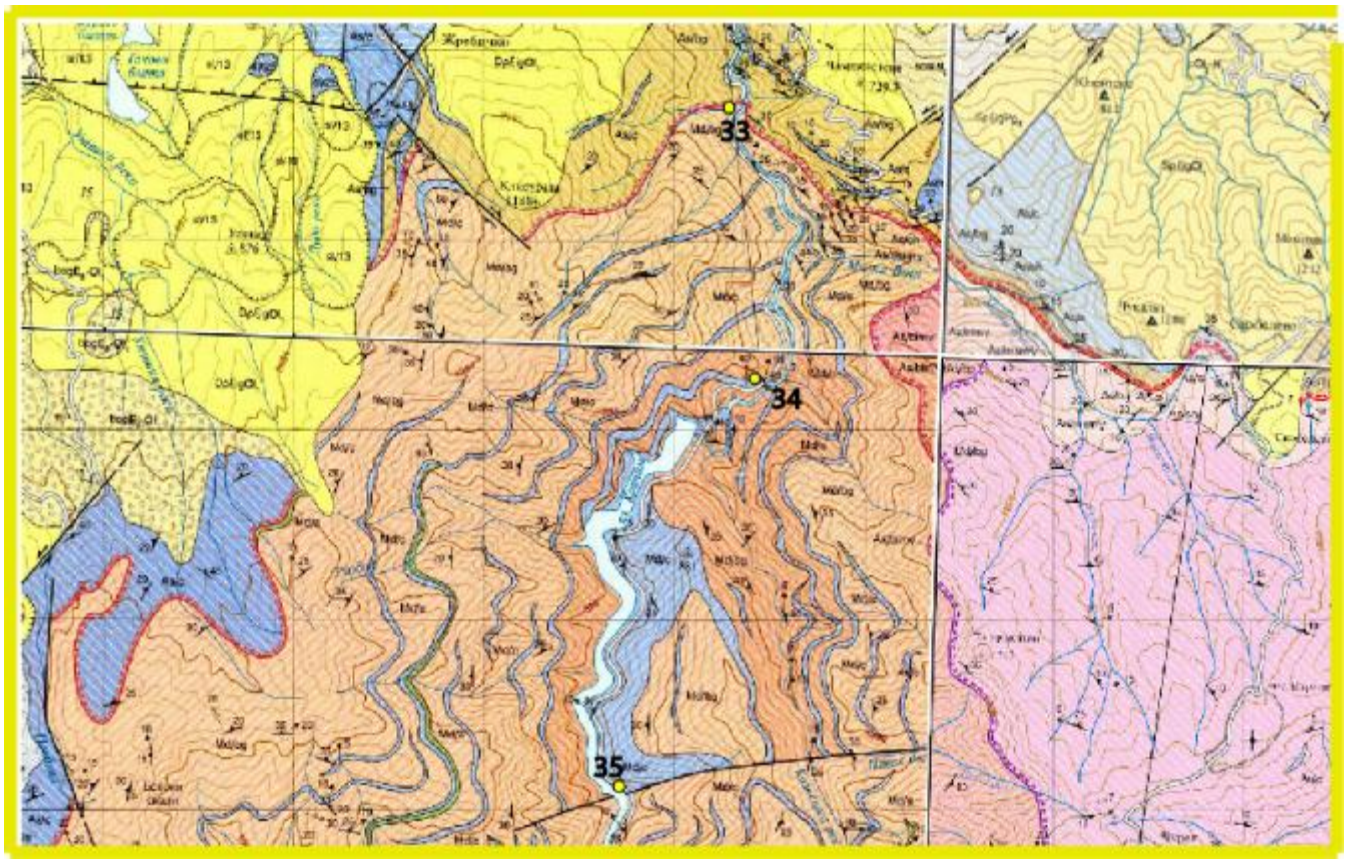


Figure 4 – Enlarged version of the yellow rectangle previously shown in appendix 1.1, figure 2, assembling the bulk of the placemarks associated with the Madan lithotectonic unit. The numbers attached to the placemarks are as registered in the field book, associated with this study.

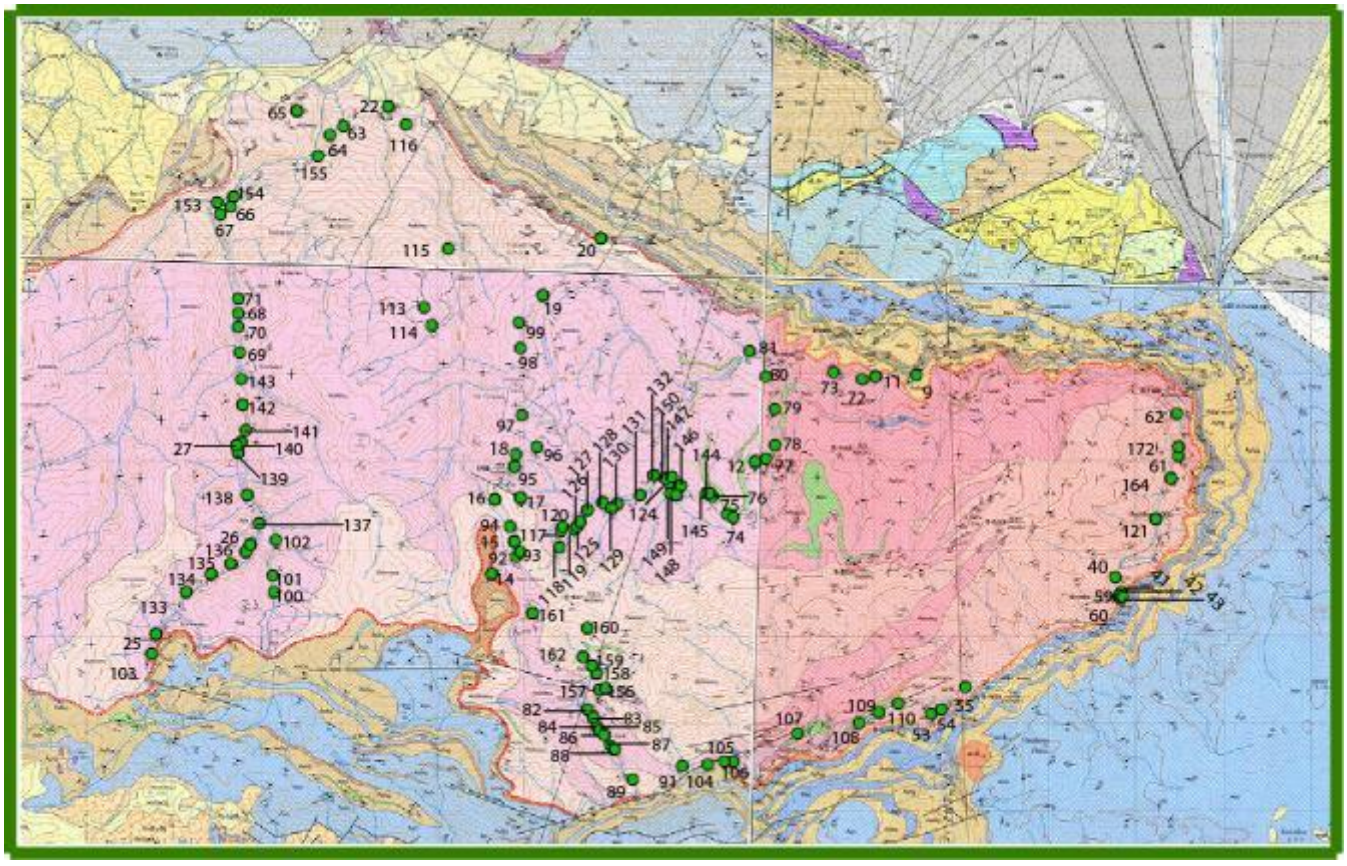


Figure 5 – Enlarged version of the dark green rectangle previously shown in appendix 1.1, figure 2, assembling the bulk of the placemarks associated with the Bachkovo-Dobralak lithotectonic unit. The numbers attached to the placemarks are as registered in the field book, associated with this study.

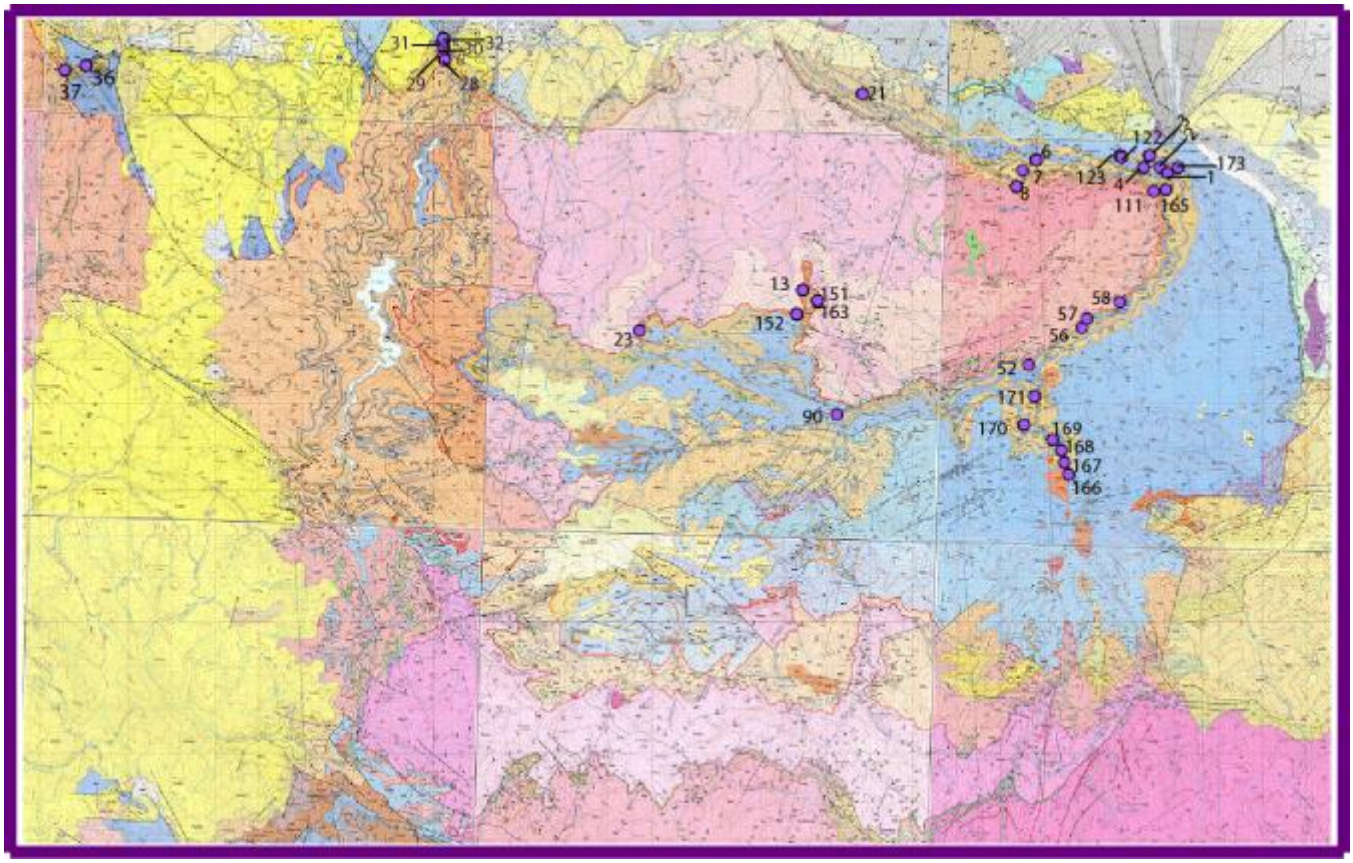


Figure 6 – Enlarged version of the purple rectangle previously shown in appendix 1-1, figure 2, assembling the bulk of the placemarks associated with the Asenitsa lithotectonic unit. The numbers attached to the placemarks are as registered in the field book, associated with this study.

Table 1 - Showing an overview of placemark numbers and their respective lithology for the four lithotectonic units discussed. Colored placemark numbers are sampled. Blue placemark numbers are used for optical microscopic analysis. Red placemark numbers are additionally used for EMPA study.

	Chepinska	Madan	Bachkovo-Dobralak	Asenitsa
migmatized biotite and amphibole-biotite gneiss	38, 45, 46, 48, 51, 49	33, 34, 35		
	50			
muscovite to two-mica gneiss	39			
marbles with graphite		35		
biotite-epidote metagranite			9, 11, 12, 17, 18, 19, 22, 25, 26	
			27, 63, 64, 65, 66, 67, 68, 69, 70	
			71, 72, 73, 74, 75, 76, 77, 79, 80	
			81, 84, 87 ,88, 91, 95, 96, 97, 98	
			99, 100, 101, 102, 103, 105, 106	
			113, 114, 115, 116, 117, 118	
			119, 120, 124, 125, 126, 127, 128	
			129, 130, 131, 132 ,133, 134, 135	
			136, 138, 139, 140, 141, 142, 143	
			144, 145, 146, 147, 148, 149, 150	
			153, 154, 155, 156, 157, 161	
muscovite metagranite			15, 16, 20, 40, 41, 42 ,43, 59, 60	
			61, 62, 89, 92, 93, 94, 109, 107, 110	
			121, 158, 159, 160, 162, 164, 172	
medium-grained marble				4, 52, 57, 58, 122, 123, 169, 170
amphibolites			78, 82, 83, 85, 53, 54, 55, 137	6, 7, 17, 23
biotite-schist with and without garnet			14, 104, 108, 86	13, 11, 163
biotite and amphibole-biotite gneiss and gneiss-schist				1,2, 3, 8, 21, 28, 29, 30, 31
				32, 36, 37, 56, 151, 152, 165
				167, 168, 169, 171, 173
massive, medium-grained marble				166

Appendix 1.2 – Infield measurement (tables)

	S1			S1			
no.	dip-dir	strike	dip	no.	dip-dir	strike	dip
1	71	341	39	90	293	203	108
2	72	342	40	91	204	114	22
3	56	326	35	92	212	122	2
4	34	304	5	93			
5				94	236	146	12
6	29	299	29	95	135	45	5
7				96	170	80	7
8	73	343	18	97	248	158	10
9	64	334	10	98			
10				99	348	258	6
11	248	158	15	100	175	85	5
12	348	258	15	101	156	66	4
13	188	98	14	102	156	66	10
14	150	60	6	103	197	107	12
15	206	116	11	104	170	80	77
16	84	354	10	105	171	81	24
17	84	354	4	106	185	95	12?
18	160	70	20	107	135	45	30
19	350	260	55	108	205	115	13
20	358	268	29	109	118	28	26
21	14	284	25	110	130	40	46
22	355	265	18	111	338	248	28
23	194	104	10	112	48	318	26
				113			
25	358	268	20	114	51	321	11
26	316	226	13	115	20	290	11
27	311	221	22	116	92	2	24
28	28	298	20	117	252	162	5
29				118	218	128	14
30				119	306	216	2
31	38	308	30	120	234	144	22
32	46	316	30	121	114	24	22
33	310	310	35	122	65	335	38
34	320	320	30	123	343	253	46
35	71	341	19	124	246	156	5
36	194	104	48	125	215	125	10
37	340	250	10	126	180	90	4
38	42	312	32	127	152	62	3
39	200	110	50	128	180	90	18
45	1	271	40	129	168	78	15

46	38	308	41	130	216	126	10
47	31	301	43	131	196	106	10
48	354	264	37	132	216	126	7
49	258	168	28	133	195	105	29
50	350	260	40	134	149	59	7
51	350	260	27	135	169	79	12
52	157	67	55	136	204	114	8
53	142	52	46	137	197	107	8
54	153	63	46	138	147	57	13
55				139	239	149	9
56	164	74	44	140	304	214	22
57	161	71	30	141	312	222	17
58	144	54	48	142	5	275	12
59	147	57	47	143	244	154	10
60	160	70	57	144	245	155	18
61	75	345	9	145	140	50	3
62	47	317	14	146	173	83	15
63	10	280	22	147	146	56	7
64	86	356	24	148	132	42	14
65	86	356	12	149	117	27	8
66	184	94	21	150	222	132	5
67	57	327	5	151	22	292	15
68	105	15	10	152	299	209	8
69	21	291	12	153	174	84	8
70	31	301	24	154	253	163	10
71	171	81	12	155	302	212	28
72	308	218	16	156	186	96	9
73	348	258	17	157	233	143	10
74	187	97	25	158	171	81	31
75	197	107	20	159	169	79	8
76	171	81	24	160	263	173	16
77				161	175	85	13
78	229	139	18	162	243	153	10
79	82	324	24	163	214	124	9
80	36	306	10	164	141	51	40
81	42	312	16	165	5	275	26
82	192	102	19	166	90	0	52
83	220	130	22	167	70	340	47
84	197	107	24	168	68	338	29
85	175	85	44	169	75	345	29
86	184	94	28	170	163	73	32
87	180	90	28	171	143	53	34
88	203	113	22	172	120	30	21
89	220	130	6	173	82	352	21

Table 1 – Showing an overview of placemark numbers (no.) and their (S1) foliation measured. Dip-dir is dip-direction. Strike is calculated from the dip-direction. #40-44 are missing from the table, for these numbers have not been described infield. This also accounts for table 1-3 and 1-4. Note from Appendix 1-1, figure 1-6 that these have still been added to the map. Dip directions for placemark 1 and 2 are under the column 'strike'.

	S2				S2		
no.	dip-dir	strike	dip	no.	dip-dir	strike	dip
1				90			
2				91			
3				92			
4				93			
5				94			
6				95			
7				96			
8				97			
9				98			
10				99			
11				100			
12				101			
13				102			
14				103			
15				104			
16				105			
17				106			
18				107			
19				108			
20				109			
21				110			
22				111			
23				112			
				113			
25				114			
26				115			
27				116			
28				117			
29				118			
30				119			
31				120			
32				121			
33				122			
34				123			
35				124			
36				125			
37				126			
38				127			
39				128			

45				129			
46				130			
47				131			
48				132			
49				133			
50				134			
51				135			
52				136	215	125	24
53				137			
54				138			
55				139			
56				140			
57				141			
58				142			
59				143			
60				144			
61				145			
62				146			
63				147			
64				148			
65				149	260	85	
66				150			
67				151			
68				152			
69				153			
70				154			
71				155			
72				156			
73				157			
74				158			
75				159	246	55	
76				160			
77				161			
78				162			
79				163			
80				164			
81				165			
82				166			
83				167	358		74
84				168			
85				169			
86				170			
87				171			
88				172			
89				173			

Table 1 [ctnd] – Placemark numbers (no.) and their (S2) foliation measured.

	L1				L1		
no.	lineation	plunge	shear sns	no.	lineation	plunge	shear sns
1	6	16	6	90	264(1-2)	28	264(?)
2				91	257(1-2)	18	
3	82	33	82	92	176	12	
4	60	4	60	93	93	?	
5				94	183(1-2)	8	
6	57	3	57	95	122	2	
7				96	257(1)	2	77
8	56		56	97	285	2	
9	77	8		98	182(1)	16	
10				99	356(1-2)	2	356?
11	242	10	52	100	242	5	
12	68	7	68	101	256	2	76
13	130	10	130	102	250	2	
14	80	1	80	103	168	12	168?
15	130	3	310	104	248	16	68
16	126	1	306	105	245	10	65
17	133	4	313	106			
18	73	4		107	225	1	225???
19	317	14	317	108	195	14	
20	333	10	153	109	74	5	
21	336	18	18	110	66	20	
22	314	5	314	111	68?	8	68
23	140	7		112	79	20	79
				113	38(3)	0	38
25	150	21	330	114	60(1)	11	
26	155	15	335	115	78	9	
27	310	28	310	116	126	20	306
28	336	22	336	117	202	4	
29	150	8	330	118	316	2	316(1)
30	334	20	334	119	228	8	228
31	346	20	346	120	228(1)	16	
32	130	8	310	121	84	17	84
33	346	22	346	122	76	23	
34	50	30	180	123			
35	333	7	153	124	246	5	
36	170	45	350	125	292	8	292
37	56	38	56	126	129	2	
38	338	16	42 , (=42+180)???fieldbook	127	150	2	330

39	138	35	138	128	186	18	
45	350	40	350	129	214	10	34
46	350	44	350	130	210	7	
47	0	35		131	203	10	
48	342	36	162	132	192	11	
49	340	3		133	270	8	
50	314	38(1-2)		134	260	2	80
51	350	27	170	135	256	2	
52				136	216	7	
53	59(1-2)	15	59	137	140	4	
54	74	11		138	76	2	
55				139	234	7	
56	146(2)	46	326	140	230	5	
57	234	4		141			
58	66	14		142	313	3	
59	67	1	67	143			
60				144	198	6	
61	80	9	80	145	198	2	
62	60	12	60	146	216	8	
63	118(2)	2		147	216	8	36
64	136	12	316	148	198	4	
65	35	10	278	149	208	16	
66	80	1		150	220		
67	120(1-2)	1		151	305	8	
68				152	234	5	54
69	310	16	310	153	284	8	
70	90(1-2)	4		154	290	8	
71	122(1)	8		155	285	28	
72	48	1		156	261	5	
73	80	11	80	157	258	8	
74	120	10		158	82	6	82
75	215	8	35	159	249	4	
76	214	20		160	262	13	
77	15	8	195	161	300	5	
78	207	18	27	162	240	8	
79	40(2-3)	30		163	207	16	
80	75	5	75	164	84	20	84
81				165	92	5	
82	215	20	35	166	213	16	
83	241	20		167	15	26	15
84	227	23	47	168	30	19	19
85	242	10	62	169	59	24	
86	240	6	60	170	232	12	
87	265	4		171	67	6	
88	250	20		172	71	17	17

89	278	2		173	19	10	

Table 2 – Showing an overview of placemark numbers (no.) and their (L1) lineation measured. Shear sns is shear sense.

	L2				L2		
no.	lineation	plunge	shear sns	no.	lineation	plunge	shear sns
1				90			
2				91			
3				92			
4				93			
5				94			
6				95			
7				96			
8				97			
9				98			
10				99			
11				100			
12				101			
13				102			
14				103			
15				104			
16				105			
17				106			
18				107			
19				108			
20				109			
21				110			
22				111			
23				112			
				113			
25				114			
26	141	6		115			
27				116			
28				117			
29				118			
30				119			
31				120			
32				121			
33				122			
34				123			
35				124			
36				125			
37				126			
38				127			
39				128			

45				129			
46				130			
47				131			
48				132			
49				133			
50				134			
51				135			
52				136			
53				137			
54				138			
55				139			
56	80?	24	260	140			
57				141			
58				142	22	8	
59				143			
60				144			
61				145			
62				146			
63				147			
64				148			
65				149			
66				150			
67				151			
68				152			
69				153			
70				154			
71				155			
72				156			
73				157			
74				158			
75				159			
76				160			
77				161			
78				162			
79				163			
80				164			
81				165	51	24	
82				166			
83				167	60	38	
84				168			
85				169			
86				170			
87				171			
88				172			
89				173			

Table 2 [ctnd] – Placemark numbers (no.) and their (L2) lineation measured.

	fold		fault			fold		fault	
no.	hinge	plunge	axial pln	dip	no.	hinge	plunge	axial pln	dip
1					90				
2					91				
3					92				
4					93				
5	±60				94				
6					95				
7					96				
8					97				
9					98				
10					99				
11					100				
12					101				
13					102				
14					103				
15					104				
16					105				
17					106				
18					107	267	24		
19					108				
20					109				
21					110				
22					111				
23					112				
					113				
25					114				
26					115				
27					116				
28					117				
29	300	26			118	198	34		
30					119				
31					120				
32					121				
33					122				
34					123				
35					124				
36					125				
37					126				
38	340	26			127				
39					128				
45					129				

46					130				
47					131				
48					132				
49					133			219	76
50					134				
51					135				
52	354	15			136				
53					137				
54					138				
55					139				
56					140				
57	78	8			141	150	3		
58					142	130	10		
59					143				
60					144	198	10		
61					145				
62					146				
63					147				
64					148				
65					149				
66					150				
67					151				
68					152				
69					153	147	8		
70					154				
71					155				
72					156				
73					157				
74					158				
75					159				
76					160				
77					161				
78					162				
79					163				
80					164				
81					165				
82	0	6			166				
83					167				
84					168				
85					169	99	27		
86					170	252	58		
87					171	46	4		
88					172				
89					173	17	20		

Table 3 – Showing an overview of placemark numbers (no.) and their fold and fault measurements. Axial pln is axial plane.

Appendix 2 – Petrologic data

A map is presented showing sample locations and a table with sample no.'s and their respective lithology is shown. Appendix 2.1 provides a description of samples and thin sections. Appendix 2.2 (Optical Microscopy) presents plan-view images of thin sections as used for optical microscopy analysis and a number of images of areas within thin sections, which are extensively described in the report. Appendix 2.3 (EMPA), presents plan-view images of thin sections as positioned in the sample table of the Electron Microprobe.

