Appendix 1-1A: SEM-BSE images for Flemish Cap Granules with EDS Mineral Analyses and Microphotographs
Sample 2008061-195.1L

Flemish Cap Sample 195.1L Lithology Summary Notes

Granule 1 (Sites 1, 1.1, 1.2) Microphotographs: Figures 1-1A.27, 1-1A.28.
Holocrystalline igneous rock made up of dominantly hornblende and quartz. There are also minor amounts of titanite and apatite (Figs. 1-1A.3,4).

Granule 2 (Sites 2, 2.1, 2.2, 2.3) Microphotographs: Figures 1-1A.29, 1-1A.30.
Holocrystalline granite. This Granule consists of dominantly quartz, K-feldspar, and albite.Perthite can be seen between K-feldspar and albite. Rare zircon crystals. Late fractures and titania minerals are present.

Granule 3 (Sites 3, 3.1, 3.2, 3.3, 3.4, 3.5) Microphotographs: Figures 1-1A.31, 1-1A.32.
Holocrystalline granitic rock. This Granule consists of mainly quartz, K-feldspar, and albite. Minor minerals include biotite, labradorite, oligoclase, and chlorite. Rare zircon and zincite are also present. Chlorite and dissolution voids appear to be late.

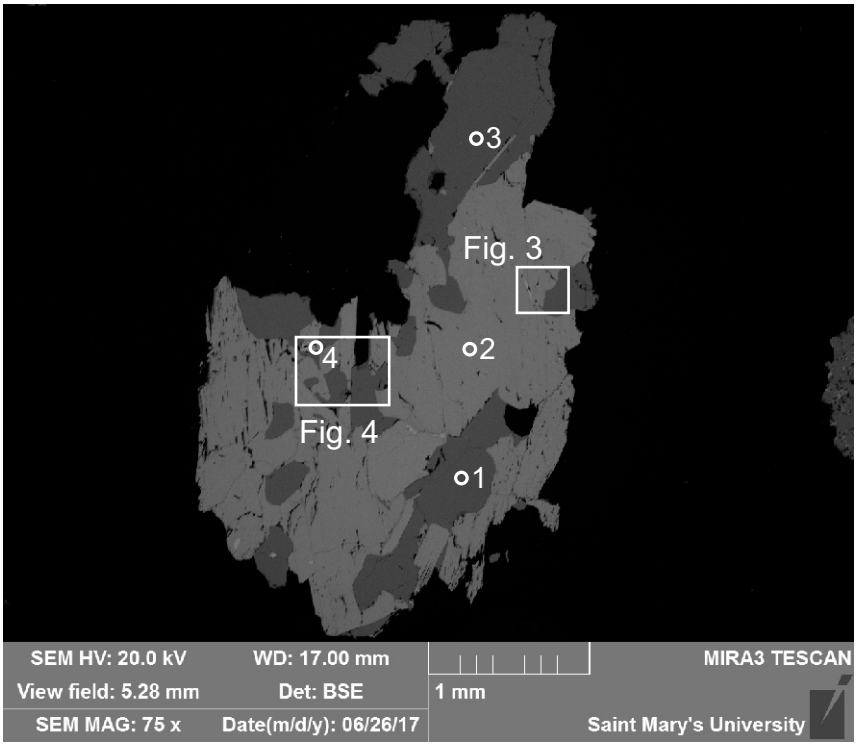
Granule 4 (Sites 4, 4.1, 4.2) Microphotographs: None.
Deformed ?granitic rock, highly chloritized, possibly metamorphosed. Main minerals include K-feldspar, quartz, andesine, and chlorite. Late minerals are chlorite, and rare barite, monazite, titania, and pyrite.

Granule 5 (Sites 5, 5.1, 5.2) Microphotographs: Figures 1-1A.33, 1-1A.34.Porous dolostone. This Granule consists mostly of dolomite. There is also rare K-feldspar, and late possibly diagenetic pyrite.