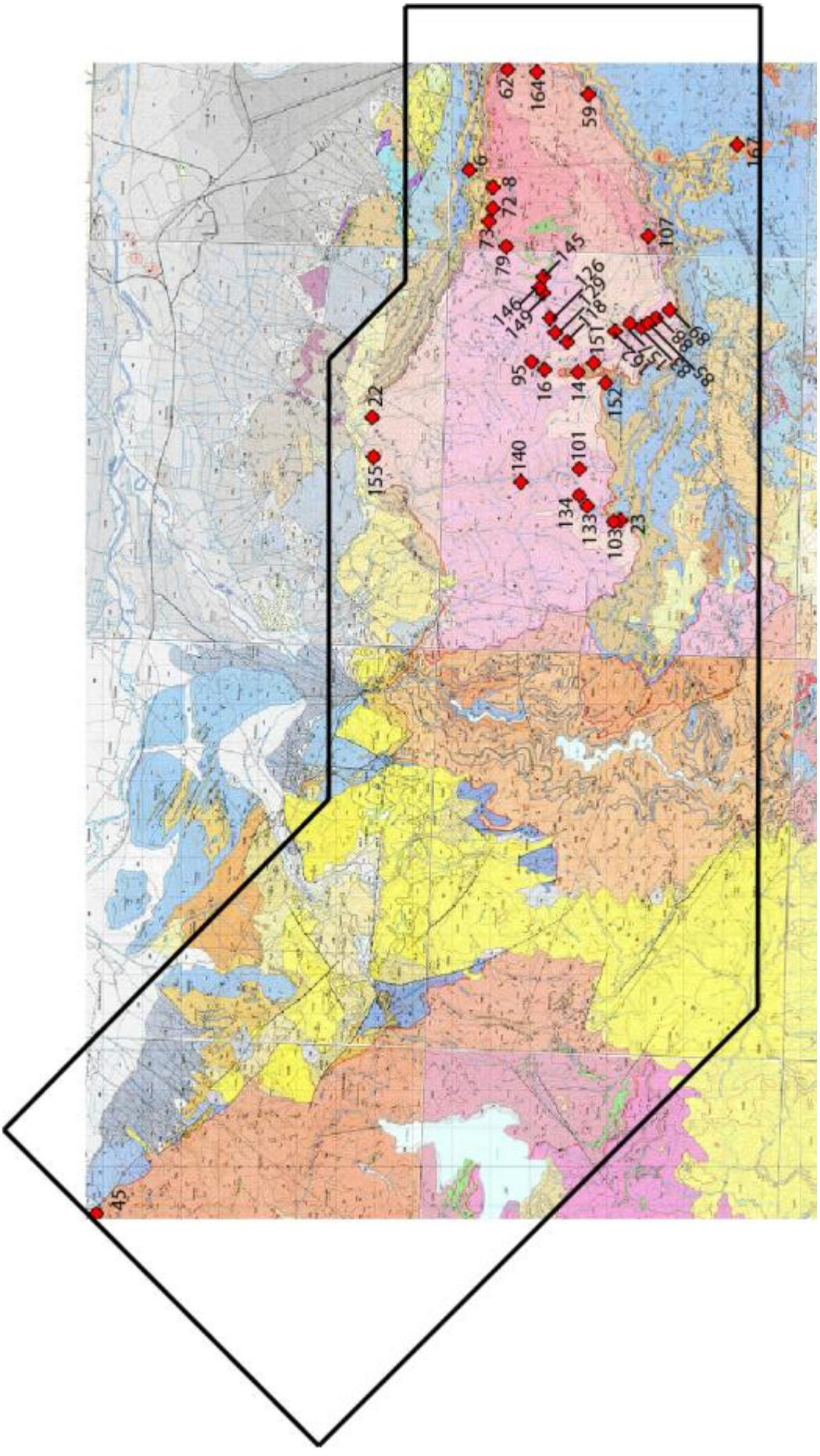


Figure 1 – Showing the location of samples and their corresponding labels. Label numbers and placemark locations match those displayed in appendix 1.1, figures 2-6.

Appendix 2.1 - Thin section description

This section is dedicated to the description of the characteristics of samples and thin sections.

These samples and thin sections will be presented in order of lithology as determined infield.

Bachkovo-Dobralak lithotectonic unit

biotite-epidote metagranite

Sample: #73

Structural characteristics

Outcrop description:
orthogneiss

Structural data:

S: 348/17
L: 80/11, top 80, based on numerous sigma-clasts

Petrologic description

Mineralogy:
grt(1), epidote(4), qtz(60), biotite(20), muscovite(10), Kfs(5)

Sample description:
A few small deformed garnets present

Sample: #133

Structural characteristics

Outcrop description:

Outcrop is ultramylonite
or is in either case very heavily sheared.

Structural data:

S: 195/29 / 187/14 (oriented sample).
L: 270/8 / 256/6 (oriented sample).

Petrological description

Mineralogy:

grt(11), qtz(70), Kfs(1), bt(4) muscovite(6), opx(3), pl(5)

Shear sense indicators:

No clear shear sense can be identified whatsoever.

Large garnet crystals are present
which have been fragmented.
Garnet has broken down into bt and qtz.

Sample: #146

Structural characteristics

Outcrop description:

Mica-rich orthogneiss.

Structural data:

S: 173/15

L: 216/8 well defined by stretching of muscovite

Petrological description

Mineralogy:

chlorite(2), qtz(66), muscovite(30), biotite(2)

Sample description:

Quartz of varying grain size present, deformed in a variety of manners. Also triple point junctions present.

Shear sense indicators:

From microstructures
it seems that shear bands indicate top NE
Several mica fish indicate top NE,
some indicate top NW (SW?)

Sample: #134

Structural characteristics

Outcrop description:

Orthogneiss.

Structural data:

S: 149/7

L: 260/2 top NE (80),
indicated by shear bands

Petrological description

Mineralogy:

qtz(55), [grt?](1), epidote (strained)(3), chlorite(1), muscovite(15), biotite(20), Kfs, [amphibole: actinolite?](2), plagioclase(albite)(3)

Sample description:

Looks high-grade, even though it shows top NE (which should be extension related).

Qtz of varying grain size is present.
Relatively small grain-sized qtz formed subgrains.
Relatively large qtz grains show bulging.

Sample: #103

Structural characteristics	Petrological description
Outcrop description: Orthogneiss. **Structural data:** S: 197/12 L: 168/12, 145/12. Weak (1-2) top SE has been identified	**Mineralogy:** qtz(70), biotite(14), muscovite(12), orthopyroxene[?](3) **Shear sense indicators:** Maybe shear bands, which would also indicate top to SE. **Sample description:** Qtz often bulges and has irregular grain boundaries.

Sample: #118

Structural characteristics	Petrological description
Outcrop description: Augengneiss, containing well-defined foliation + lineation. **Structural data:** S: 218/14 L: 316/2 No clear indication of shear sense, available indications show top NW (1)	**Mineralogy:** qtz(67), mu(11), biotite(17), garnet(1), epidote(2), Kfs(2) **Shear sense indicators:** Mica fish in thin section indicate opposite shear sense (top SE) **Sample description:** Qtz in XPL has subgrain domains Garnet is present occasionally with well defined hexagonal crystal shape though reworked by qtz + mu. Muscovite has seemingly migrated into garnet. Streak of garnets are present.

Sample: #101

Structural characteristics	Petrological description
Outcrop description: Orthogneiss **Structural data:** S: 156/4 L: 256/2 Available shear sense indicators indicate predominantly top NE, but still not very obvious	**Mineralogy:** qtz(59) biotite(20), muscovite(6), epidote(6), plagioclase(albite)(10), orthopyroxene(9)

Sample: #95

Structural characteristics	Petrological description
Outcrop description: mu +qtz rich orthogneiss **Structural data:** S: 135/5, 150/5 L: 122/2 Available shear sense indicators indicate predominantly top NE, but still not very obvious	**Mineralogy:** qtz(50), biotite(22), muscovite(8), epidote(6), spinel[rutile?](2), [cpx?](?), grt[?](2), accessory minerals(10) **Shear sense indicators:** Shear sense appears top NW **Sample description:** 120° triple point junctions in optically strain-free grains of qtz

Sample: #157

Structural characteristics	Petrological description
Outcrop description: muscovite+biotite-bearing mylonitic (ortho)gneiss, containing well-defined lineation+foliation. **Structural data:** S: 233/10 L: 258/08	**Mineralogy:** qtz(40), biotite(22), rutile(4), amphibole(16), muscovite(7), grt?[spl?](1), accessory minerals(10)

Sample: #22

Structural characteristics	Petrological description
Outcrop description: Muscovite-bearing orthogneiss. (possible cataclastic detachment present bordering outcrop). **Structural data:** S: 355/18 L: 314/5, top NW	**Mineralogy:** qtz(60), mu(20), biotite(5), opx(10) [grt?](1), [rutile?](2), plagioclase(2) **Shear sense indicators:** top NW shear sense confirmed by several mica fish. **Sample description:** Garnet surrounded by rutile?

Sample: #126

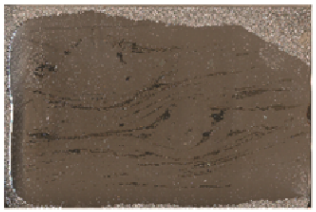
Structural characteristics	Petrological description
Outcrop description: Orthogneiss. **Structural data:** S: 180/4 L: 129/2	**Mineralogy:** grt(2), qtz(65), mu(2), plagioclase(albite)(7), Kfs(12), biotite(12) **Sample description:** Within qtz grains, subgrains can be identified and occasionally, triple point junctions. Potential small garnet(s) identified, surrounded by qtz + mu, as well as a potential small garnet, intergrown with muscovite.

Sample: #107

Structural characteristics	Petrological description
Outcrop description: Amphibolite. Seemingly, relict garnet present (associated with fluid/melt, felsic material). **Structural data:** S: 135/30 L: 225/1 Further to W: L:62/8 Top 225 (SW), as indicated by shear bands	**Mineralogy:** amphibole(60) [chlorite?](?), mu(2), qtz(35), accessory minerals(3) Small grt/spl present? **Sample description:** Seemingly, a lot of chloritization has taken place Triple point junctions of qtz present

Sample: #129

thin section scan



Structural characteristics

Outcrop description:

Orthogneiss.

Structural data:

S: 168/15
L: 214/10, top NE (34)

Petrological description

Mineralogy:

Kfs(2), biotite(20) muscovite(4), epidote(11), qtz(60), chlorite(1), [amphibole?], accessory minerals(2) [potentially reconsider %'s?].

Sample description:

Bulging is present in large grains

Grain boundary migration texture is recognized

Subgrain formation is recognized

120° triple point junctions of qtz present

Chloritization of biotite, within a qtz supergrain is encountered

Qtz (Kfs/plg?) grains have been recrystallized at the edges. One of these has qtz recrystallized within its interior

Sample: #155

Structural characteristics

Outcrop description:

Orthogneiss.

Structural data:

S: 302/28

L: 285/28 260/±10

Petrological description

Mineralogy:

[glaucophane?], Kfs[?], muscovite(16), biotite(12) plagioclase(albite)(6), qtz(60), garnet(4), rutile[spinel?](2)

Shear sense indicators:

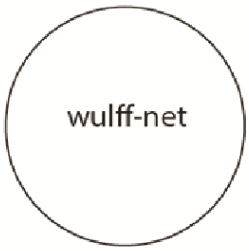
Top NW (mica fish)

Shear bands[?], top NW

Sample: #88

thin section scan

Structural characteristics



Outcrop description:

Orthogneiss.

Structural data:

S: 203/22
L: 250/20

Petrological description

Mineralogy:

biotite(8), muscovite(15), chlorite(2), qtz(70), amphibole[?](3), accessory minerals (2)

Shear sense indicators:

Top NE sigma clasts
Shear bands[?], top NE

Mu + bio crystallized together. This configuration is surrounded by qtz crystals

grain-size of all minerals in general is relatively small

Sample: #149

Structural characteristics

Outcrop description:

Orthogneiss.

Structural data:

S1:117/1

L: 208-212/16

S2: 260/85 – 275/±90

Petrological description

Mineralogy:

spl[?](1), chlorite, qtz(68), muscovite(20), biotite(8), grt[?](1), accessory minerals(2)

Sample description:

Ground matrix is of very small grainsize.

Subgrains of qtz are identified

Smaller grain size towards tails of grain

Muscovite borders qtz and biotite

Garnet identified, located in between muscovite and biotite

muscovite metagranite

Sample: #59

Structural characteristics	Petrological description
Outcrop description: Orthogneiss.	**Mineralogy:** chlorite(2), [grt?](?), amphibole(58), plagioclase(albite?)(2), qtz(35), accessory minerals(3) **Sample description:** Qtz has formed subgrains. Occasionally, gb migration has taken place with 120˚ triple point junctions.

Sample: #16

Structural characteristics	Petrological description
Outcrop description: Orthogneiss. Qtz is not dynamically recrystallized, which means that temperatrures have not been very high **Structural data:** S1: 84/10 L: 126/1	**Mineralogy:** spl[?](1), chlorite, qtz(68), muscovite(20), biotite(8), grt[?](1), accessory minerals(2) **Sample description:** Ground matrix is of very small grainsize. Subgrains of qtz are identified Smaller grain size towards tails of grain Muscovite borders qtz and biotite Garnet identified, located in between muscovite and biotite

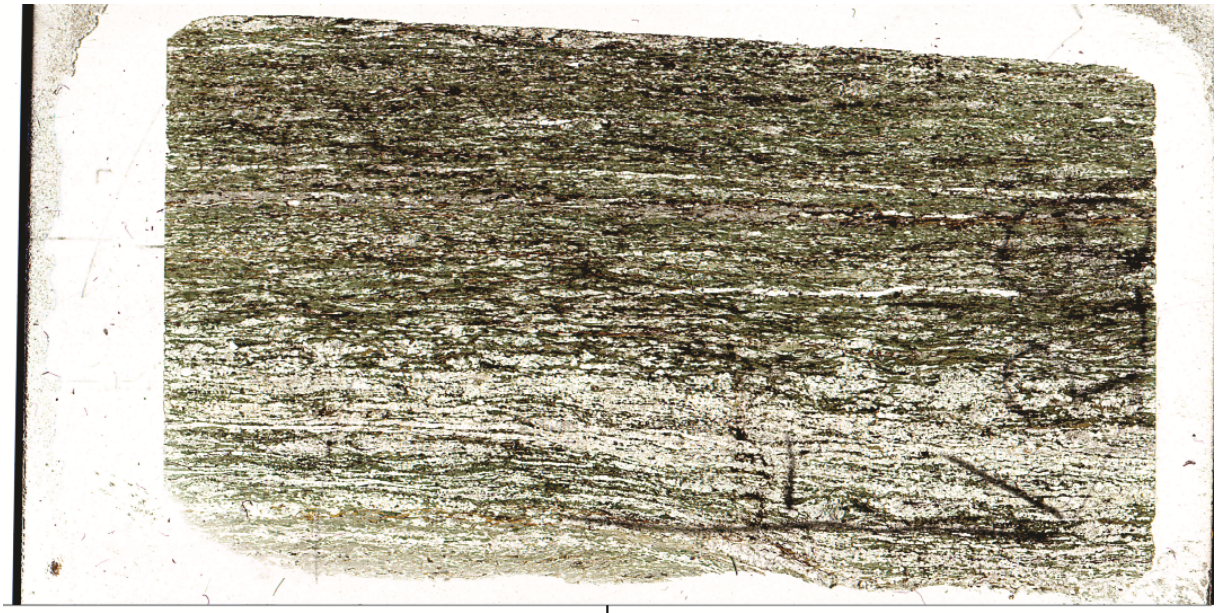
Sample: #62

Structural characteristics	Petrological description
Outcrop description: Orthogneiss. Qtz has not been dynamically recrystallized, which means T was not very high **Structural data:** S: 47/14 L: 60/12 Top to 60 (NE, sigma clast + shear bands[?])	**Mineralogy:** qtz(53), muscovite(20), Kfs (11), rutile(2), plagioclase (14) **Shear sense indicators:** Top NE (Shear bands) **Sample description:** Possible shear bands and sheared clast confirm top NE

Sample: #162

Structural characteristics	Petrological description
Outcrop description: Orthogneiss. **Structural data:** S: 243/10 L: 240/8	**Mineralogy:** plagioclase (albite)(4), Kfs(5), mu(18), qtz(60), rutile(10), biotite(2), garnet(1) **Shear sense indicators:** Top NE (Shear bands) **Sample description:** Possible shear bands and sheared clast confirm top NE Multiple grt present, surrounded by mu + qtz

amphibolite



Sample: #85 (58)

Structural characteristics

Outcrop description:

Amphibolite-schist

Well-defined foliation + lineation

Structural data:

S: 175/44

L: 242/10 Top NE

Petrological description

Mineralogy:

Kfs, qtz(12, mu(1), bio(8),
amp(65), calcite(2), minor rutile(2),
minor epidote(?)(2),
[amphibole](5),
accessory minerals(8)

Shear sense indicators:

Top NE is confirmed by sigma-clast

Sample description:

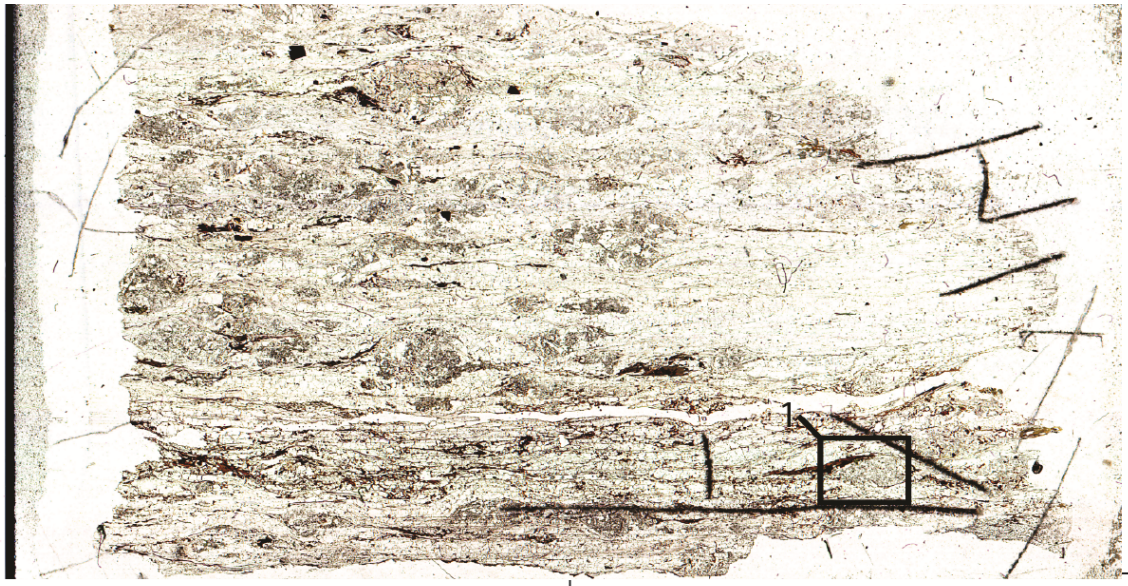
Seemingly, quite a lot
of flattening has taken place.

Subgrains, as well as 120 triple
point junctions are present

Sample: #83

Structural characteristics	Petrological description
Outcrop description: Amphibolite Chlorite present **Structural data:** S: 220/23 L: 241/10	**Mineralogy:** amphibole(2), chlorite(5), muscovite(35), qtz(45), biotite(10), epidote(3) **Shear sense indicators:** Top NE[?] **Sample description:** 120° triple point junctions present

biotite schist, with and without garnet



Sample: #14

Structural characteristics

Outcrop description:

Well foliated
micaschist

Greenschist facies mylonitic
shearing is present.
Schist contains chloritized biotite

Structural data:

S: 150/06, 156/07

L: 80/1, 94/02 Top to 80

Petrological description

Mineralogy:

grt, [plagioclase?], qtz(40),
chlorite(5), muscovite(30),
biotite(15), Kfs[?](?),
spl[?](?), rutile(4),
accessory minerals(6)

Sample description:

Plagioclase[qtz] contains a
lot of internally
crystallized minerals.

Qtz tends to concentrate
in the tails of plagioclase[qtz].

Multiple grt crystals are present

Asenitsa lithotectonic unit

biotite and amphibole-biotite gneiss and gneiss-schist

Sample: #167

Structural characteristics

Outcrop description:

Paragneiss

Structural data:

S: 70/47

S2?: 258/74

L1: 15/26 Top 15

L2: 60/38

Angle between both L's: ±45°

Petrological description

Mineralogy:

qtz(59), biotite(29), grt(unstable)(4), spinel[?](?)
(black in PPL, isotropic in XPL),
Kfs(4), accessory minerals(4)

Sample description:

Multiple grt crystals are present

Edges of garnet are relatively erratic

Garnet contains tiny inclusions [of mica?]

Garnet is surrounded by biotite and qtz

Garnets may be surrounded by a rim of spinel

Qtz grain size is relatively small
and derformed by
subgrain rotation, as well as
by grain boundary migration

Sample: #152

Structural characteristics	Petrological description
Outcrop description: Paragneiss **Structural data:** S: 299/8 L: 234/5 top NE (54), shear bands	**Mineralogy:** qtz(80), mu(6), biotite(2), calcite(12)

amphibolite (As/a)

Sample: #6

Structural characteristics	Petrological description
Outcrop description: Amphibolite **Structural data:** S: 29/29 L: 57/03 top NE (54), shear bands	**Mineralogy:** qtz(28), calcite(45), chlorite(4), epidote(6), mu(8), accessory minerals [amongst which Kfs](5), spinel[rutile?](2) or garnet(2) (melanite) **Sample description:** Qtz grain size is relatively small, subgrains occur

Sample: #23

Structural characteristics

Outcrop description:

Unsheared, folded amphibolite

Folded amphibolite is chloritized and contains very pervasive foliation

Represents former plagiogranite

Structural data:

S: 194/10

L: 140/7

Petrological description

Mineralogy:

qtz(73), mu(10), plagioclase (albite) (2), biotite(1), garnet(3), amphibole(1), opx(3) chlorite(2), amphibole (5) epidote??

Shear sense indicators:

Top NE[?]

Sample description:

Relatively fine-grained

Subgrains occur in qtz

Appendix 2.2 – Optical Microscopy

Bachkovo-Dobralak lithotectonic unit

biotite-epidote metagranite

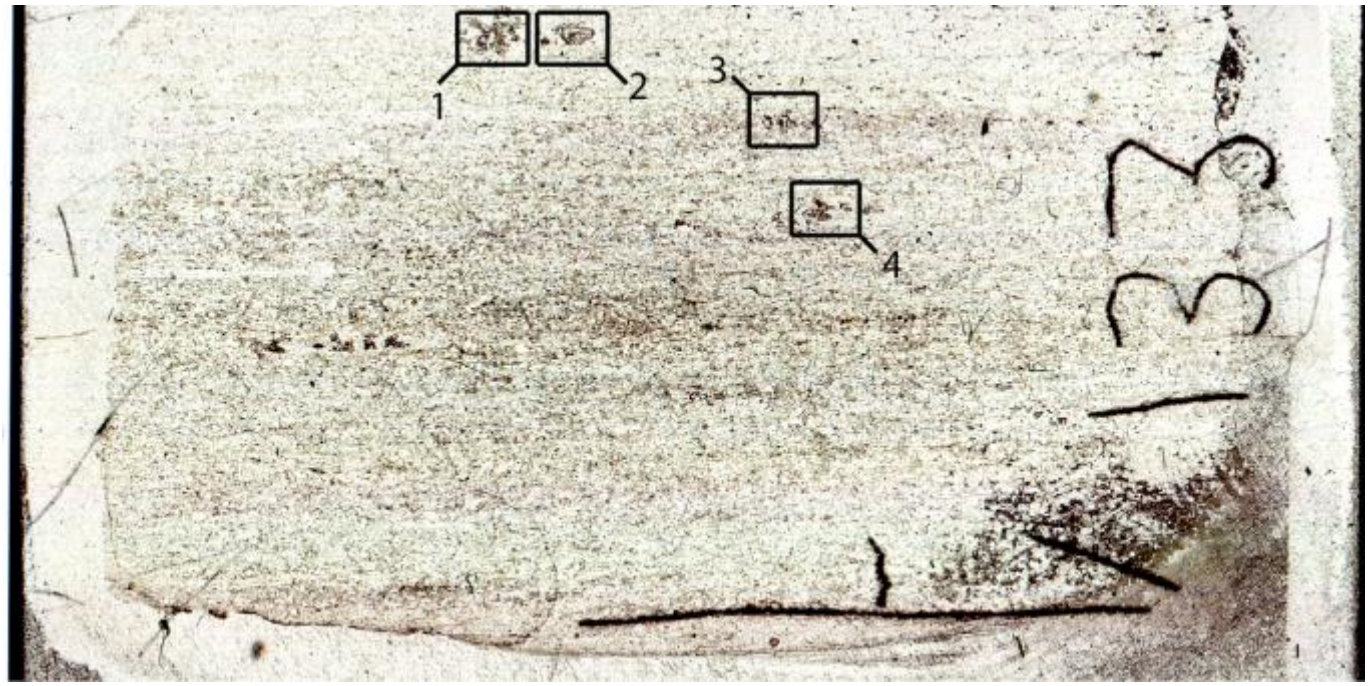


Figure 1 – Thin section scan of sample 133. Rectangles labeled 1, 2, 3 and 4 represent more specific, smaller areas analyzed with the OM, of which (Leica) images are presented in the report and appendix 2.2 (Optical Microscopy). The arrow located on the bottom of the thin section indicates the plunge of the sample. The small, vertical line positioned on the arrow indicates the direction of the top of the sample.

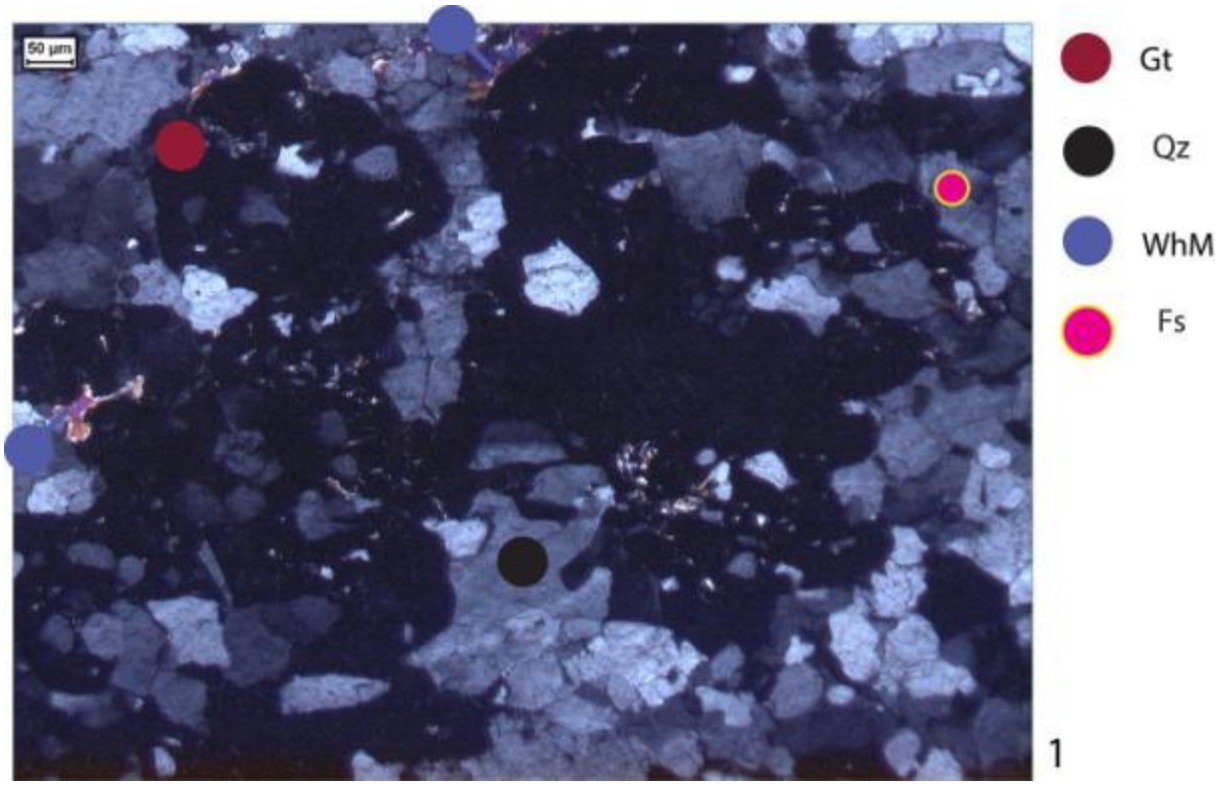


Figure 2 – XPL image of area 1 of sample 133. Scale bar in the top left corner reads 50 µm.

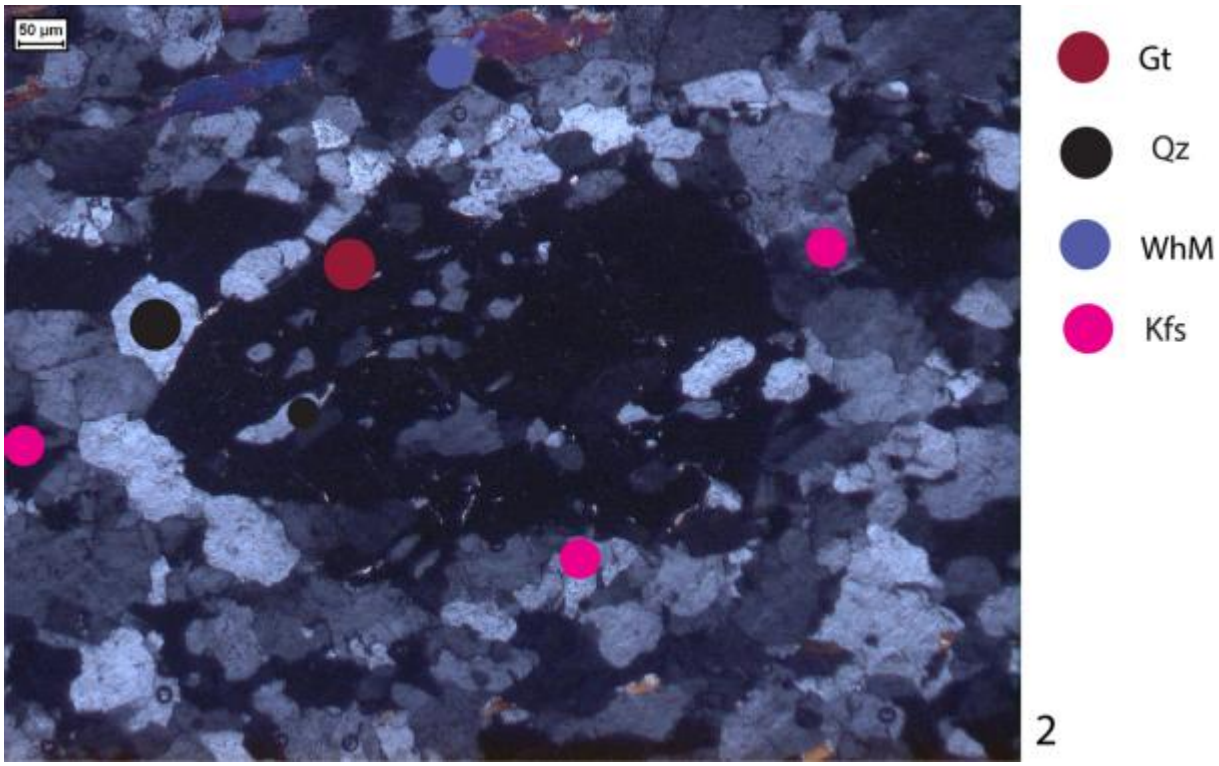


Figure 3– XPL image of area 2 of sample 133. Scale bar in the top left corner reads 50 µm.

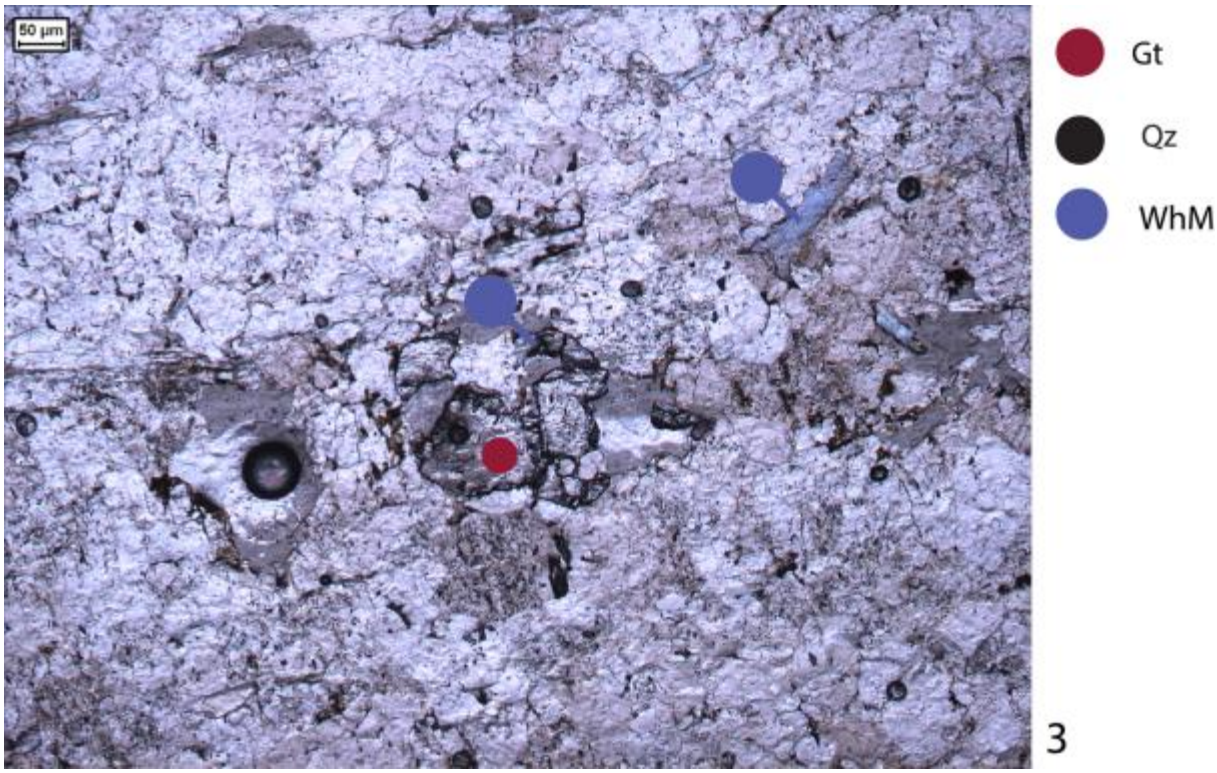


Figure 4 - PPL image of area 3 of sample 133. Scale bar in the top left corner reads 50 µm.

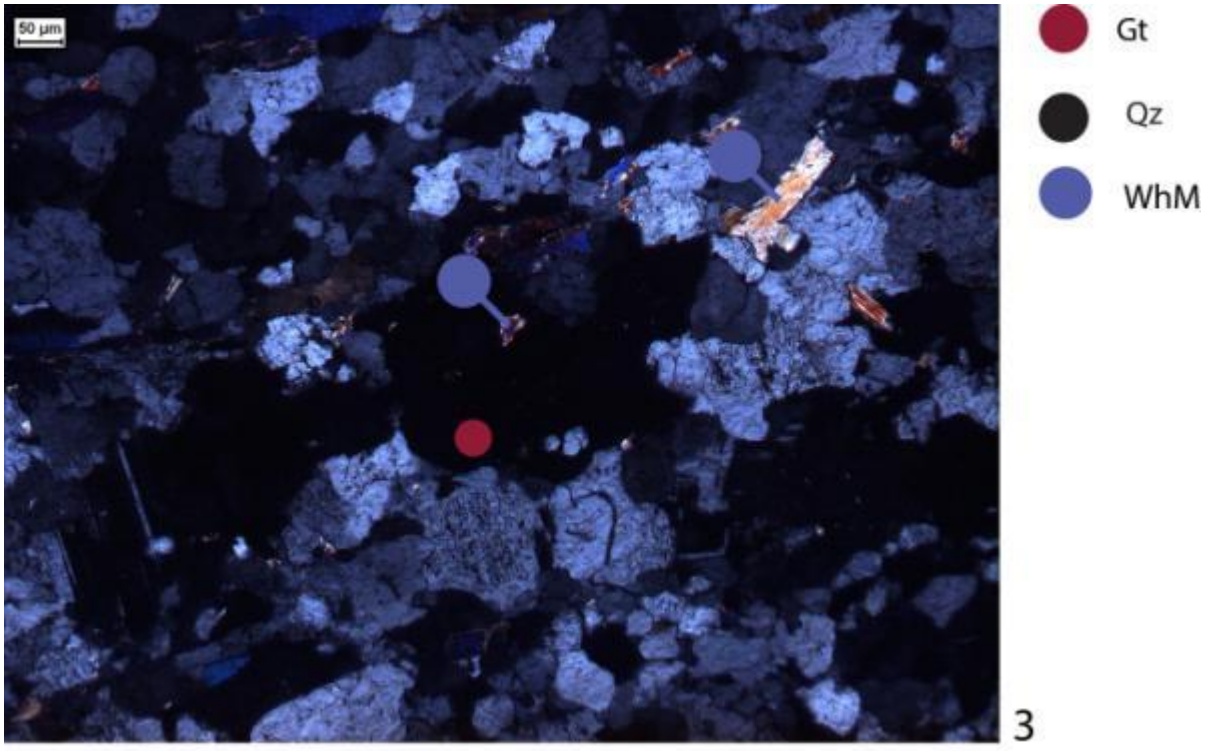


Figure 5 - XPL image of area 3 of sample 133. Scale bar in the top left corner reads 50 µm.

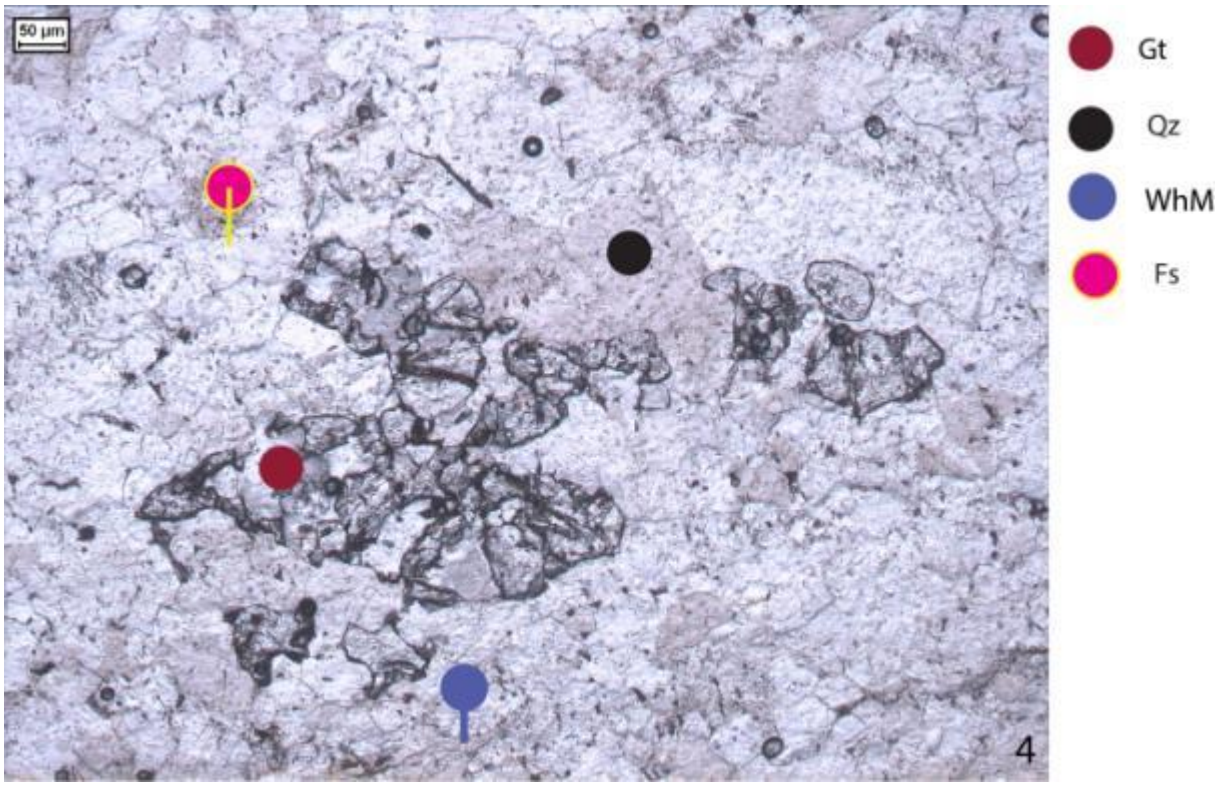


Figure 6 - PPL image of area 4 of sample 133. Scale bar in the top left corner reads 50 µm.

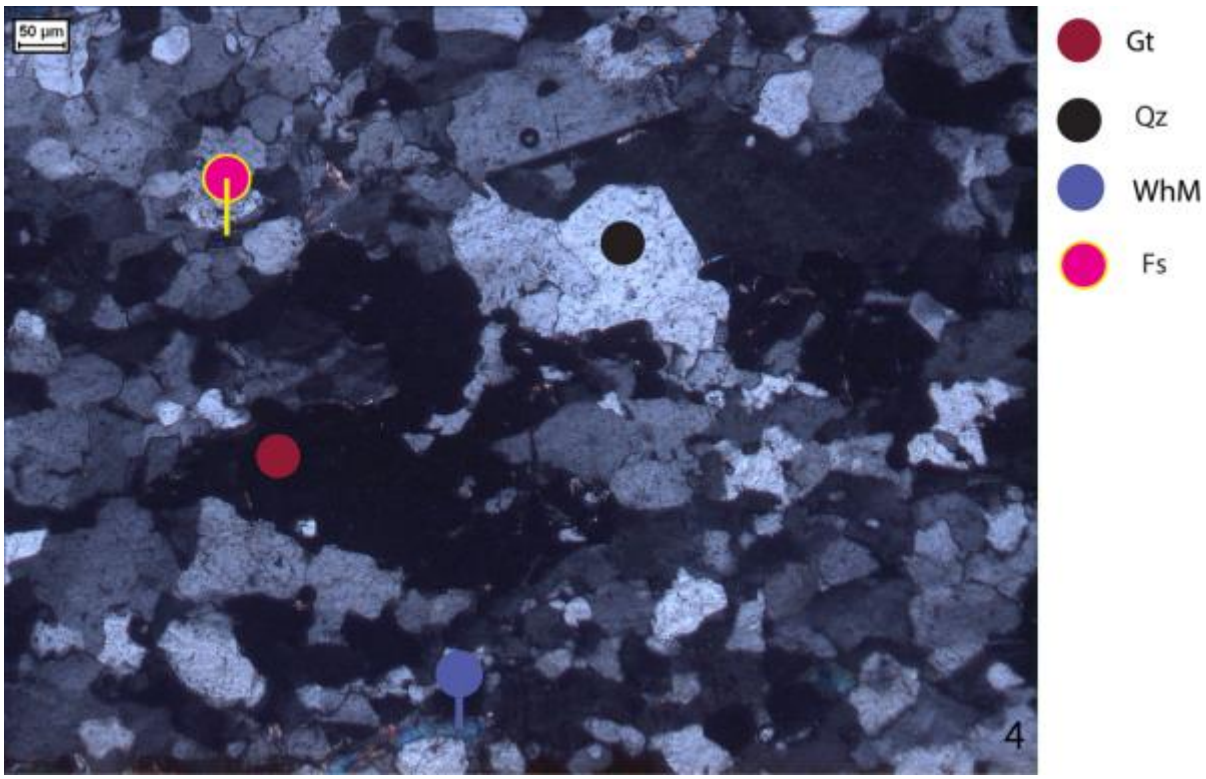


Figure 7 - XPL image of area 4 of sample 133. Scale bar in the top left corner reads 50 µm.

amphibolite (As/a)

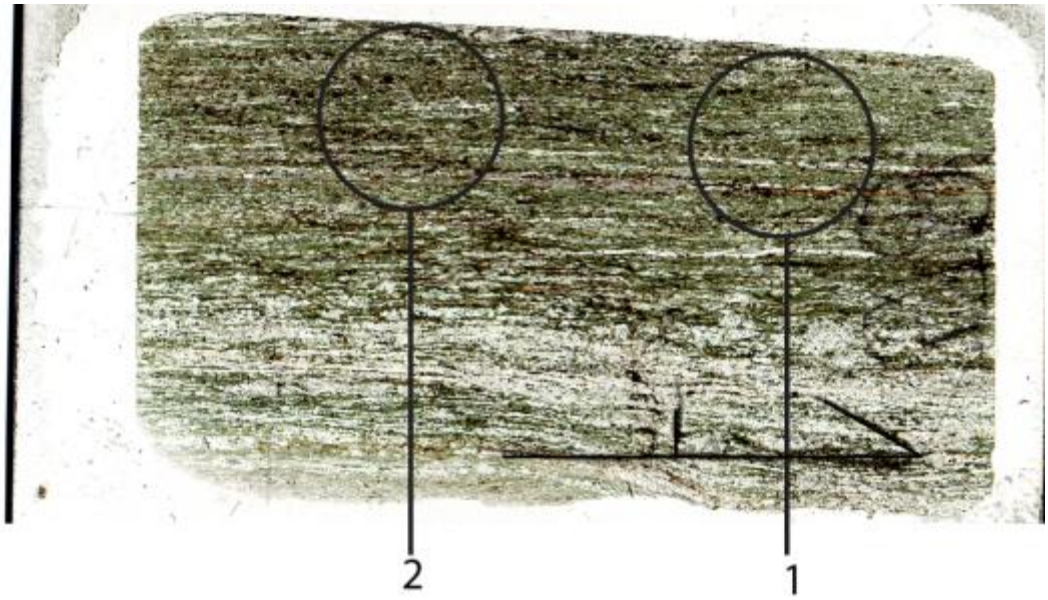


Figure 8 - Thin section scan of sample 85. Circles labeled 1 and 2 represent the very approximate location of more specific, smaller areas analyzed with the OM, of which (Leica) images made, are presented in the report and the appendix 2.2 (Optical Microscopy). The arrow located on the bottom of the thin section indicates plunge of the sample. The small, vertical line positioned on the arrow indicates the direction of the top of the sample.

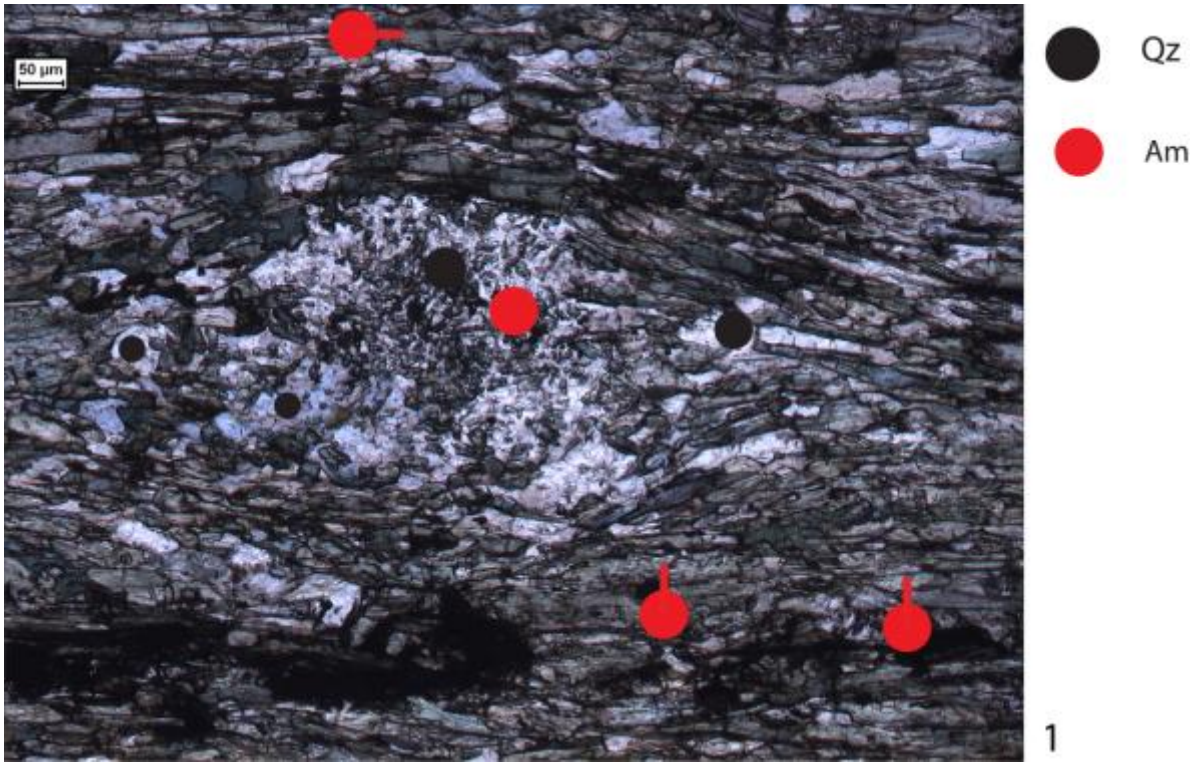


Figure 9 - PPL image of area 1 of sample 85. Scale bar in the top left corner reads 50 µm.