Granule 6 (Sites 6, 6.1, 6.2) Microphotographs: None.
Similar to Granule 5. Consists of mainly dolomite and K-feldspar, although detrital minerals are more common. In the thin section (Fig. 1-1A.1) the Granule appears concentric, with possible ?growth rings. Late possibly diagenetic minerals include pyrite, and probable iron oxides.

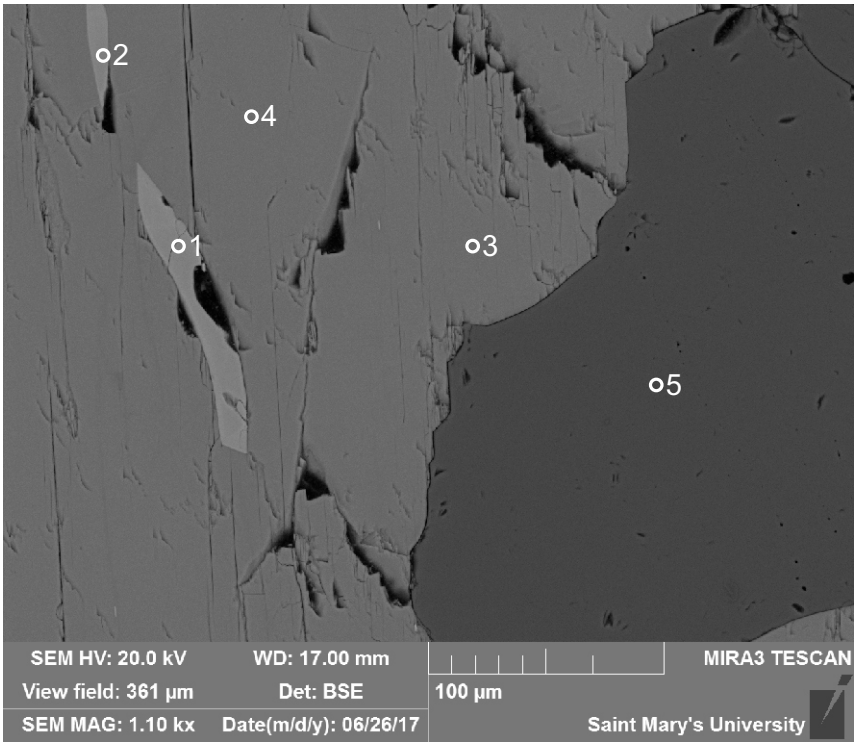
Granule 7 (Sites 7, 7.1, 7.2) Microphotographs: Figures 1-1A.35, 1-1A.36.
Possible metamorphic rock or highly altered granite. Main minerals include quartz, albite, and epidote. Epidote is most likely secondary, and appears as veins in the Granule. Rare zircon, titanite, and apatite are usually found in association with epidote.

Figure 1-1A.1: Scanned thin section of Flemish Cap sample 195.1L. Granules are numbered in red corresponding to analysed sites.



1:Quartz
2:Hornblende
3:Quartz
4:Apatite

Figure 1-1A.2: Sample 195.1L site 1. Holocrystalline rock. Composed of dominantly hornblende (2) and quartz (1 & 3).



1:Titanite
2:Titanite
3:Hornblende
4:Hornblende
5:Quartz

Figure 1-1A.3: Sample 195.1L site 1.1. Interlocking contact between quartz (5) and hornblende (3 & 4). Titanite (1 & 2) appears to be late filling voids.

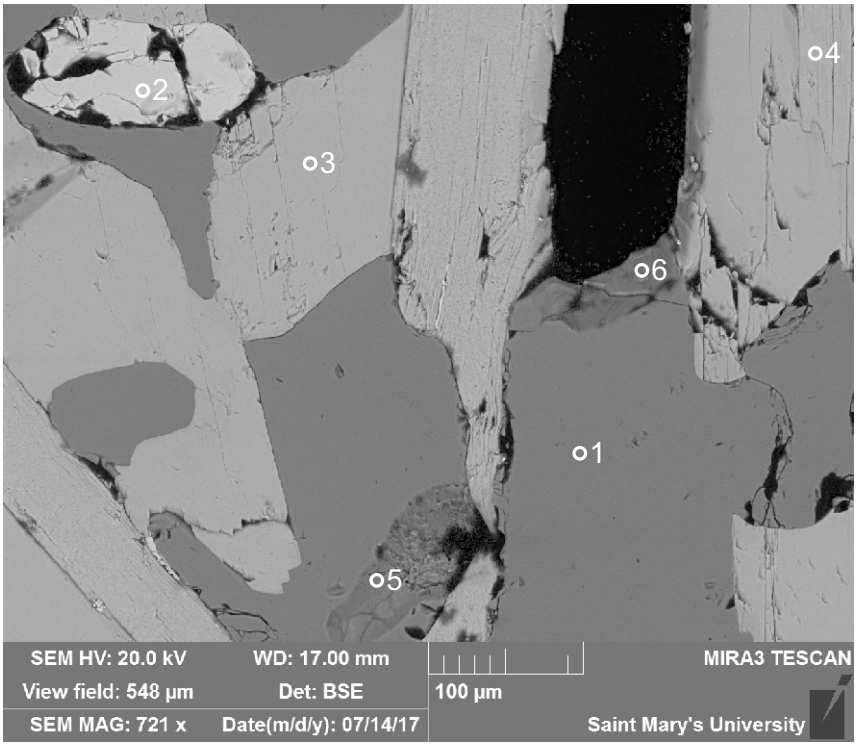


Figure 1-1A.4: Sample 195.1L site 1.2. This site contains relatively subhedral grains of quartz (1, 5), hornblende (3) and biotite (4) exhibiting sharp contact relationship. Apatite (2) is filling a void.