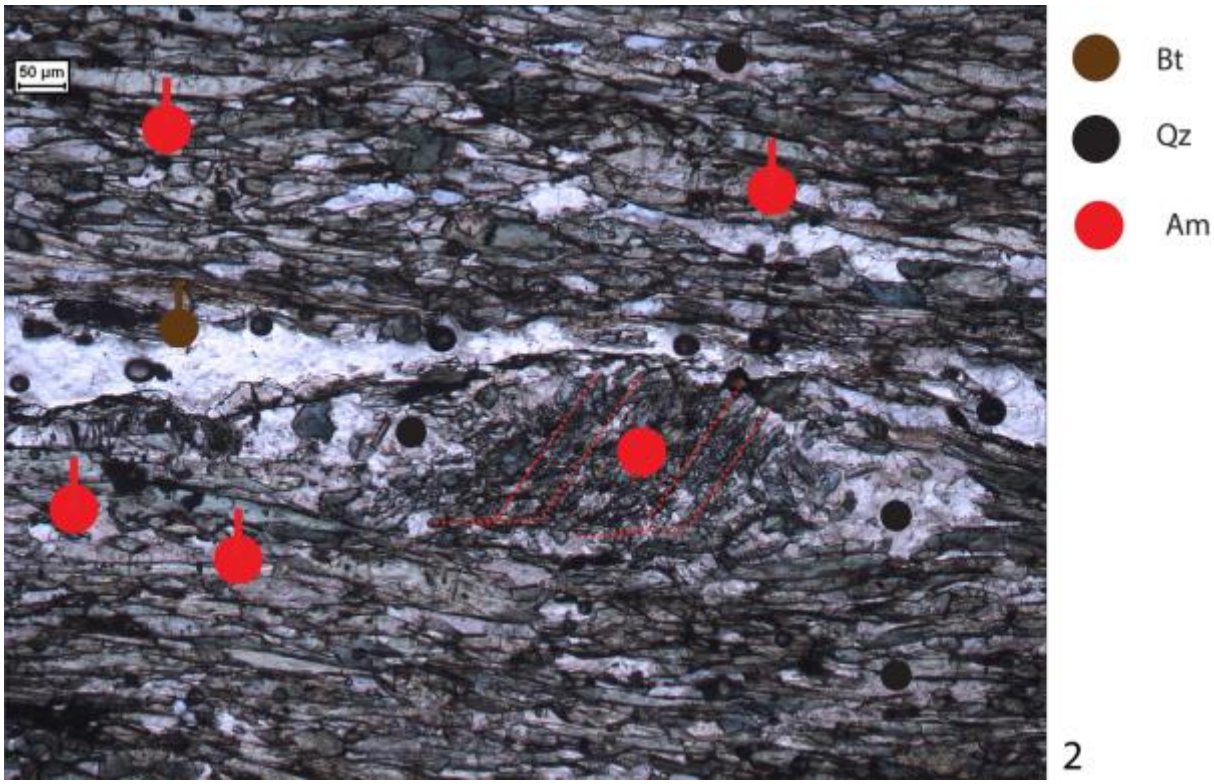


Figure 10 - PPL image of area 2 of sample 85. Scale bar in the top left corner reads 50 µm.

Figure 11 - Thin section scan of sample 14. Rectangle labeled 1 represents the more specific, smaller area analyzed with the OM, of which (Leica) images made, are presented in the report and the appendix 2.2 (Optical Microscopy). The arrow located on the bottom of the thin section indicates plunge of the sample. The small, vertical line positioned on the arrow indicates the direction of the top of the sample.

biotite schist, with and without garnet

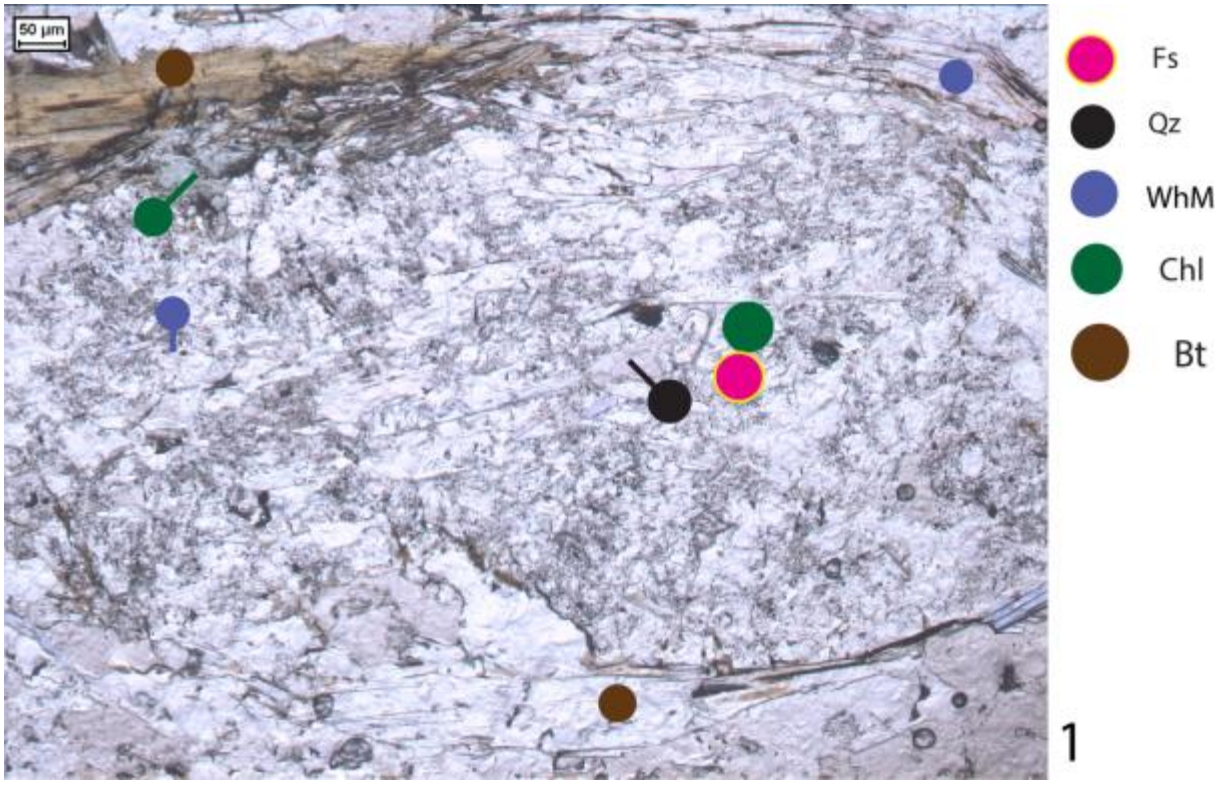


Figure 12 - PPL image of area 1 of sample 14. Scale bar in the top left corner reads 50 µm.

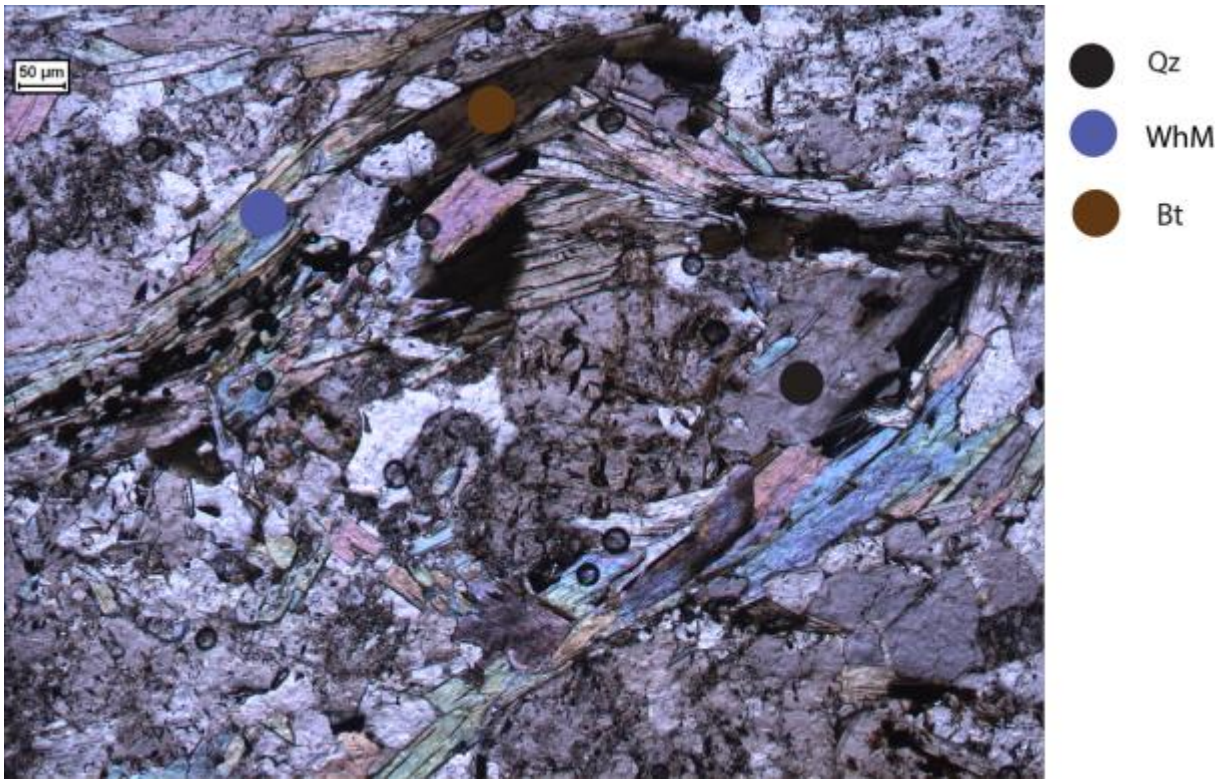


Figure 13 - PPL image of area 2 of sample 14. Scale bar in the top left corner reads 50 µm. The location of this area cannot be accurately retrieved. Scale bar in the top left corner reads 50 µm.

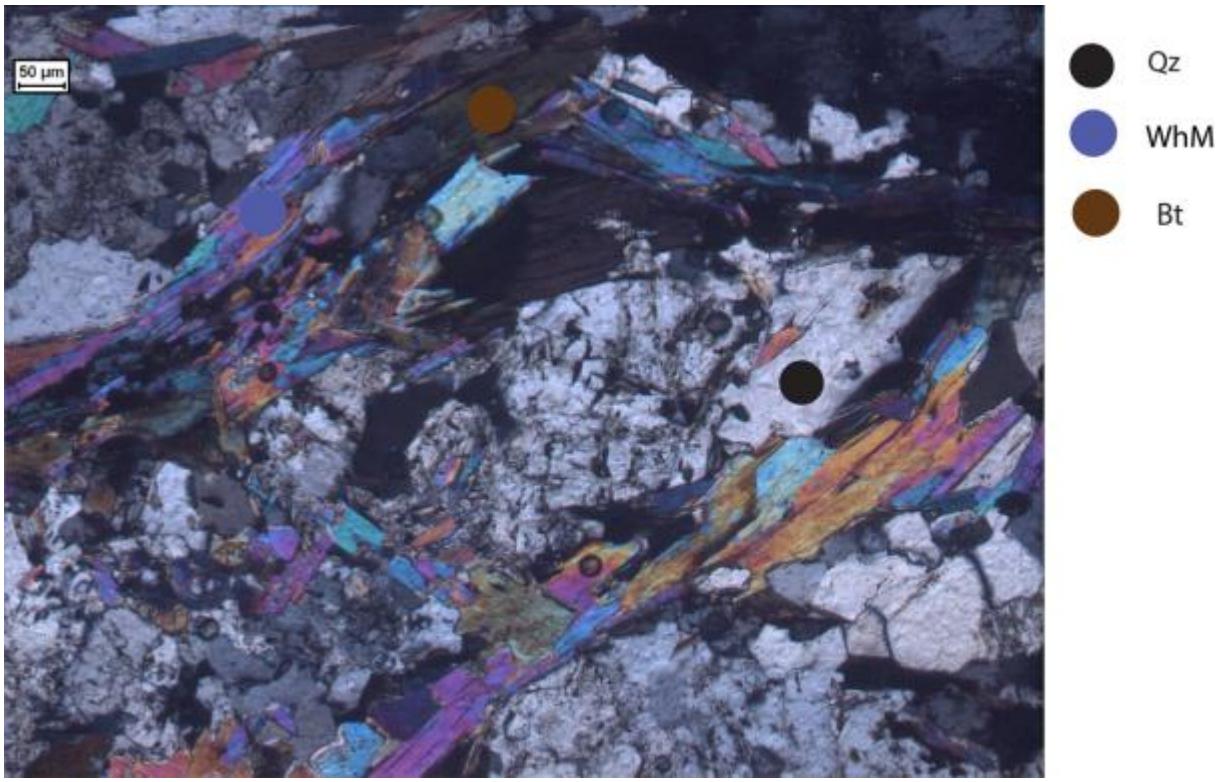


Figure 14 - XPL image of area 2 of sample 14. Scale bar in the top left corner reads 50 µm. The location of this area cannot be accurately retrieved. Scale bar in the top left corner reads 50 µm.

Asenitsa lithotectonic unit

biotite and amphibole-biotite gneiss and gneiss-schist

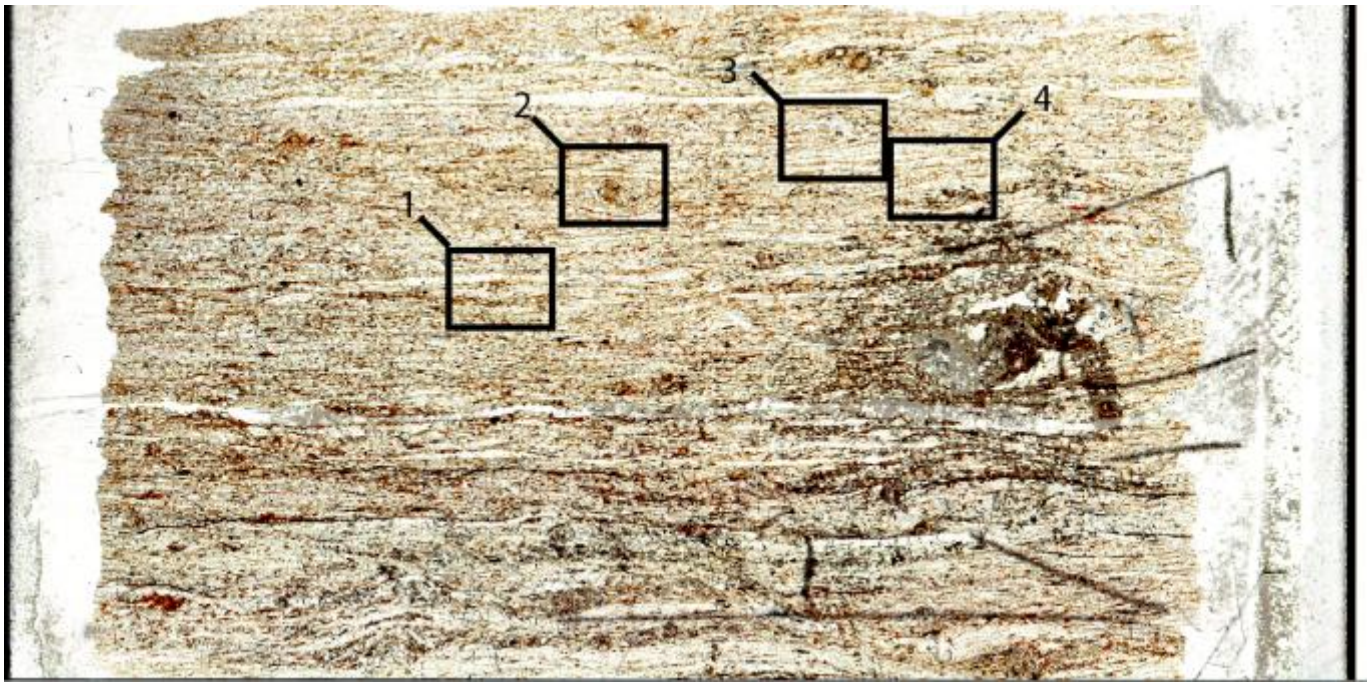


Figure 15 - Thin section scan of sample 167. Rectangles labeled 1, 2, 3 and 4 represent the more specific, smaller areas analyzed with the OM, of which (Leica) images made, are presented in the report and the appendix 2.2 (Optical Microscopy). The arrow located on the bottom of the thin section indicates plunge of the sample. The small, vertical line positioned on the arrow indicates the direction of the top of the sample.

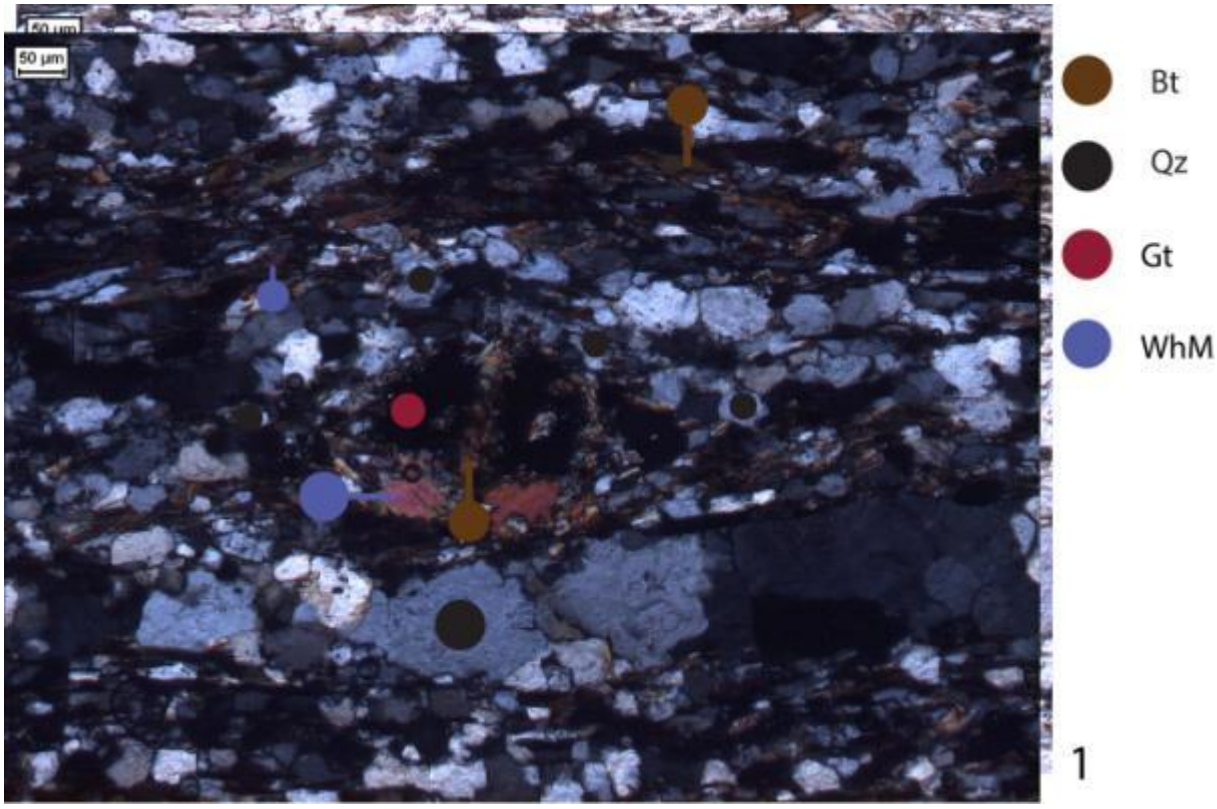


Figure 16 - XPL image of area 1 of sample 167. Scale bar in the top left corner reads 50 µm.

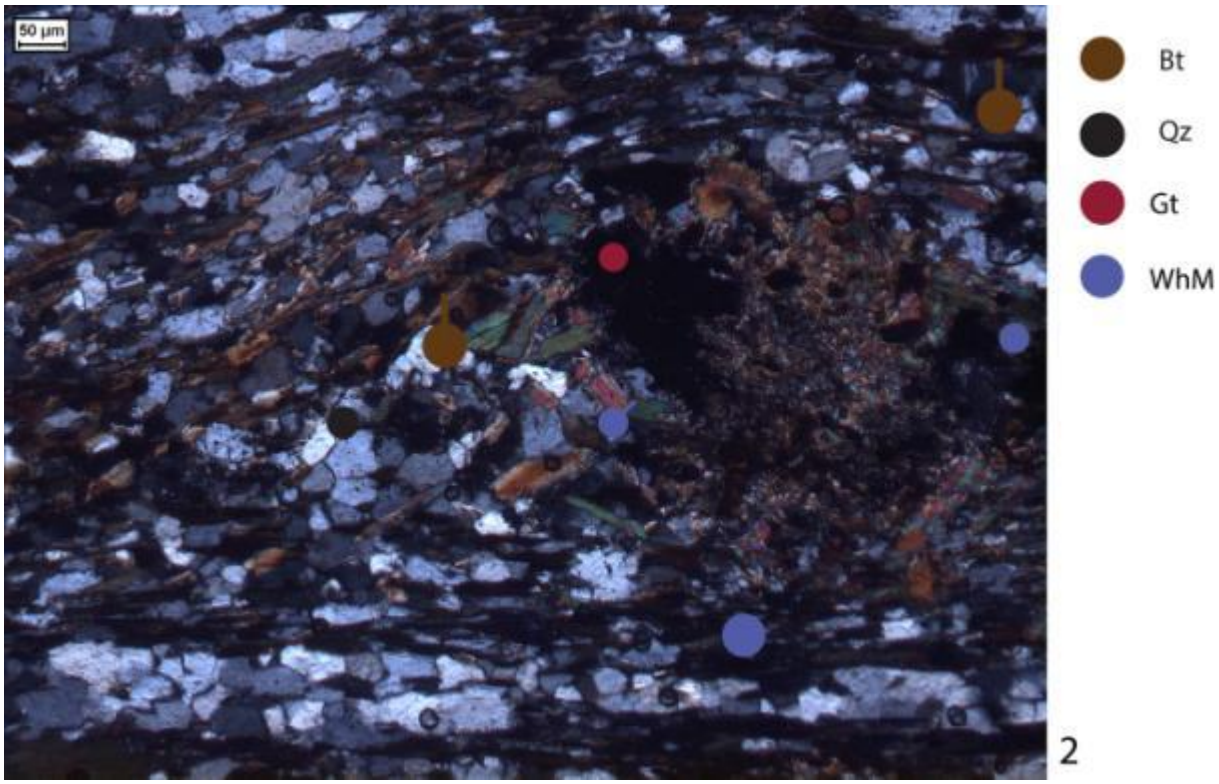


Figure 17 - XPL image of area 2 of sample 167. Scale bar in the top left corner reads 50 µm.

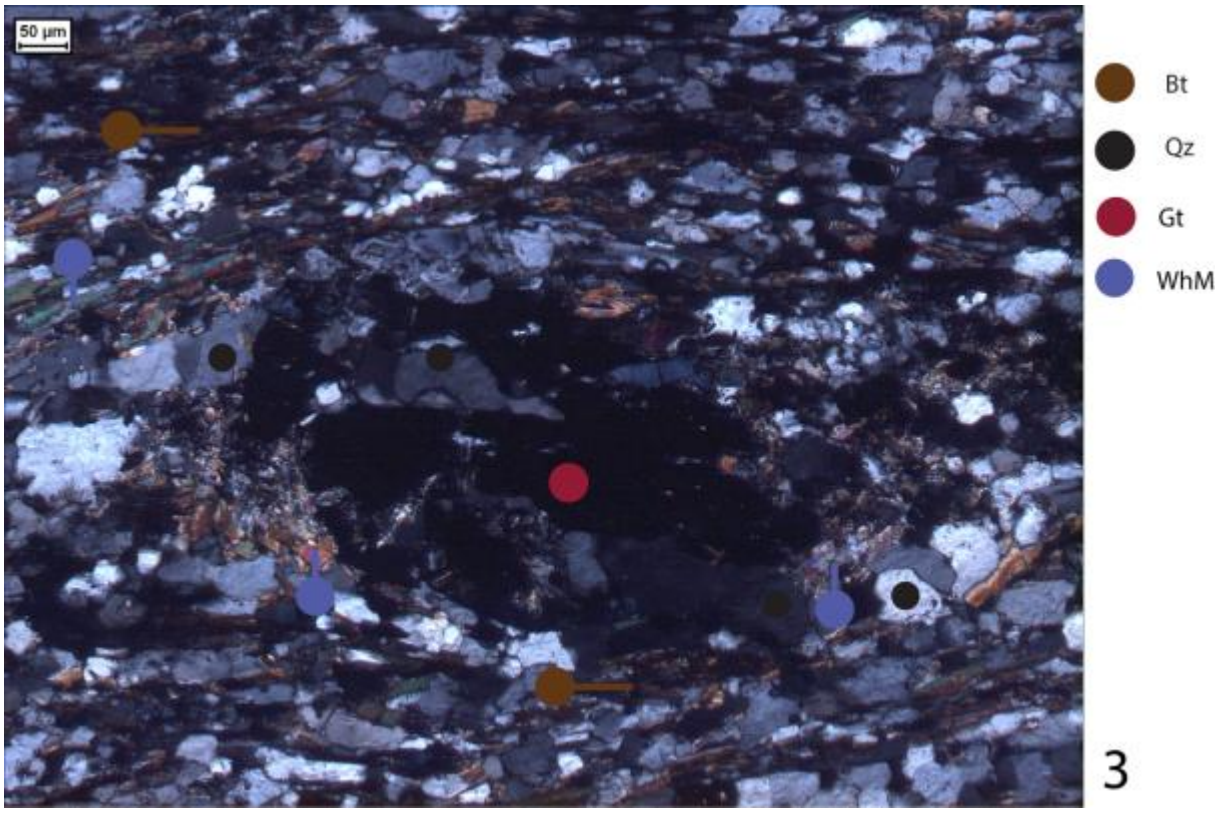


Figure 18 - XPL image of area 3 of sample 167. A number of different types of inclusions can be recognized from the interior of garnet. Scale bar in the top left corner reads 50 µm.

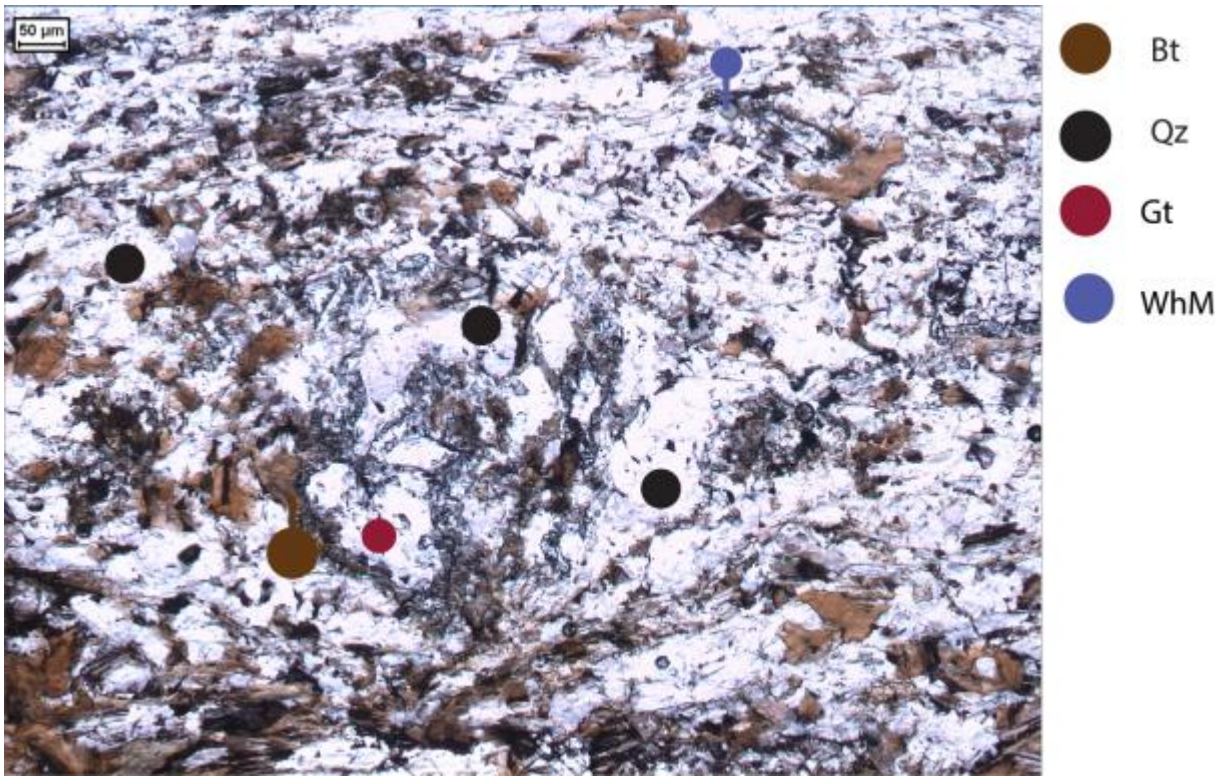


Figure 19 - PPL image of sample 167. Scale bar in the top left corner reads 50 µm. The location of this area cannot be accurately retrieved.

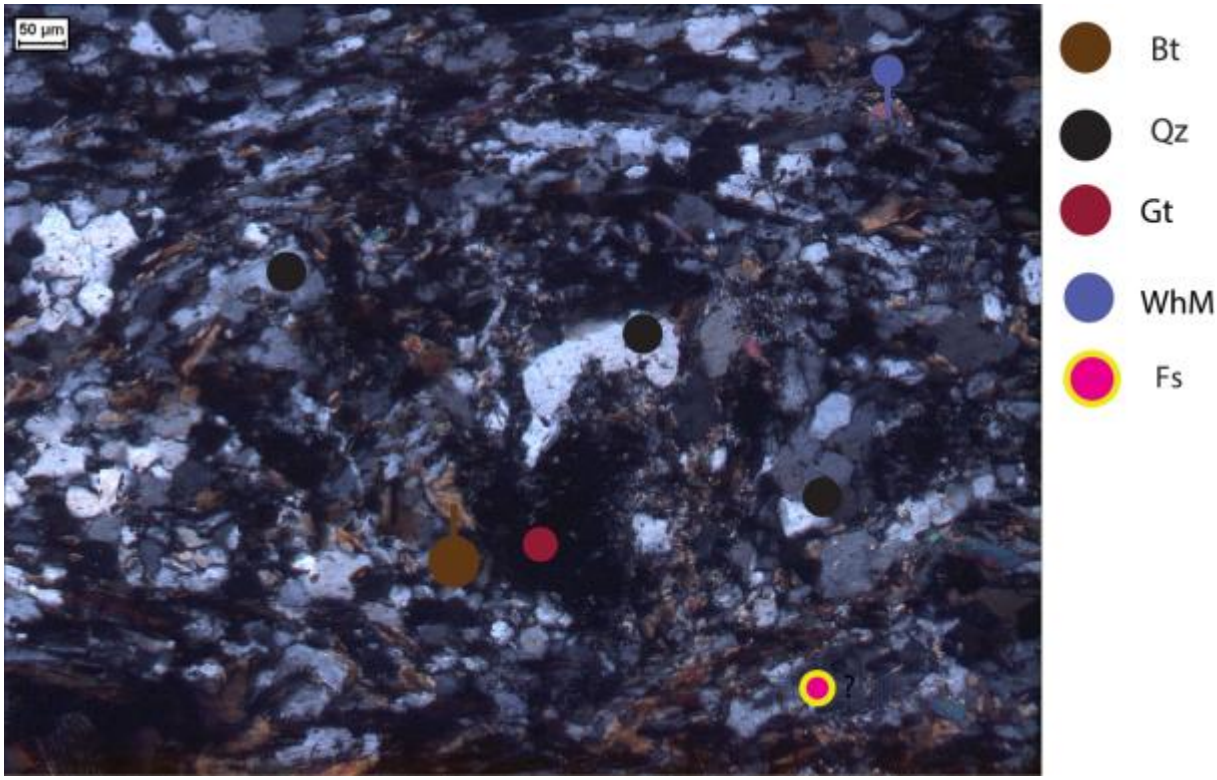


Figure 20 - XPL image of sample 167. Scale bar in the top left corner reads 50 µm. The location of this area cannot be accurately retrieved.

amphibolite

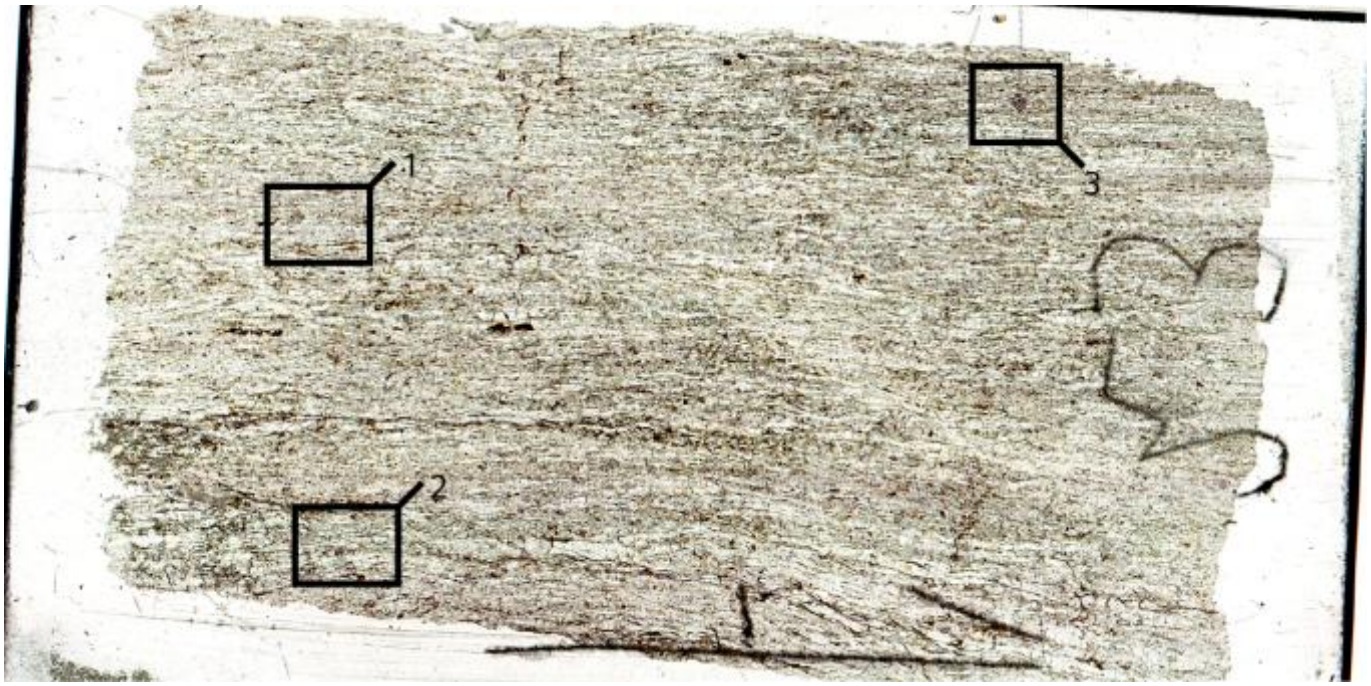


Figure 21 - Thin section scan of sample 23. Rectangles labeled 1, 2 and 3 represent the more specific, smaller areas analyzed with the OM, of which (Leica) images made, are presented in the report and the appendix 2.2 (Optical Microscopy). The arrow located on the bottom of the thin section indicates plunge of the sample. The small, vertical line positioned on the arrow indicates the direction of the top of the sample.

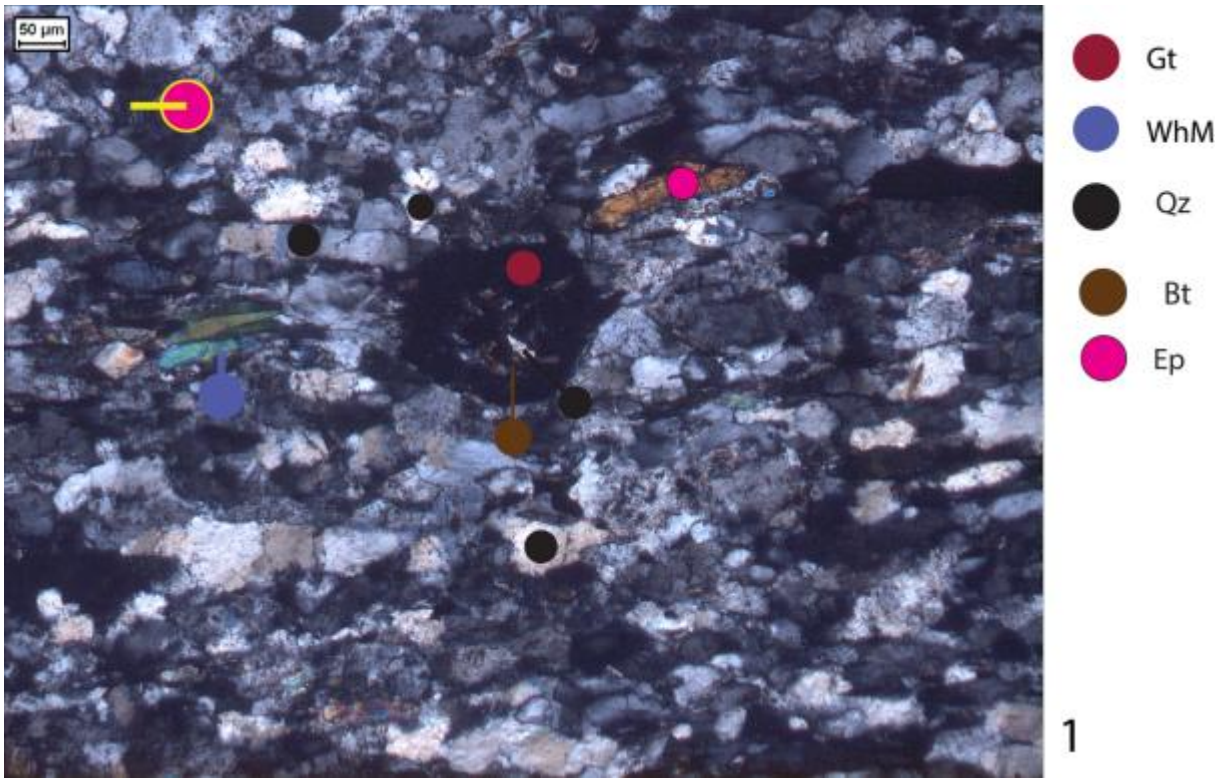


Figure 22 – XPL image of area 1 of sample 23. Scale bar in the top left corner reads 50 µm.

Figure 23 – XPL image of area 2 of sample 23. Scale bar in the top left corner reads 50 µm.

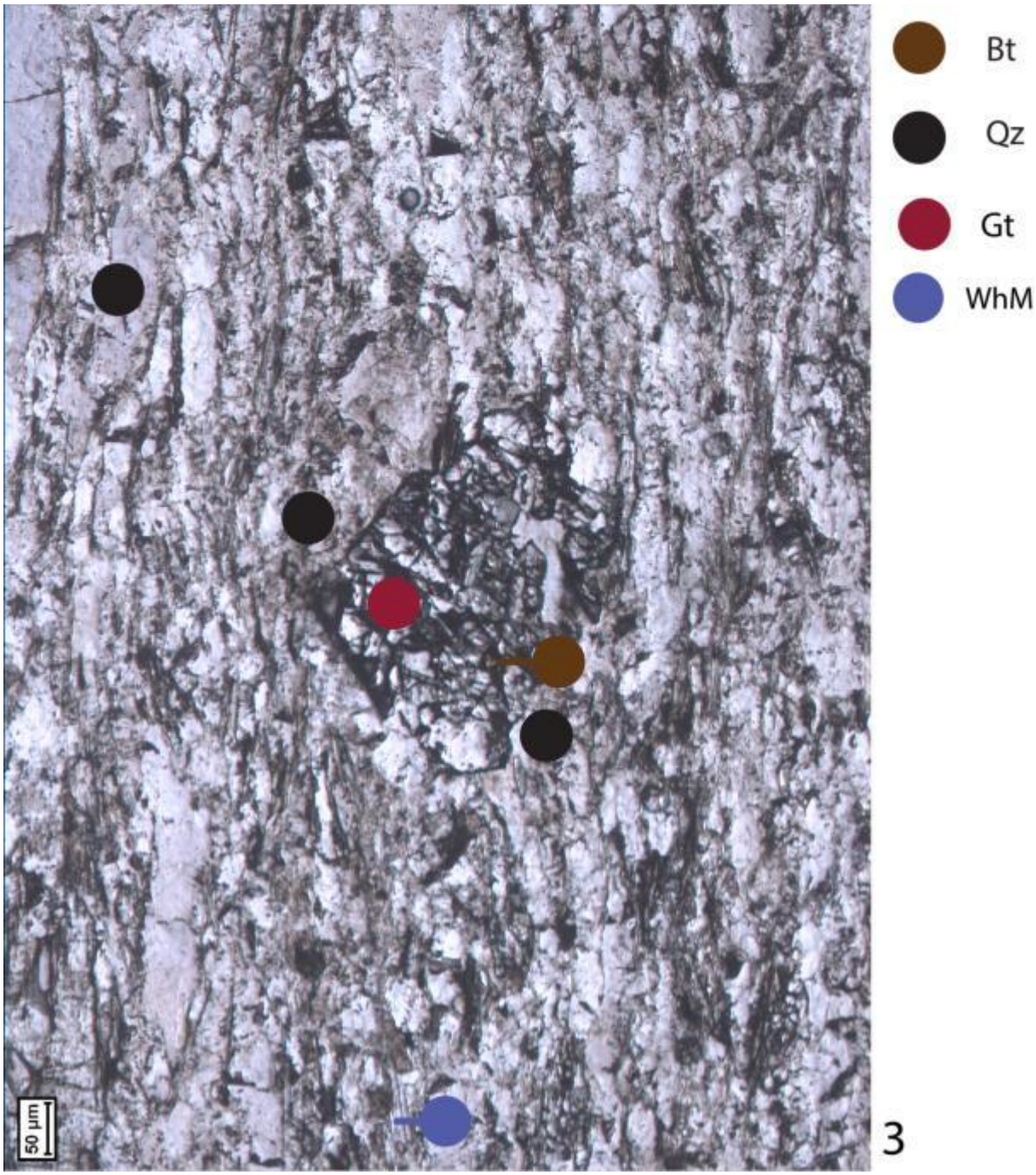


Figure 24 - PPL image of area 3 of sample 23. Scale bar in the top left corner reads 50 µm.

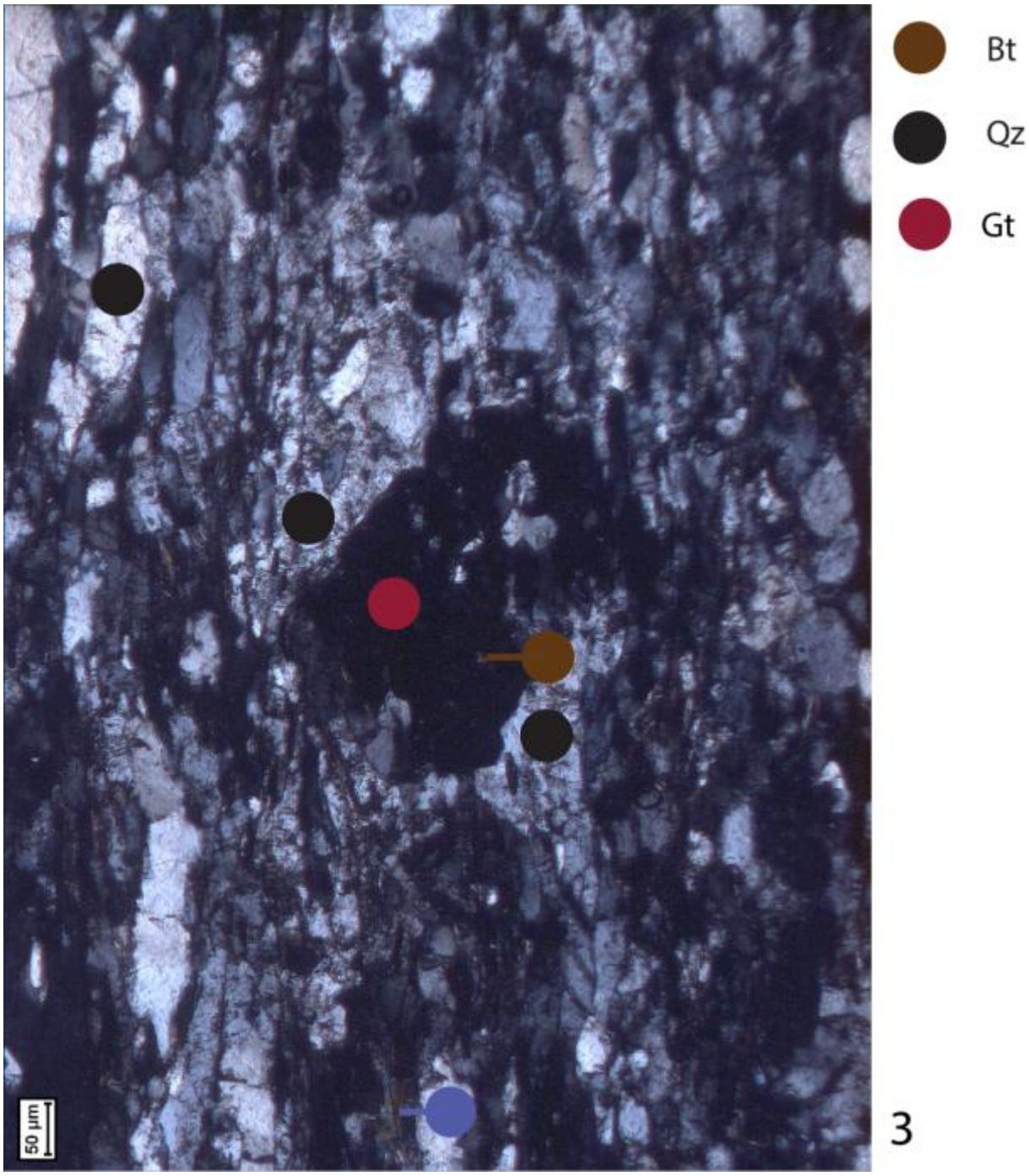


Figure 25- XPL image of area 3 of sample 23. Scale bar in the top left corner reads 50 µm.

Appendix 2.3 – EMPA

Garnet

133_Garnet	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cr2O3	sum
1	35,91	0,0771	20,19	15,35	23,18	1,2156	2,86	0,0816	0	0	**98,86**
2	35,66	0,143	19,9	15,25	23,37	1,0966	2,9	0,0458	0	0	**98,37**
3	35,21	0,1267	20,43	15,41	23,23	1,0657	2,79	0,0348	0,0297	0,0141	**98,34**
8	36,19	0,0594	20,28	13,61	21,35	1,0061	6,02	0,0514	0	0,0213	**98,59**
9	35,97	0,0274	20,52	14,91	23,93	0,9421	2,43	0,0615	0	0	**98,79**
18	36,23	0,1838	20,51	12,78	22,18	0,9477	6,36	0,0885	0	0	**99,28**
19	35,82	0,0198	20,59	14,79	23,98	1,029	2,56	0,0167	0,0265	0	**98,83**
14_Garnet	**SiO2**	**TiO2**	**Al2O3**	**FeO**	**MnO**	**MgO**	**CaO**	**Na2O**	**K2O**	**Cr2O3**	**sum**
5	36,71	0,1475	20,93	23,61	5,47	1,2601	11,07	0,0182	0,003	0,0041	**99,22**
7	36,72	0,1161	20,88	26,9	2,97	1,3603	10,11	0,071	0	0	**99,13**
11	36,29	0,1274	20,8	21,11	9,39	1,18	9,76	0,0701	0,0608	0	**98,79**
167_Garnet	**SiO2**	**TiO2**	**Al2O3**	**FeO**	**MnO**	**MgO**	**CaO**	**Na2O**	**K2O**	**Cr2O3**	**sum**
1	37,04	0,1534	21,1	27,68	1,2319	2,25	9,82	0,04	0,0011	0,0338	**99,35**
2	37,09	0,1355	21,15	28,17	1,2653	2,27	9,1	0,0247	0	0,0006	**99,21**
3	37,14	0,126	20,98	28,37	1,1957	2,31	9,24	0,0105	0,0092	0	**99,38**
4	36,9	0,1268	21,1	28,09	1,2283	2,25	9,32	0,0294	0	0,023	**99,07**
5	37,13	0,1576	20,9	27,98	1,2087	2,31	9,47	0,0183	0,0058	0	**99,18**
6	37,06	0,162	21,05	28,01	1,2706	2,34	9,48	0,0225	0,0238	0	**99,42**
7	37,07	0,1301	21,01	27,89	1,2141	2,26	9,48	0,0095	0,0011	0,0195	**99,08**
8	37,09	0,1423	20,89	28,08	1,2326	2,31	9,45	0,027	0	0,0072	**99,23**
9	36,95	0,1649	20,89	27,84	1,2422	2,28	9,39	0,0503	0,016	0,0251	**98,85**
20	36,47	0,1279	20,65	27,76	1,31	2,26	9,31	0,092	0,0163	0,0395	**98,04**
21	36,83	0,1591	21	28,2	1,2793	2,26	9,29	0	0,0024	0,0037	**99,02**
22	37,03	0,1427	21,05	28,16	1,32	2,31	9,13	0,0455	0,0038	0,0538	**99,25**
1	36,44	0,1202	21,09	28,65	1,2721	2,33	8,78	0,0528	0,0016	0,0278	**98,76**
2	36,87	0,143	21,22	28,46	1,2686	2,39	8,91	0,0171	0,0198	0,0033	**99,30**
Grt_next-to-inclusion	**36,99**	**0,1026**	**20,87**	**28,54**	**1,2149**	**2,32**	**8,94**	**0,0348**	**0,018**		
	0,0248	**99,0551**									
1	36,2	0,1135	20,29	26,03	10,09	0,8983	5,15	0,0366	0	0	**98,81**
6	36,18	0,2145	20,43	24,56	10,67	1,1474	5,01	0,0326	0	0,0346	**98,28**
21	36,2	0,0729	20,86	29,59	3,03	1,72	6,86	0,0377	0,0095	0	**98,38**
23_Garnet	**SiO2**	**TiO2**	**Al2O3**	**FeO**	**MnO**	**MgO**	**CaO**	**Na2O**	**K2O**	**Cr2O3**	**sum**
2	35,82	0,036	20,7	23,95	9,81	2,27	5,33	0,1252	0,0286	0	**98,07**
7	35,66	0,0368	22,19	24,7	10,05	2,01	4,8	0,1805	0,0305	0	**99,66**
65	36,71	0,0181	20,68	22,42	10,39	2,69	6,05	0	0	0	**98,96**
66	36,56	0,0393	20,88	22,99	10,04	2,77	5,95	0	0	0,0068	**99,23**
69	36,76	0,0825	20,88	21,88	10,07	2,87	6,63	0,0147	0	0,0009	**99,19**

Table 1 – WD measurements of spot analysis of garnet for samples 133, 14, 167 and 23. Element oxides are displayed in percentages. The left column represents spot analysis numbers. For sample 167, from bottom to top: [1-20] are spot analysis of Niels_167_Foto-section01, line1, [21, 22, 1, 2] are spot analyses of Niels_167_Foto-section01, line 2. [1, 6] and [21] are spot analyses of Niels_167_Foto-section05b. Total oxide percentages are in bold.