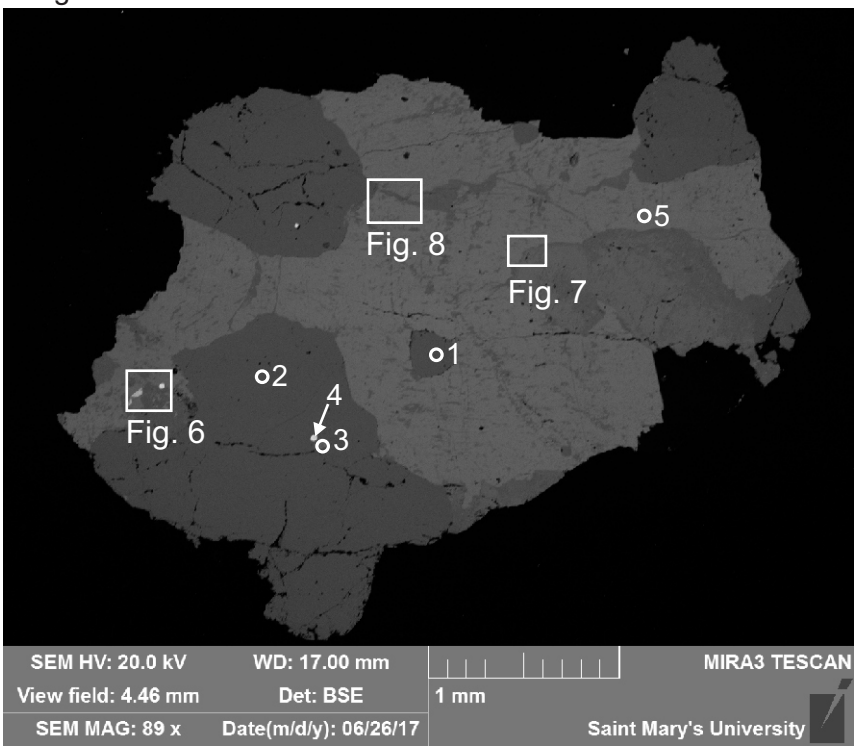
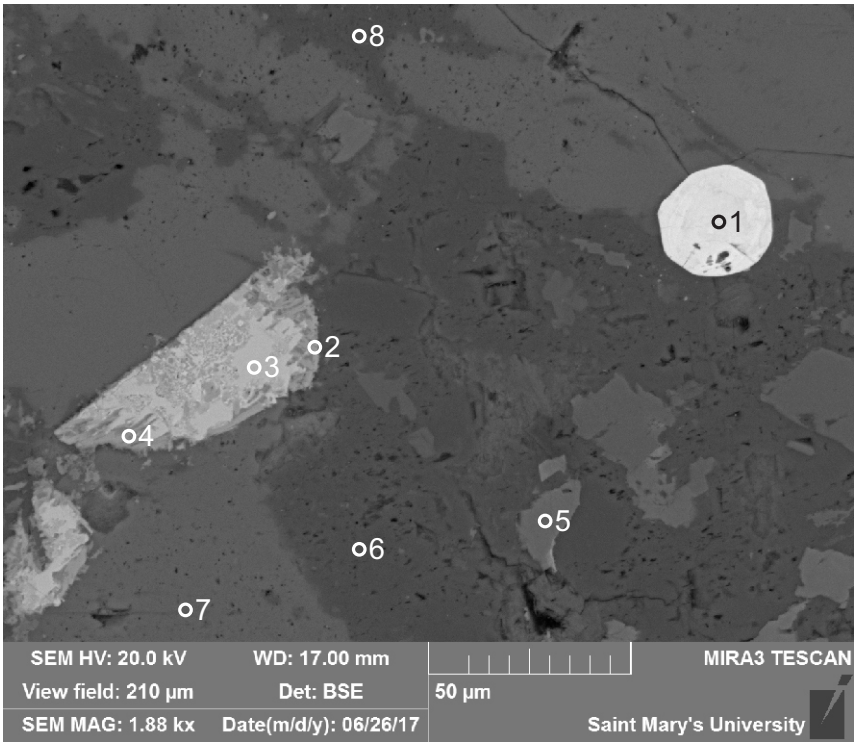
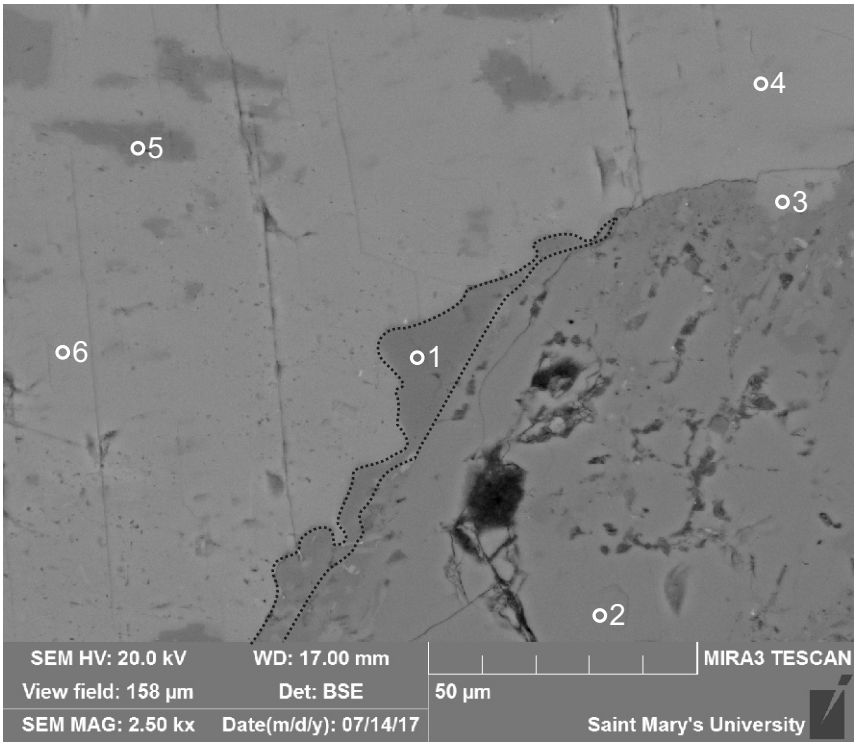


Figure 1-1A.5: Sample 195.1L site 2. Holocrystalline granitic rock. Large quartz crystals (2) interlocking with K-Feldspar (5). Some zircon (4) is present in the quartz as inclusion.