133_Felds	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cr2O3	sum	an(d)	ab(d)	k(d)
5	66,44	0,0148	19,89	0,1158	0,1723	0,0019	0,178	12,29	0,1097	0	99,2125	0,023842	0,997383	0,006203
6	63,45	0,0066	18,69	0,0684	0,0691	0,0048	0	0,5567	16,24	0,0042	99,0898	0,015418	0,024946	0,969305
7	66,54	0,0172	19,95	0,0577	0,0307	0,0086	0,595	11,81	0,1556	0	99,1648	0,034831	0,975905	0,00879
11	63,48	0,0034	18,47	0,0578	0,1328	0	0,0127	0,7594	15,87	0,0065	98,7926	0,010623	0,047839	0,948992
12	63,77	0,0011	18,68	0,0467	0,0188	0	0,0038	0,6555	16,05	0	99,2259	0,013676	0,039424	0,955061
20	66,72	0	19,83	0,1773	0,2039	0	0,1388	11,99	0,1402	0,0123	99,2125	0,020742	0,987543	0,007918
21	63,75	0	18,62	0,1124	0,0868	0	0	0,7032	15,9	0,0045	99,1769	0,012181	0,046086	0,946595

85_Feldsp	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cr2O3	sujm	an(d)	ab(d)	k(d)
5	60,66	0,0019	24,47	0,2604	0,0059	0,0137	5,72	8,66	0,0758	0,002	**99,87**	0,279768	0,72463	0,004312
10	61,08	0,0131	23,44	0,2104	0,0005	0,0143	4,91	8,99	0,0673	0	**98,73**	0,239804	0,763894	0,003862
11	63,49	0,0009	18,49	0,1262	0,0128	0,0238	0	0,0645	16,82	0,0263	**99,05**	0,010902	-0,01182	1,005889
12	60,52	0,002	23,93	0,1282	0,003	0	5,31	8,76	0,0825	0	**98,74**	0,263048	0,742232	0,004738
22	59,98	0	24,19	0,3762	0,0084	0,0124	5,26	9,11	0,1032	0	**99,04**	0,269148	0,74568	0,00593
25	61,03	0,0044	23,64	0,1332	0,0286	0	4,99	9,16	0,0643	0	**99,05**	0,245245	0,766028	0,003681
36	60,39	0,0224	24,09	0,0372	0,002	0	6,05	8,22	0,0682	0	**98,88**	0,284096	0,713865	0,003912
46	59,96	0	24,39	0,0755	0,0054	0	5,72	8,56	0,0481	0,0076	**98,77**	0,285669	0,723042	0,002764

14_Feldsp	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cr2O3	sum	an(d)	ab(d)	k(d)
15	63,14	0	22,49	0,0507	0,0025	0,0067	3,62	9,74	0,0904	0,0091	**99,15**	0,177254	0,825358	0,00514
16	62,46	0,0237	22,53	0,0522	0	0	3,78	9,76	0,1299	0	**98,74**	0,186174	0,82069	0,00743
31	62,76	0,0051	22,26	0,0692	0	0,0059	3,39	10,03	0,1097	0	**98,63**	0,169865	0,840258	0,006276
38	62,62	0,0153	22,35	0,2024	0,0098	0	3,17	10,28	0,0941	0	**98,74**	0,16695	0,848412	0,005384

167_Fs	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cr2O3	sum	an(d)	ab(d)	k(d)
11	51,18	0,0123	29,87	0,6428	0,0206	0,1816	12,2	4,23	0,369	0,0224	98,73	0,613	0,359	0,022
12	55,42	0	27,47	0,4709	0,0236	0,0146	9,4	6,45	0,1394	0,0268	99,42	0,463	0,537	0,008
13	56,28	0,0114	26,64	0,4591	0,0034	0,0214	8,38	6,82	0,1601	0	98,78	0,419	0,577	0,009
14	56,77	0	26,43	0,3759	0,0098	0	8,14	7,15	0,165	0	99,04	0,404	0,597	0,010
15	56,53	0	26,62	0,44	0,0157	0	8,22	6,93	0,1593	0	98,92	0,413	0,584	0,009
16	58,14	0,0126	25,55	0,4941	0,0089	0,0138	7,39	7,54	0,1571	0,0044	99,31	0,358	0,637	0,009
17	55,3	0,0028	27,66	0,4159	0,0187	0,0127	8,92	6,02	0,364	0	98,71	0,461	0,516	0,021
18	52,93	0	28,77	0,444	0,0167	0,0014	11,27	5,24	0,0941	0,0026	98,77	0,555	0,445	0,006
3	56,84	0,0137	26,16	0,7166	0,024	0,0218	8,12	7,19	0,1244	0,0077	99,22	0,396716	0,601682	0,007198
4	55,9	0,0202	26,69	0,6477	0,0275	0,0224	8,51	6,85	0,1369	0	98,80	0,425082	0,573076	0,007962
8	54,32	0,0273	27,63	0,6295	0,0186	0,1384	9,54	5,86	0,3024	0,0041	98,47	0,481556	0,497731	0,017697
2	59,2	0,0207	24,59	0,0527	0,0231	0,0159	6,12	8,05	0,1895	0,007	98,27	0,306	0,690	0,011
3	52,79	0,0195	29,04	0,1529	0,0069	0,0036	11,31	5,13	0,118	0,0101	98,58	0,564	0,436	0,007
4	56,05	0,0248	26,6	0,1839	0	0,0092	8,73	6,72	0,1358	0,008	98,46	0,429	0,572	0,008
21	51,79	0,0135	29,4	0,1464	0	0,0018	11,78	5,02	0,1135	0	98,27	0,591	0,417	0,007
22	36,34	0,1542	26,48	4,35	0,1032	0,2583	21,43	0,026	0,0115	1,1312	90,28	0,962	-0,018	0,001
23	36,76	0,1391	28,65	4,08	0,0744	0,192	22,53	0,0208	0,016	0,1036	92,57	1,020	-0,035	0,001
24	37,77	0,1125	28,58	5,24	0,0856	0,0626	23,45	0,0036	0,0018	0,033	95,34	1,008	-0,031	0,000
25	52,1	0,008	29,45	0,1898	0	0	11,88	4,83	0,1095	0,0174	98,58	0,591	0,410	0,006
2	54,57	0,0771	27,99	0,2687	0,0379	0,0221	10,23	5,92	0,1077	0	99,22	0,500	0,500	0,006
4	52,92	0,0539	28,1	0,6063	0,028	0,2145	10,21	5,11	0,3608	0,0342	97,64	0,521	0,445	0,021
7	62,93	0,02	18,67	0,2512	0,0211	0,0341	0,0641	0,1379	15,59	0,0181	97,74	0,021	0,023	0,939
8	58,34	0,0164	24,24	0,2456	0,0246	0,0056	5,69	4,53	5,36	0	98,45	0,298	0,388	0,315
16	55,79	0,0071	27,01	0,2826	0	0,005	7,95	7,47	0,163	0	98,68	0,420	0,597	0,009
17	57,04	0,0094	25,83	0,2863	0	0	7,14	7,95	0,1602	0,0059	98,42	0,368	0,647	0,009
18	50,48	0,0123	30,7	0,2252	0,0098	0,0046	12,83	4,27	0,0898	0	98,62	0,652	0,353	0,005
19	57,29	0,0189	25,81	0,2559	0,0108	0	7,17	7,71	0,1509	0,0077	98,42	0,367	0,640	0,009

23_Feldsp	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cr2O3	sum	an(d)	ab(d)	k(d)
12	57,93	0,0324	25,71	0,3825	0,0865	0,0216	7,6	7,48	0,0859	0	**98,35**	0,287354	0,721902	0,004954
28	59,17	0,0045	24,75	0,2053	0	0,0886	5,24	8,04	0,6654	0,0083	**99,13**	0,366202	0,641934	0,003436
35	60,93	0,1281	23,95	0,2504	0,0333	0,0011	4,86	9,11	0,0801	0,0204	**98,57**	0,23098	0,762779	0,008111
36	57,04	0,024	26,13	0,1086	0,0005	0	7,76	7,35	0,0601	0,0031	**99,17**	0,41045	0,588017	0,003728
60	59,58	0,0132	24,36	0,0484	0,0206	0	5,67	8,57	0,0858	0	**98,57**	0,23098	0,762779	0,008111
64	57,83	0,0087	25,82	0,2602	0,0863	0,0063	7,37	7,69	0,0596	0,0011	**99,17**	0,41045	0,588017	0,003728
93	61,5	0,0049	23,18	0,058	0,0103	0,0076	4,84	8,81	0,1414	0,019	**98,57**	0,23098	0,762779	0,008111
99	57,28	0,0039	26,44	0,0751	0	0	8,54	6,77	0,0647	0	**99,17**	0,41045	0,588017	0,003728

Table 1 [ctnd] - WD measurements of spot analysis of feldspar for samples 133, 85, 14, 167 and 23. Element oxides are displayed in percentages. The left column represents spot analysis number (or label). For sample 167, from bottom to top: [11-16] represent spot analysis of Niels_167_Foto-section01, line1. [17-18], [3-4] and [8] represent spot analyses of

Niels_167_Foto-section01, line2. [2-4] represent spot analyses of Niels_167_Foto-section03. [21-25] represent spot analyses of Niels_167_Foto-section04c. [2], [4], [7-8], [16-19] represent spot analyses of Niels_167_Foto-section05b.

133_Whm	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	sum	ms	pg
4	47,59	0,1518	32,07	2,6	0,4975	0,6859	0,0672	0,0473	10,17	93,8797	0,992981	0,007019
13	47,87	0,1428	31,26	2,6	0,2605	0,9216	0,0407	0,1561	9,66	92,9117	0,97603	0,02397
17	47,01	0,0198	37,64	0,9652	0,0242	0,0751	0,0254	0,0829	0,3493	86,1919	0,734918	0,265082
15	46,74	1,2968	29,91	4,21	0,0946	1,83	0,0161	0,2628	10,55	94,9103	0,963523	0,036477
16	48,18	0,0759	31,95	2,54	0,0654	1,4546	0,0036	0,1447	10,56	94,9742	0,9796	0,0204

14_white	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	sum	ms	pg
1	49,51	0,3267	28,32	3,79	0,037	2,61	0,0029	0,2516	6,63	91,4782	0,945471	0,054529
4	47,92	0,3386	31,13	4,05	0,0585	1,83	0,0094	0,3854	6,5	92,2219	0,917337	0,082663
12	47,39	0,5184	31,75	3,99	0,0661	1,3882	0,0207	0,4527	7,45	93,0261	0,915457	0,084543
17	47,45	0,3433	30,89	4,37	0,0516	1,83	0,0006	0,2885	7,04	92,264	0,94137	0,05863
19	47,08	0,3905	31,27	4,31	0,0507	1,68	0,003	0,3177	6,92	92,0219	0,934776	0,065224
27	47,11	1,0564	32,33	4,05	0,0433	1,3527	0,0115	0,3852	6,97	93,3091	0,922516	0,077484
29	47,14	0,8607	31,48	4,23	0,0268	1,5845	0,0003	0,3453	7,13	92,7976	0,931443	0,068557
33	47,77	0,8717	30,74	4,14	0,0273	1,72	0,0162	0,3238	7,2	92,809	0,936024	0,063976
34	47,8	0,9388	30,97	4,23	0,0376	1,74	0,0195	0,3235	7,38	93,4394	0,937541	0,062459

23_White	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	sum	ms	pg
21	44,69	0,3426	35,01	3,16	0,0102	0,8702	0,1851	0,9007	6,82	91,9888	0,832837	0,167163
23	45,98	0,261	35,14	2,99	0,0214	0,7318	0,09	0,7924	6,98	92,9866	0,852854	0,147146
42	44,39	0,2782	35,08	2,99	0,0307	0,8761	0,1712	1,0509	8,15	93,0171	0,836142	0,163858
46	45,23	0,2986	35,07	3,34	0,0268	0,8662	0,0744	0,8459	7,1	92,8519	0,84669	0,15331
72	46,5	0,1273	33,51	4	0,1445	0,7848	0,0565	0,4411	7,16	92,7242	0,914387	0,085613
75	44,92	0,1549	32,71	4,15	0,1239	0,761	0,1993	0,7662	8,52	92,3053	0,879759	0,120241
94	46,9	0,2907	34,31	3,05	0,0278	0,8564	0,1252	0,6051	6,85	93,0152	0,881638	0,118362
95	46,32	0,1739	33,22	3,04	0,0371	1,0646	0,1125	0,4955	7,8	92,2636	0,911954	0,088046
96	44,73	0,3792	34,08	3,3	0,0117	1,0387	0,1536	0,5456	7,62	91,8588	0,90186	0,09814

Table 1 [ctnd] - WD measurements of spot analysis of white mica for samples 133, 14, and 23. Element oxides are displayed in percentages. The left column represents spot analysis number (or label).

85_Biotite	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	sum	phl	ann
17	37,03	1,4808	16,87	12,39	0,1119	16,36	0,0945	0,1433	8,86	93,3405	0,29819	0,70181
18	37,32	1,4946	17,02	12,23	0,1598	16,11	0,0522	0,1454	9,25	93,782	0,298693	0,701307
19	37,19	1,5066	17,12	12,2	0,107	15,54	0,087	0,1598	9,46	93,3704	0,305772	0,694228
38	37,54	0,1615	28,34	5,97	0,0907	0,1234	23,38	0,0185	0,0076	95,6317	0,964466	0,035534
39	37,34	0,1113	27,8	6,14	0,0589	0,1244	23,84	0,0176	0,0109	95,4431	0,965146	0,034854
41	36,91	1,4431	16,81	12,54	0,1004	15,64	0,0391	0,1529	9,68	93,3155	0,310263	0,689737
42	37,16	0,0703	20,98	24,57	3,78	3,68	8,3	0,0176	0,0085	98,5664	0,789287	0,210713
48	37,16	1,69	16,43	11,66	0,1463	15,65	0,1666	0,046	9,72	92,6689	0,294778	0,705222

14_biotite	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	sum	phl	ann
21	35,02	3,14	16,16	19,81	0,2971	9,5	0,1021	0,1185	9,03	93,1777	0,539148	0,460852
23	35,09	3,12	16,31	19,59	0,3275	9,56	0,0389	0,1065	9,25	93,3929	0,534806	0,465194
32	35,86	2,34	16,85	17,53	0,1795	11,11	0,0219	0,0781	9,3	93,2695	0,469559	0,530441
35	36,24	2,62	17,72	16,82	0,1395	10,82	0,0672	0,0657	8,97	93,4624	0,465851	0,534149
36	35,8	2,31	16,89	17,7	0,1542	11,15	0,1028	0,1124	8,82	93,0394	0,471068	0,528932
37	35,51	2,49	16,74	17,38	0,1689	10,9	0,0371	0,0971	9,36	92,6831	0,472173	0,527827

167_Biotit	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	sum	phl	ann
10	36,03	0,4305	19,15	17,52	0,2705	11,64	0,0852	0,0793	9,26	94,4655	0,46	0,54
5	36,18	0,9196	18,06	17,38	0,273	11,57	0,1667	0,1451	8,88	93,5744	0,46	0,54
6	35,69	0,9426	18,84	17,47	0,2677	11,23	0,2265	0,0487	7,4	92,1155	0,47	0,53
7	35,29	0,9818	18,19	17,25	0,2864	11,62	0,1779	0,0683	8,37	92,2344	0,45	0,55
incl in Grt	36,1	1,4742	17,55	17,65	0,314	11,55	0,1086	0,0595	9,33	94,1363	0,461593	0,538407
10	36,14	1,0312	18,53	18,28	0,2914	11,73	0,1812	0,0608	6,84	93,0846	0,47	0,53
9	33,4	1,5814	18,41	14,04	0,2634	11,97	0,0582	0,0872	8,01	87,8202	0,40	0,60
10	33,99	1,6031	18,44	13,95	0,2635	12,38	0,0392	0,0717	8,04	88,7775	0,39	0,61
11	34,72	1,6507	18,54	13,64	0,2565	12,82	0,0309	0,0805	7,9	89,6386	0,37	0,63
12	36,11	1,72	17,95	13,75	0,26	13,48	0,0215	0,0846	7,93	91,3061	0,36	0,64
13	35,08	1,5906	18	13,86	0,2663	13,09	0,0917	0,1311	7,91	90,0197	0,37	0,63
14	37,08	1,6099	17,85	13,74	0,2564	14,05	0,0446	0,0888	8,05	92,7697	0,35	0,65
15	37,69	1,6071	17,08	13,88	0,2825	14,13	0,1121	0,1287	7,98	92,8904	0,36	0,64
22	36,58	1,91	17,09	14,12	0,3186	14	0,0068	0,0802	9,2	93,3056	0,36	0,64
23	36,5	1,91	17,04	14,2	0,3125	14,06	0,0423	0,1069	9,14	93,3117	0,36	0,64
24	35,46	1,72	17,25	13,51	0,2886	14,31	0,0193	0,0807	8,85	91,4886	0,35	0,65

23_Biotite	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	sum	phl	ann
52	35,7	1,2493	18,19	18,55	0,1813	9,73	0,3644	0,4147	8,12	92,4997	0,516812	0,483188
53	34,25	1,2393	17,9	18,65	0,1933	9,74	0,3349	0,4498	8,22	90,9773	0,517898	0,482102
54	34,82	0,927	18,26	18,7	0,2118	10,48	0,259	0,4823	8,18	92,3201	0,500268	0,499732
97	34,67	3,3	17,17	17,99	0,0736	10,42	0,1376	0,0775	9,13	92,9687	0,492028	0,507972
98	34,87	2,79	17,27	17,73	0,1119	10,89	0,0563	0,0744	8,67	92,4626	0,477374	0,522626

Table 1 [ctnd] - WD measurements of spot analysis of biotite for samples 85, 14, 167 and 23. Element oxides are displayed in percentages. The left column represents spot analysis number (or label). For sample 167, from bottom to top: [10] represents a spot analysis of Niels_167_Foto-section01, line1. [5-7], [incl in Grt] and [10] represent spot analyses of Niels_167_Foto-section01, line2. [9-14] represent spot analyses of Niels_167_Foto-section05b. [15], [22-24] represent spot analyses of Niels_167_Foto-section05.

85	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cr2O3	Sum
1	1,56	13,97	12,37	43,33	0,3099	11,81	0,3881	0,1928	11,99	0,2978	96,2186
2	0,9096	8,21	15,74	48,6	0,1394	11,92	0,3907	0,138	9,99	0,2818	96,3195
3	0,0985	16,8	15,57	36,92	8,64	0,1612	1,5965	0,2546	12,54	0,1947	92,7755
4	0,0365	16,28	15,03	37,85	9,92	0,1756	1,6426	0,2172	12,92	0,1958	94,2677
7	1,54	13,53	12,35	43,23	0,3086	11,95	0,4366	0,1213	12,43	0,2746	96,1711
8	0,3948	3,75	18,74	53,19	0,0356	12,55	0,1295	0,056	7,96	0,295	97,1009
9	0,1651	16,71	16,3	37,08	7,83	0,2603	1,5747	0,2148	12,22	0,3825	92,7374
13	0,0863	16,72	15,37	36,88	9,59	0,0655	1,84	0,3389	12,01	0,1404	93,0411
14	0,1426	17,48	16,79	36,65	7,53	0,2784	1,6131	0,2484	10,99	0,1096	91,8321
15	0,1241	16,52	15,28	36,99	7,15	0,5462	1,5726	0,2392	11,55	0,1211	90,0932
16	44,2	0,388	13,41	12,42	0,4421	12,52	10,39	1,94	0,3093	0,1876	96,207
20	63,92	0,0175	18,31	0,4256	0,0059	0,0111	0,0896	0,3855	16	0,0004	99,1656
21	27,81	0,0846	18,05	17,6	0,3126	21,42	0,2109	0	0,0275	0,4111	85,9267

23	42,76	0,3938	14,39	12,42	0,3165	12,06	11,11	1,87	0,261	0,1828	95,7641
24	21,82	0,2192	6,88	6,11	0,5921	4,85	36,29	0,5701	0,1935	0,0188	77,5437
26	49,6	0,2871	7,14	8,95	0,2352	16,96	12,17	0,8522	0,1567	0,0219	96,3731
27	44,63	0,4216	12,24	11,7	0,3087	13,35	11,35	1,59	0,2641	0,2119	96,0663
28	26,66	0,0772	21,6	12,64	0,1791	24,29	0,0549	0,0317	0,0058	0,1261	85,6648
29	26,89	0,0914	21,38	12,85	0,1666	24,53	0,0313	0,0049	0,015	0,1269	86,0861
30	26,85	0,0803	21,68	13	0,175	23,79	0,0832	0,0099	0,0189	0,0706	85,7579
31	49,78	0,2915	6,94	8,9	0,2681	16,97	12,54	0,7288	0,1569	0,0464	96,6217
32	53,52	0,0895	2,94	7,31	0,2878	19,08	12,57	0,3378	0,0531	0,0207	96,2089
33	45,02	0,4396	11,22	11,62	0,2524	13,63	12,02	1,2402	0,3022	0,3834	96,1278
34	43,67	0,4663	13,05	11,96	0,2927	12,82	11,8	1,49	0,3139	0,1064	95,9693
35	98,4	0,003	0,0444	0,3453	0,0299	0	0,0295	0	0	0,011	98,8631
37	0,0175	0,0173	0,0014	1,37	0,7903	1,67	54,45	0,0536	0,0126	0,0168	58,3995
40	37,68	0,1371	26,87	7,31	0,0765	0,1432	23,45	0	0,0142	0,2238	95,9048
43	46,6	0,3357	9,46	10,48	0,2521	14,69	12,2	1,1025	0,2017	0,151	95,473
44	28	0,0873	18,34	16,47	0,2931	21,19	0,204	0,0339	0,2658	0,5423	85,4264
45	37,23	0,07	26	8,83	0,0601	0,0809	23,04	0,0009	0	0,1485	95,4604
47	98,22	0,0057	0,0202	0,1109	0,0115	0	0,0548	0,0271	0,0027	0	98,4529
167	**SiO2**	**TiO2**	**Al2O3**	**FeO**	**MnO**	**MgO**	**CaO**	**Na2O**	**K2O**	**Cr2O3**	**sum**
Niels_167_Bi05	36,27	2,54	17,27	15,06	0,3114	12,26	0,0493	0,0722	9,15	0,145	93,1279
Niels_167_Bi06	35,69	2,57	17,86	15,07	0,275	11,65	0,0538	0,0729	9,2	0,1228	92,5645
Niels_167_Bi07	36,78	2,42	16,54	15,12	0,2574	12,69	0,0226	0,0656	9,27	0,0895	93,2551
Niels_167_Bi08	36,69	2,41	16,47	15,52	0,2649	12,96	0,0309	0,0816	9,26	0,0985	93,7859
Niels_167_Bi09	36,86	2,47	16,21	15,42	0,2741	13,04	0,0241	0,0507	9,28	0,1028	93,7317
Niels_167_Bi10	37,16	2,64	16,49	15,22	0,2607	12,64	0,0146	0,0822	9,14	0,0863	93,73
Niels_167_Bi11	36,44	2,52	17	14,97	0,2807	12,23	0,0725	0,0474	9,58	0,1099	93,2505
Niels_167_Bi12	36,16	2,09	16,91	15,23	0,2972	12,57	0,0488	0,0562	9,68	0,0631	93,1053
Niels_167_Bi13	36,25	2,43	17	15,28	0,2371	12,39	0,0474	0,0577	9,34	0,082	93,1142

Niels_167_Bi14	36,44	2,61	16,73	15,02	0,2691	12,39	0,0638	0,079	9,45	0,0649	93,1168
Niels_167_Chl15	27,31	0,298	20,08	20,45	0,3678	16,51	0,097	0	0,6149	0,0763	85,804
Niels_167_Pll16	54,31	0,0055	28,22	0,0006	0,0054	0,0031	10,06	6,13	0,1381	0,0054	98,8781
Niels_167_Bi17	35,71	2,32	17,19	15,63	0,3208	12,68	0,0994	0,125	9,39	0,0476	93,5128
Niels_167_Pl18	56,39	0,0048	26,71	0,109	0	0	8,46	6,87	0,1423	0	98,6861
Niels_167_Bi19	35,78	1,92	17,1	16,59	0,2531	12,57	0,103	0,0406	9,61	0,072	94,0387
Niels_167_GtOre28	0,1736	99,66	0,0739	0,41	0,0327	0	0,3951	0,0149	0,0889	0,0732	100,9

Table 1 [ctnd] – Remaining spot analyses.

Table 2 - An overview of the approximate coordinates of the BSE images of the more specific, smaller-scale areas analyzed and additionally presented in this appendix.

		BSE image areas: approximate coordinates per sample				
lithotectonic unit	lithology	sample	area	app. fig.	rep. fig.	approx. Coordinates (x, y)
Bachkovo-Dobralak unit	**"biotite[-epidote] metagranite" (As/bimu[/y])**	155	155-WhM-01	1		-0,776, 23,564
		155	155-WhM-02	2		2,381, 22,979
		155	155-WhM-03	3		2,846, 6,187
		155	155-WhM-04	4		-0,852, 12,007
		133	133-Gt-01		2-3	12,201, 22,815
		133	133-Gt-01b		2-4	12,819, 22,859
		133	133-Gt-01c		2-5	11,569, 22,397
	"amphibolite" (As/a)	85	85-Am-Bt-Chl-02	5		30,598, 9,528
		85	85-Am-Bt-unknown-03	6		28,731, 21,43
		85	85-Am- Chl-04	7		37,723, 26,466
		85	85-Am- Chl-04c	8		38,407,26,855
	"biotite schist, with and without garnet" (As/sh)	14	Niels_14_Foto-section01		2-10	36,886, 20,585
		14	Niels_14_Foto-section01b	9		36,523, 20,344
		14	Niels_14_Foto-section02	10		34,157, 22,436
Asenitsa unit	**"biotite and amphibole-biotite gneiss and gneiss-schist" (As/bg)**	167	Niels_167_Foto-section01		2-15	-26,543, 2,844
		167	Niels_167_Foto-section03	11		-27,888, 1,350
		167	Niels_167_Foto-section04	12		-28,629, 1,304
		167	Niels_167_Foto-section04b	13		-27,919, 1,320
		167	Niels_167_Foto-section04c	14		-28,273, 1,588
		167	Niels_167_Foto-section05		2-16	-29,174, 1,070
		167	Niels_167_Foto-section05b	15		-29,174, 1,070
	"amphibolite" (As/a)	23	Niels_23_Foto-section01		2-19	5,511, 29,426
		23	Niels_23_Foto-section02	16		-6,33, 27,114
		23	Niels_23_Foto-section02b	17		-6,33, 27,114
		23	Niels_23_Foto-section02c	18		-6,823, 27,319
		23	Niels_23_Foto-section02d	19		-6,823, 27,319
		23	Niels_23_Foto-section02e		2-20	-6,323, 27,384

Bachkovo-Dobralak [lithotectonic] unit

biotiteepidote metagranite (As/bimu)

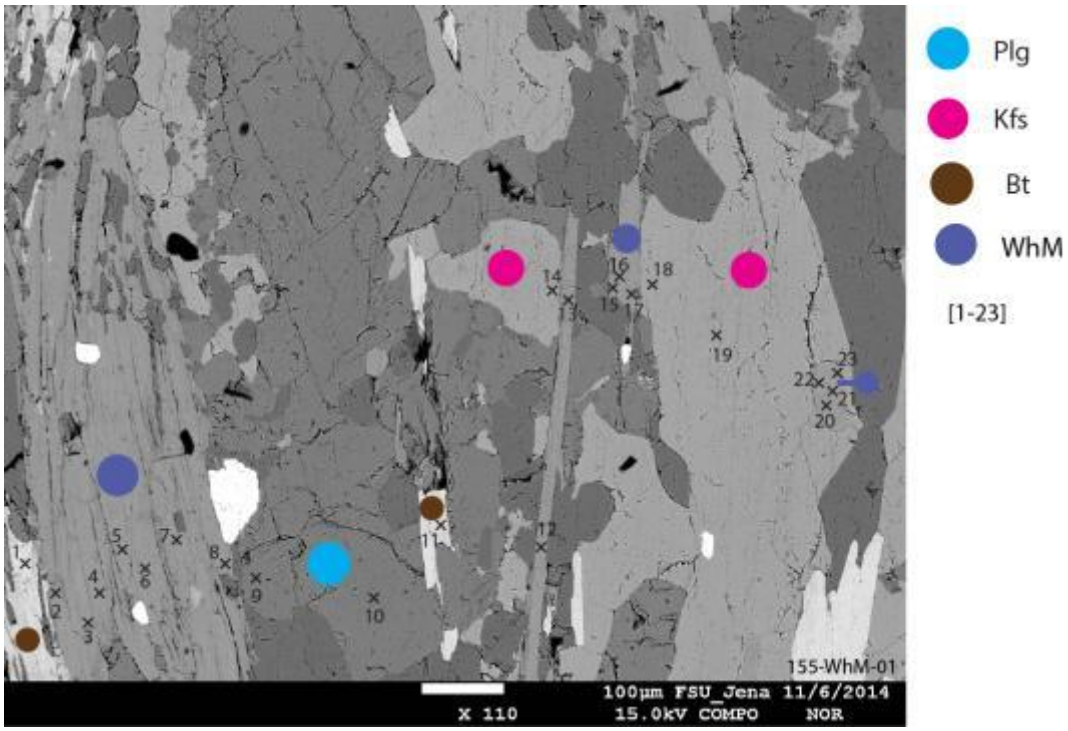


Figure 1 – BSE image of 155-WhM-01.

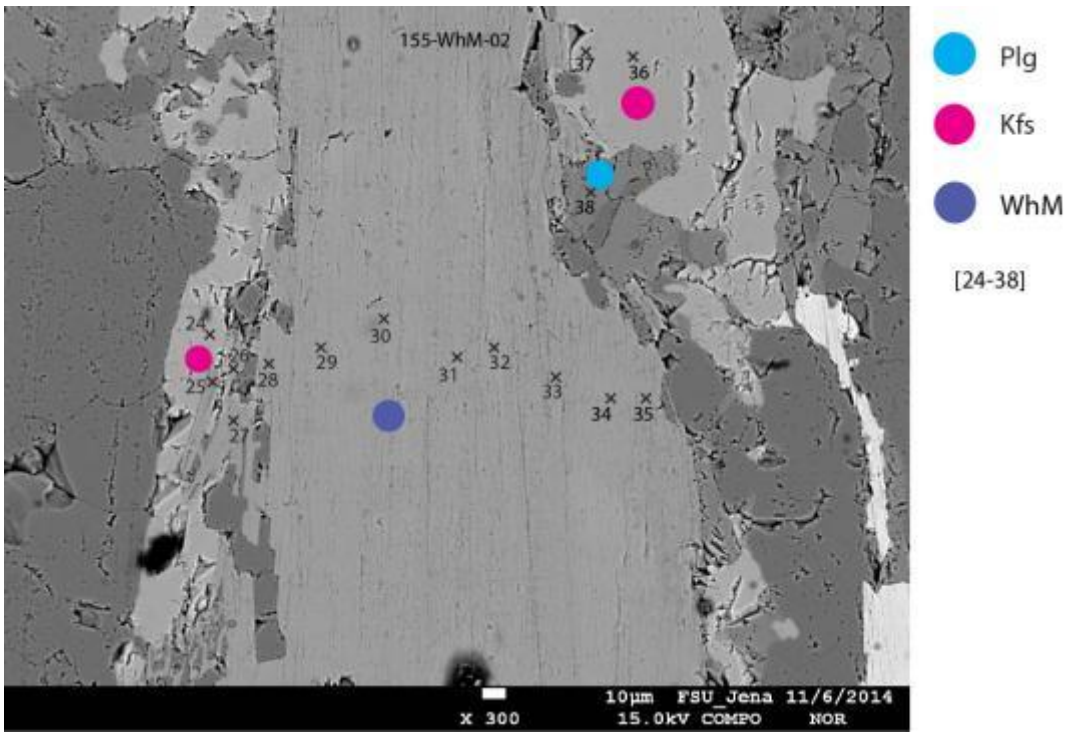


Figure 2 – BSE image of 155-WhM-02.

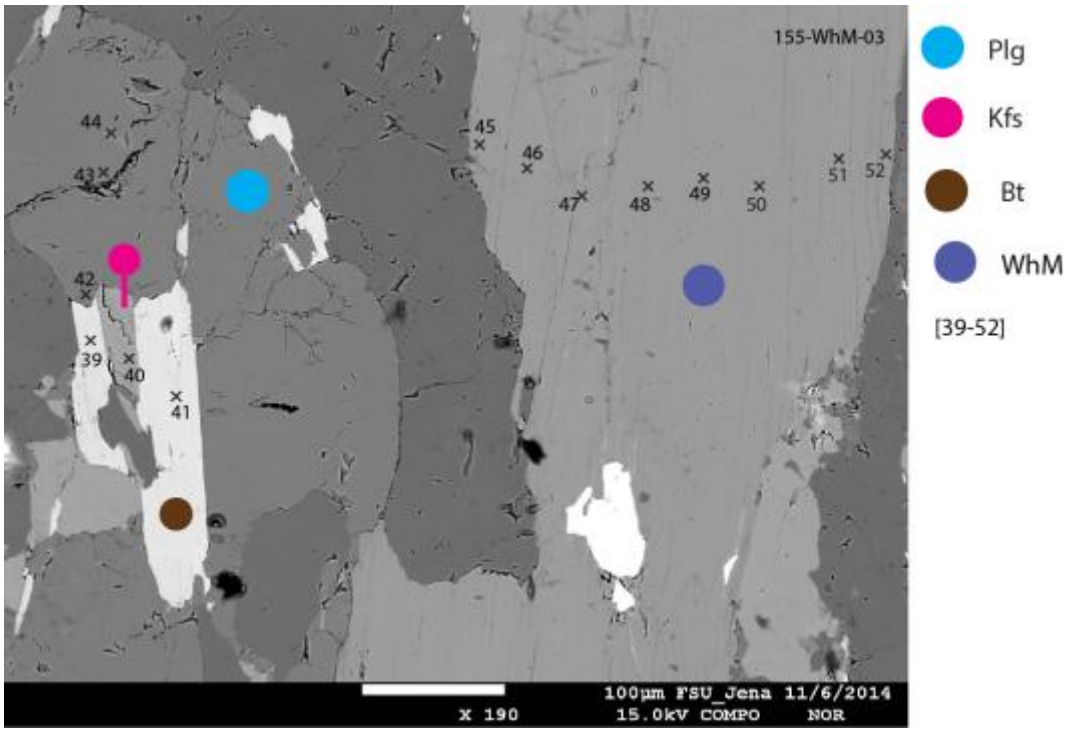


Figure 3 – BSE image of 155-WhM-03.

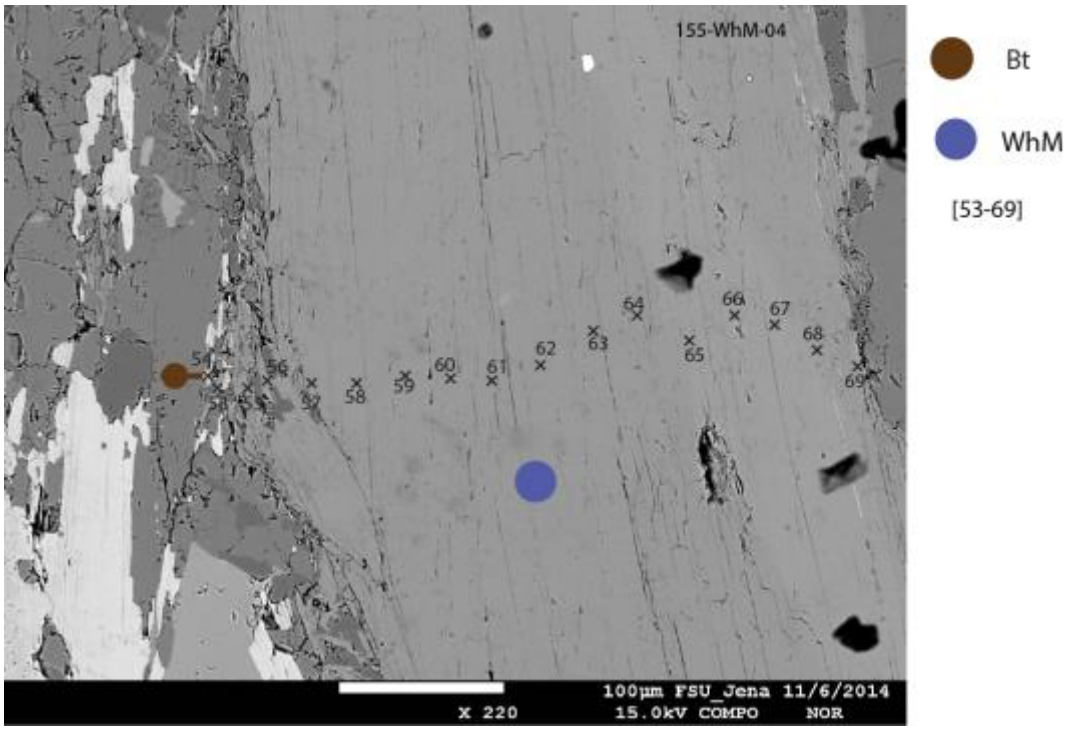


Figure 4- BSE image of 155-WhM-04.

biotite schist, with and without garnet (As/sh)

Sample 14

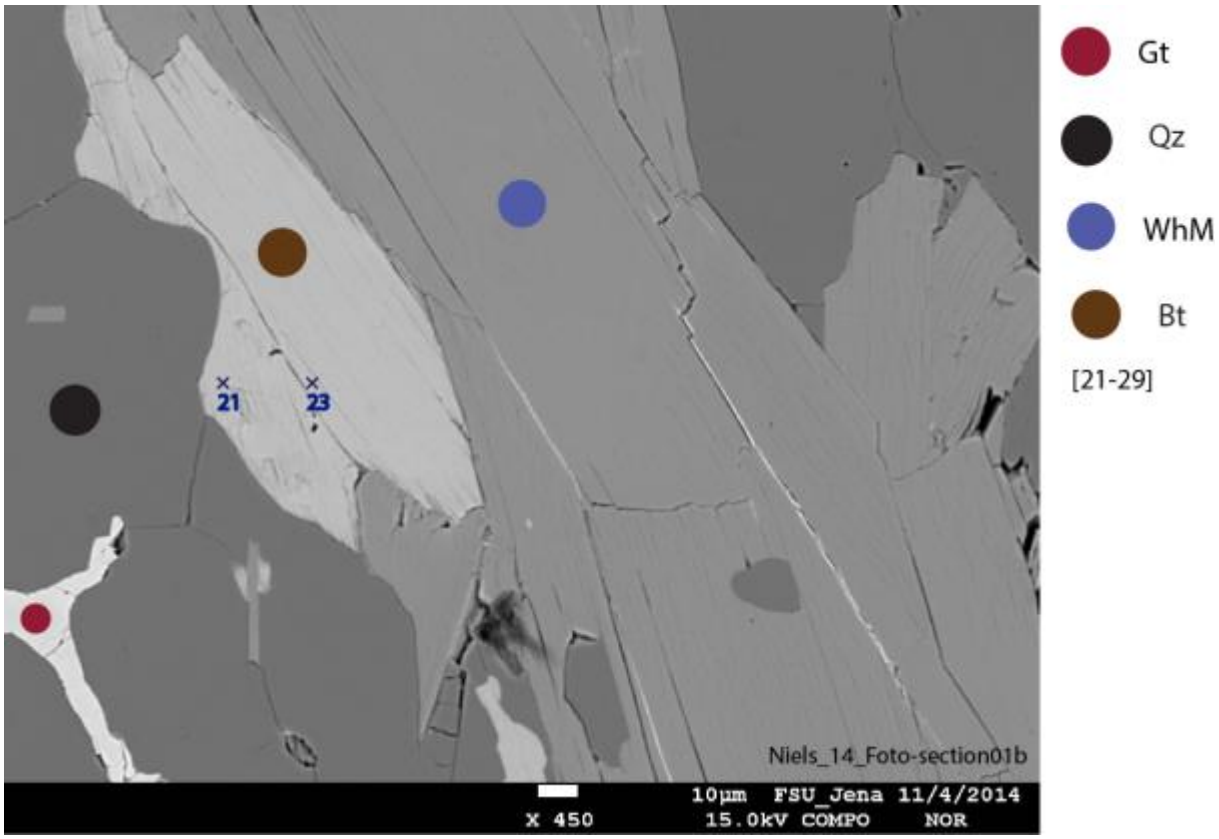


Figure 5 - BSE image of Niels_14_Foto-section01b.

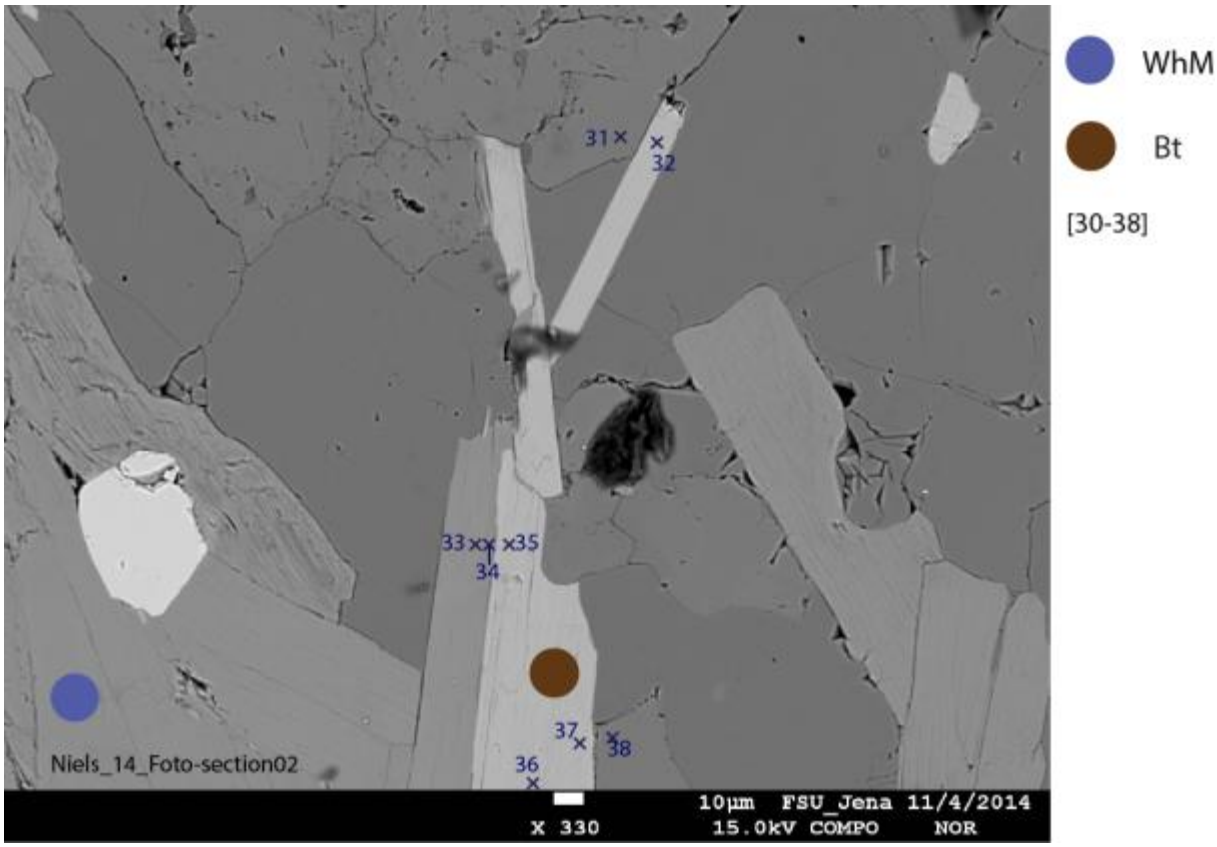


Figure 6 - BSE image of Niels_14_Foto-section02.

Asenitsa [lithotectonic] unit

biotite and amphibole-biotite gneiss and gneiss-schist (As/bg)

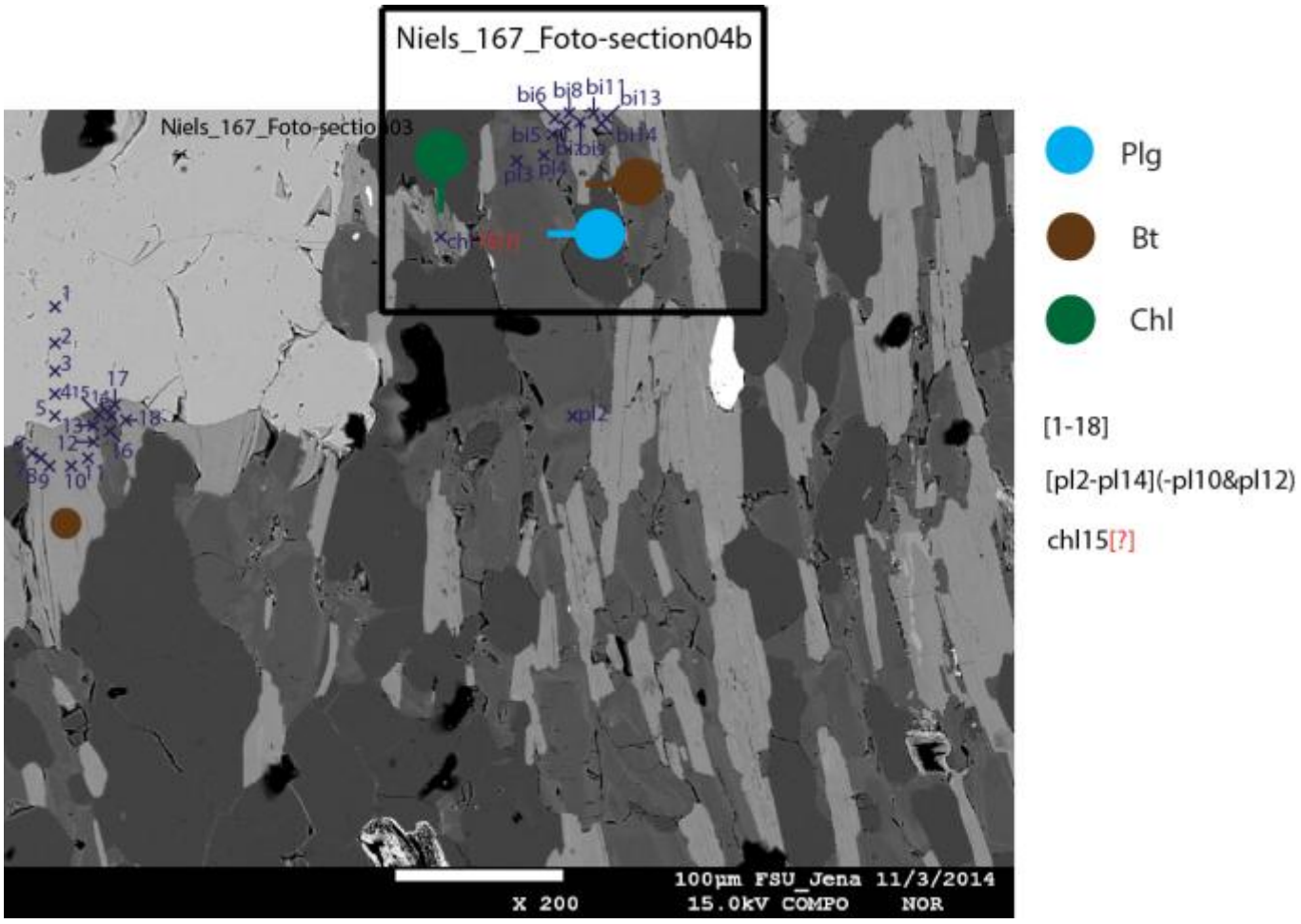


Figure 7 – BSE image of Niels_167_Foto-section03.