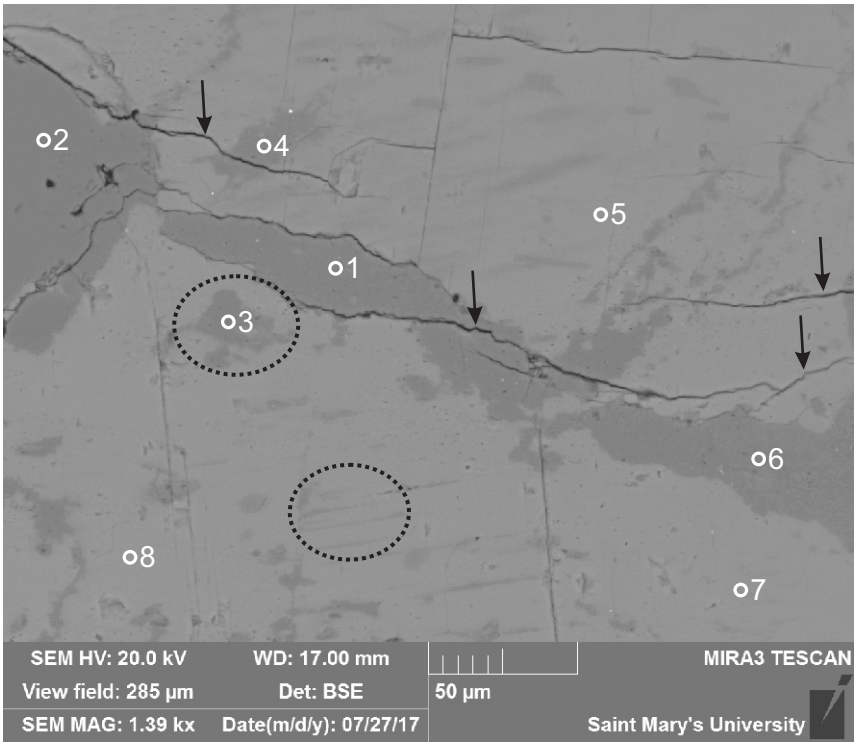
1:Zircon
2:TiO_2 +
3:Ilmenite
4:Titanite +
5:Clinozoisite
6:Albite
7:K-Feldspar
8:Albite

Figure 1-1A.6: Sample 195.1L site 2.1. This site contains well developed euhedral zircon crystal (1), ilmenite (3) with titanite (4) in contact between ilmenite (3) and K-Feldspar (7), likely a product of alteration. Clinozoisite (5) grows in albite (6). Albite (6, 8) intergrowths with K-Feldspar (7).



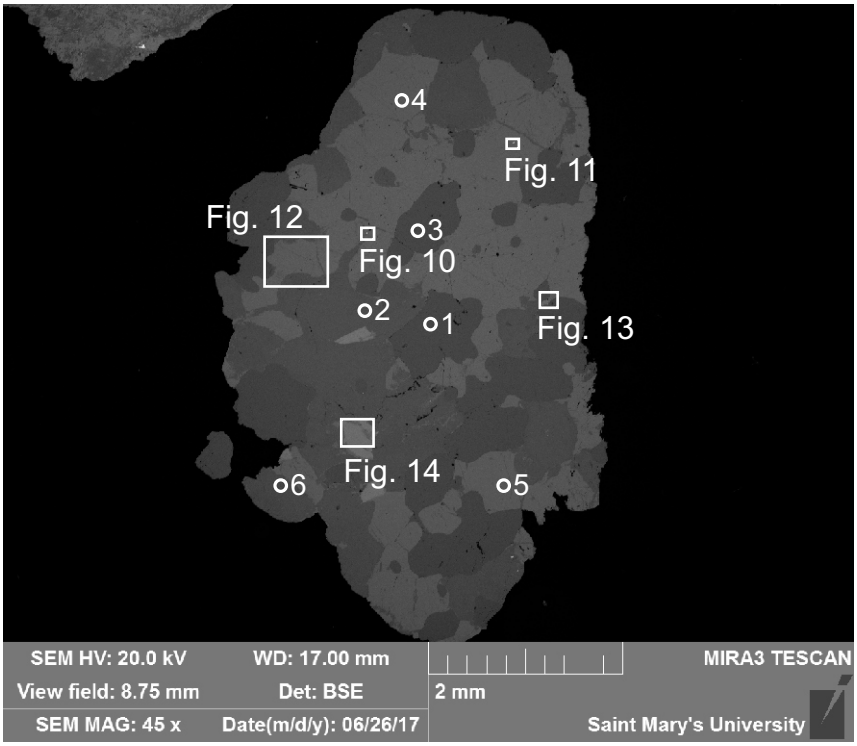
1:Quartz + Albite
2:Oligoclase
3:K-Feldspar
4:K-Feldspar
5:Albite +
6:K-Feldspar