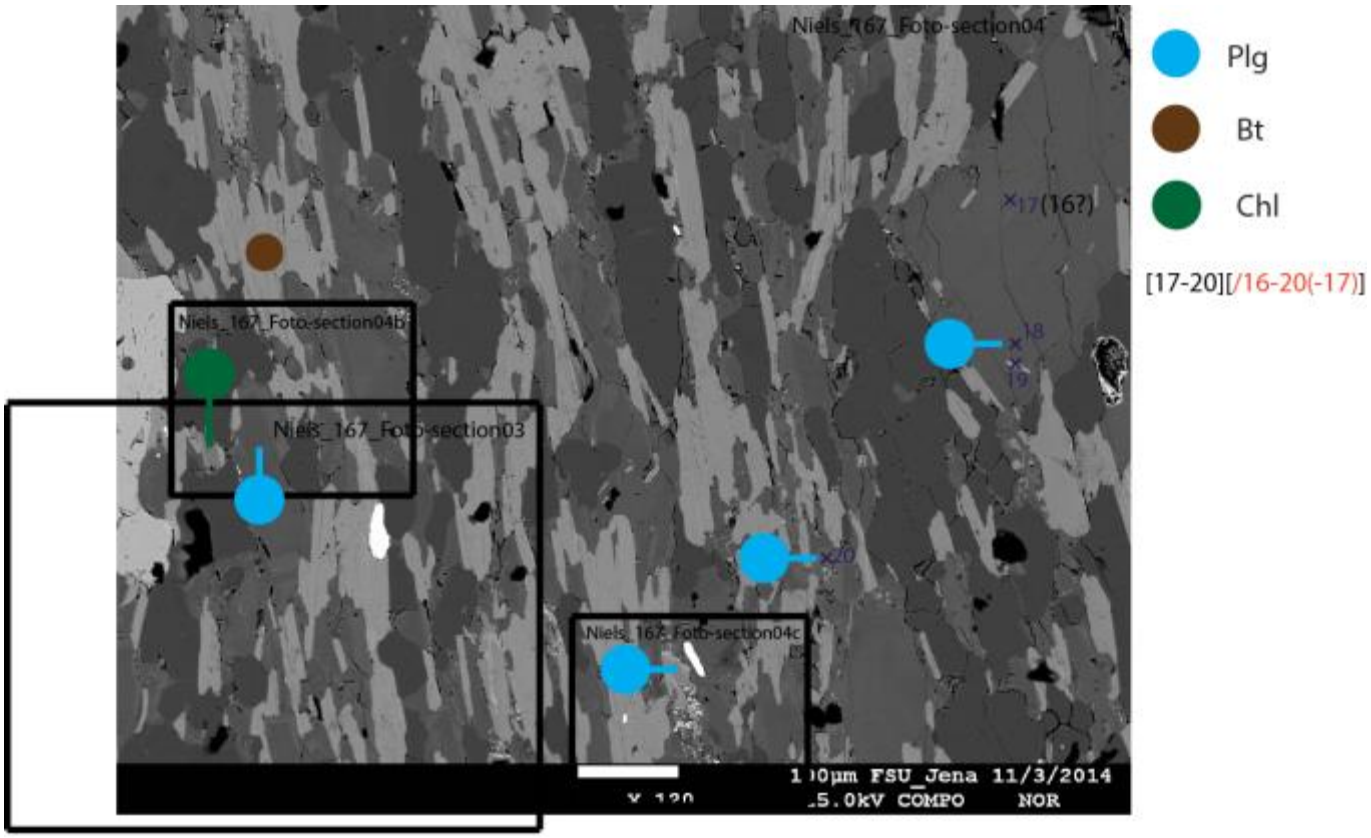


Figure 8 - BSE image of Niels_167_Foto-section04.

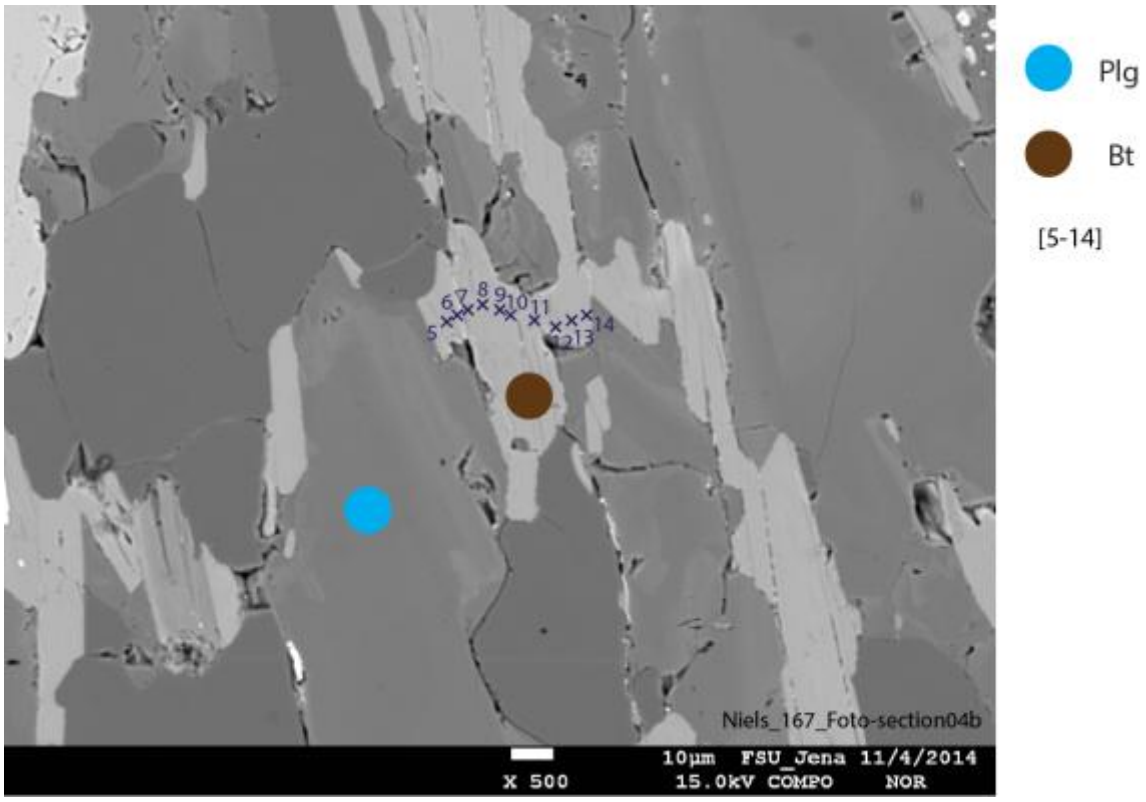


Figure 9 - BSE image of Niels_167_Foto-section04b. Datapoints 5-14 are identical to bi5-bi14 in figure 8.

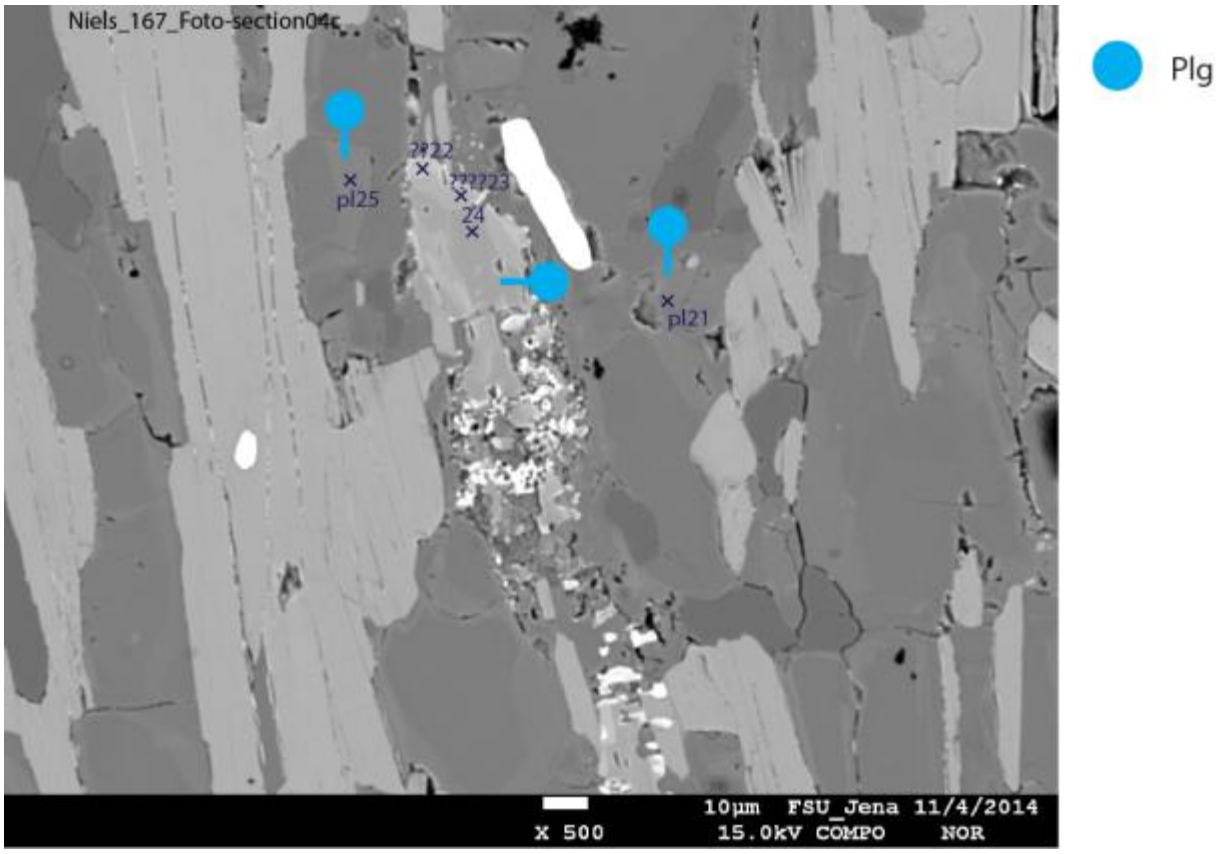


Figure 10 - BSE image of Niels_167_Foto-section04c.

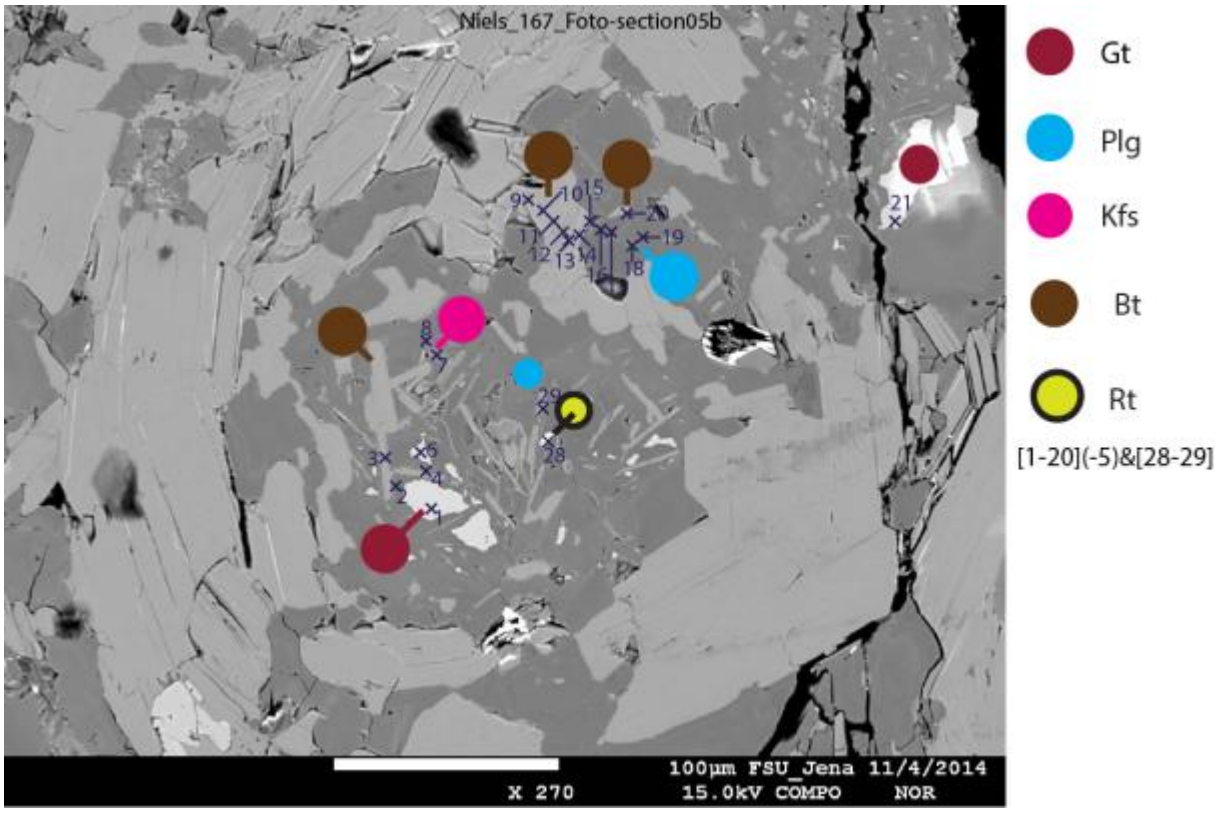


Figure 11 - BSE image of Niels_167_Foto-section05b.

amphibolite (As/a)

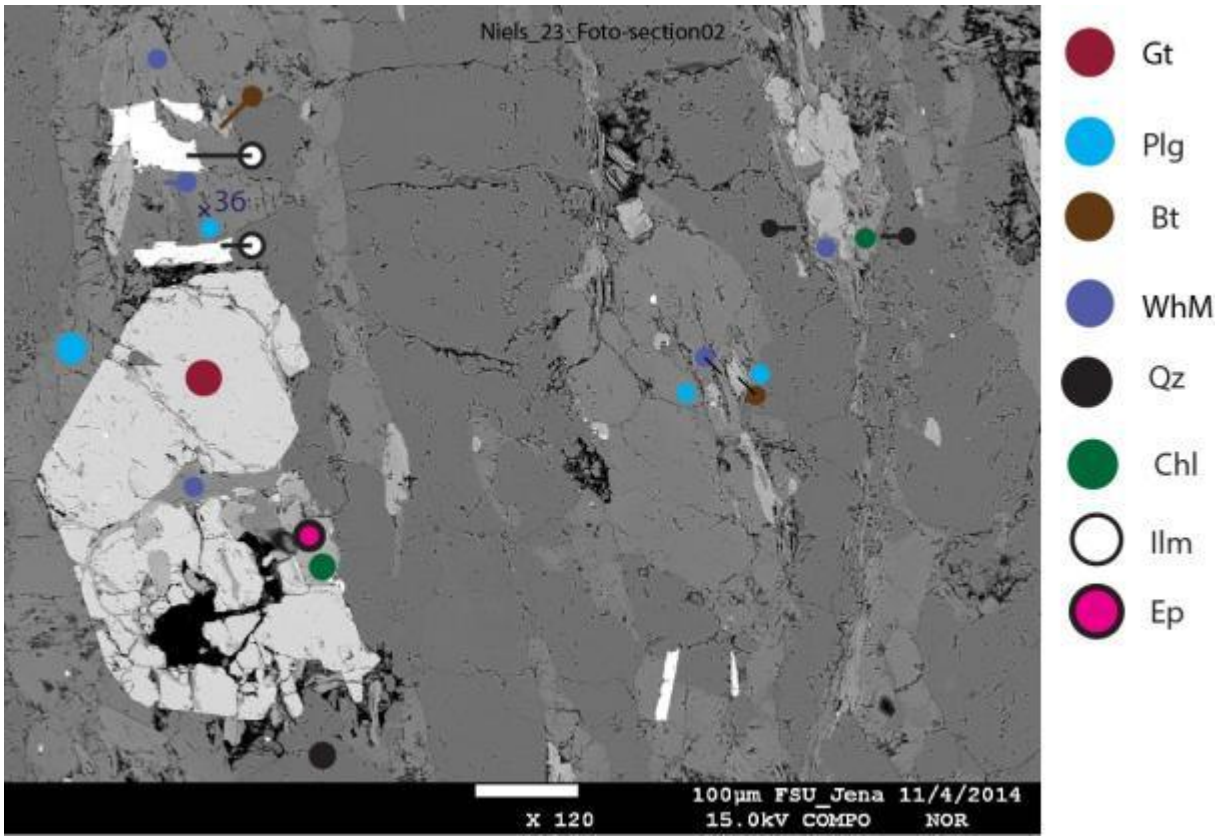


Figure 12 - BSE image of Niels_23_Foto-section02.

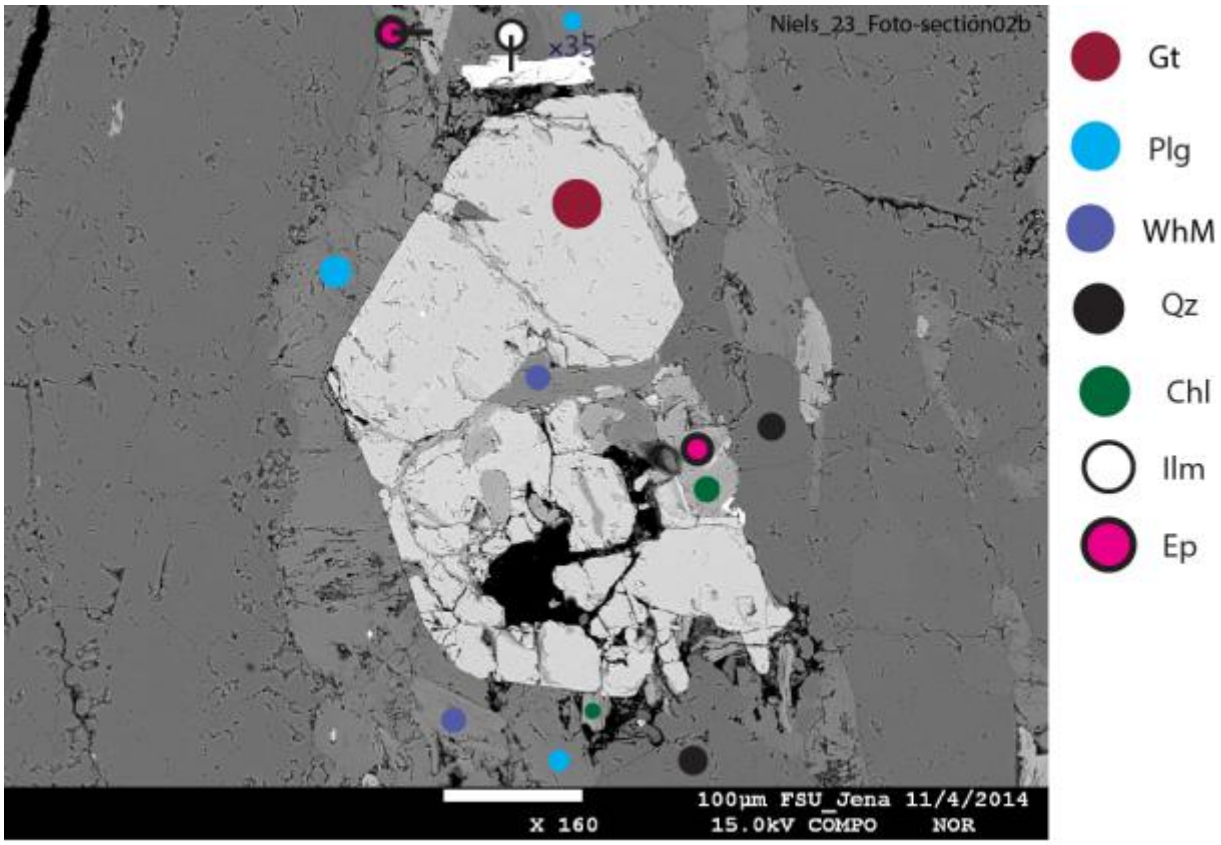


Figure 13 – BSE image of area Niels_23_Foto-section02b.

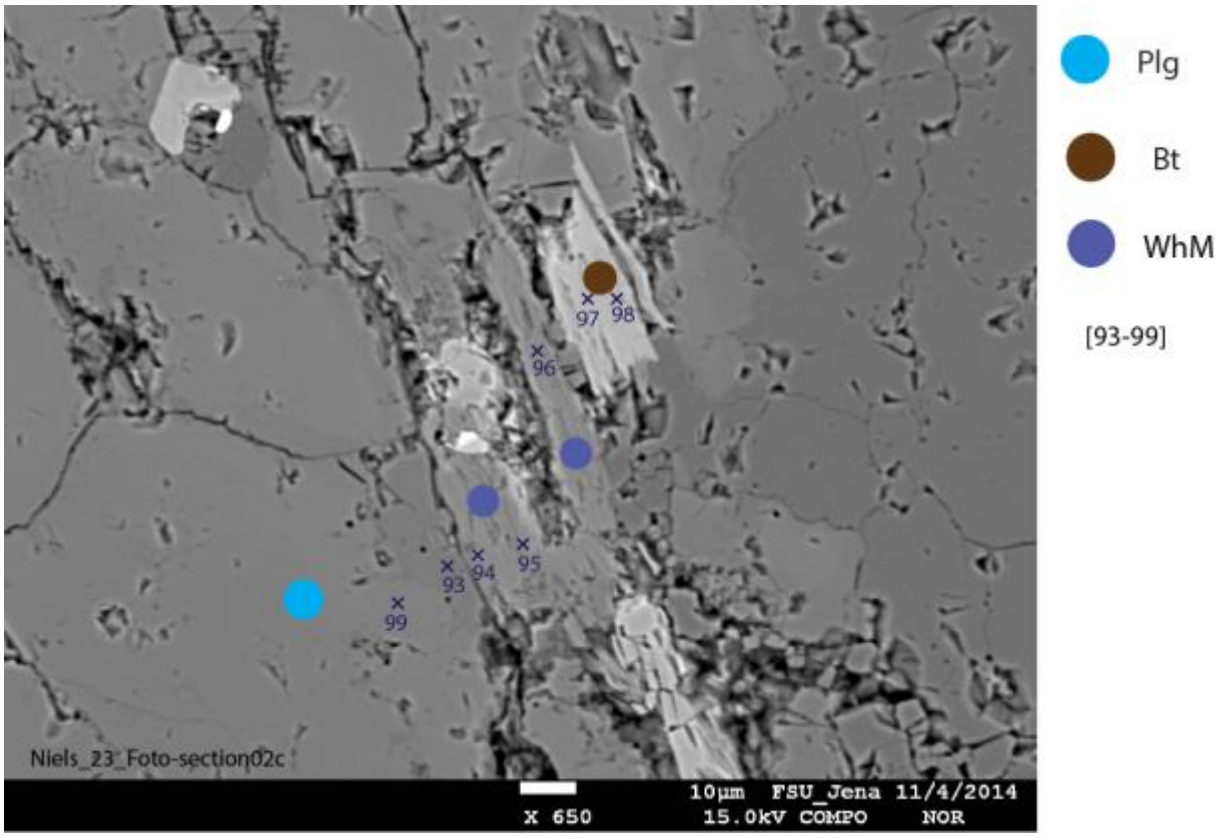


Figure 14 – BSE image of area Niels_23_Foto-section02c.

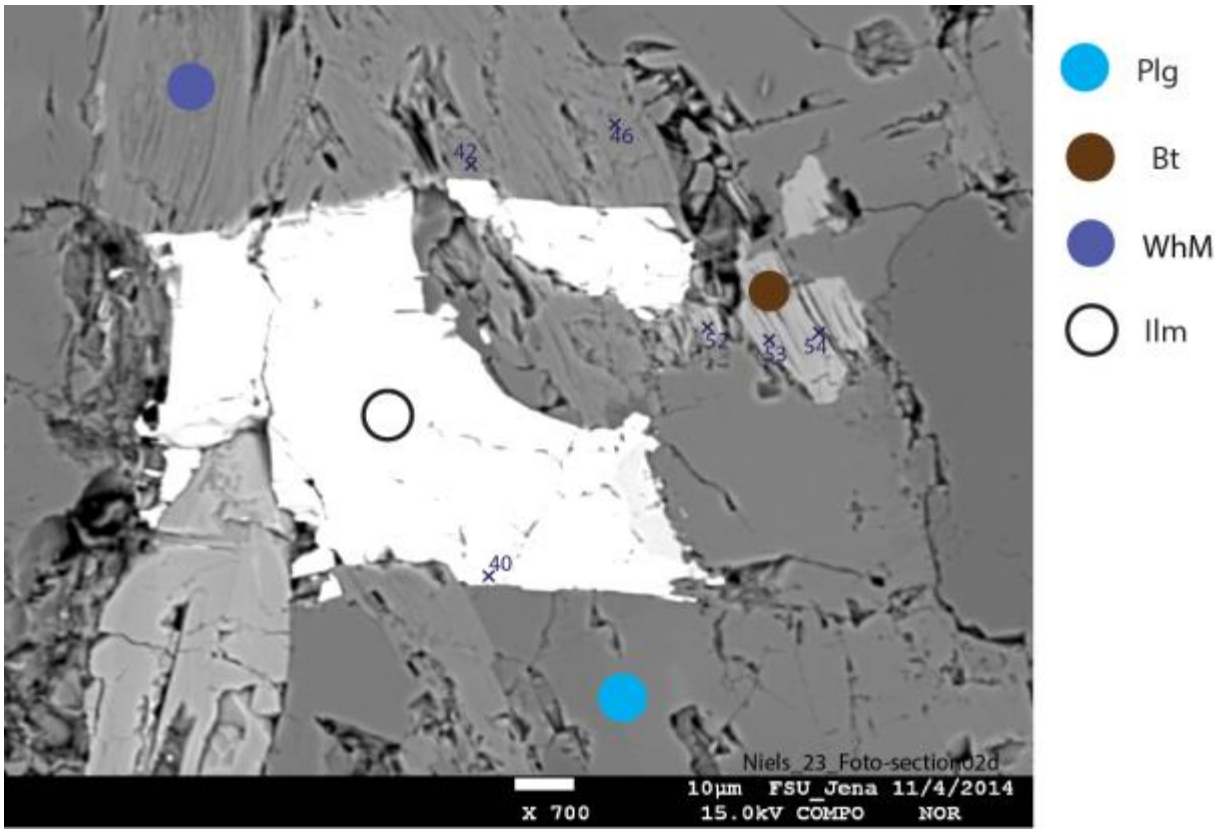


Figure 15- BSE image of Niels_23_Foto-section02d.

List of abbreviations

Gt - garnet

Bt - biotite

Whm – white mica

Ms – muscovite

Plg - plagioclase

Kfs – k-feldspar

Qtz – quartz

Chl - chlorite

Ep - epidote

Fs - feldspar

Am - amphibole

Php - phosphate

Rt - rutile

Ilm - ilmenite