Figure 1-1A.7: Sample 195.1L site 2.2. This site contains patches of albite (5) in K-Feldspar (4, 6). A more silica rich phase (1) (quartz) separates the andesine (2) and the K-Feldspar (4, 6) outlined by dashed line.



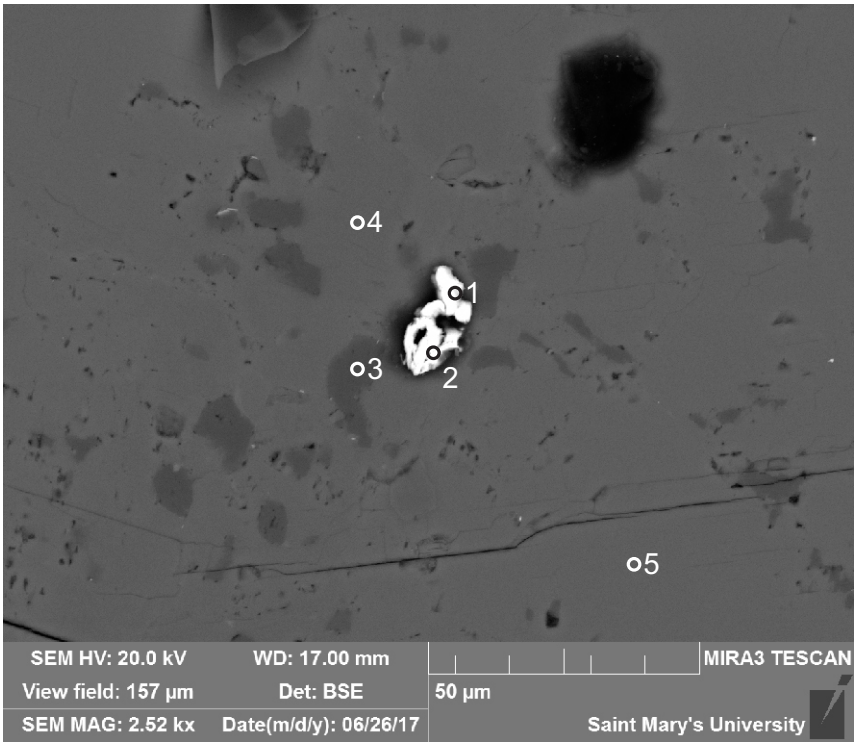
1:Albite
2:Quartz
3:Albite + K-Feldspar
4:Albite + K-Feldspar
5:K-Feldspar
6:Oligoclase +
7:K-Feldspar
8:K-Feldspar

Figure 1-1A.8: Sample 195.1L site 2.3. Fractures can be seen indicated by arrows. Albite (3, 4) patches in K-Feldspar (5, 7, 8) can be seen (indicated by circle), suggest albitization of the K-feldspar. Plagioclase (albite and oligoclase, 1, 16) appear to partly fill some of the fractures (synmagmatic deformation).



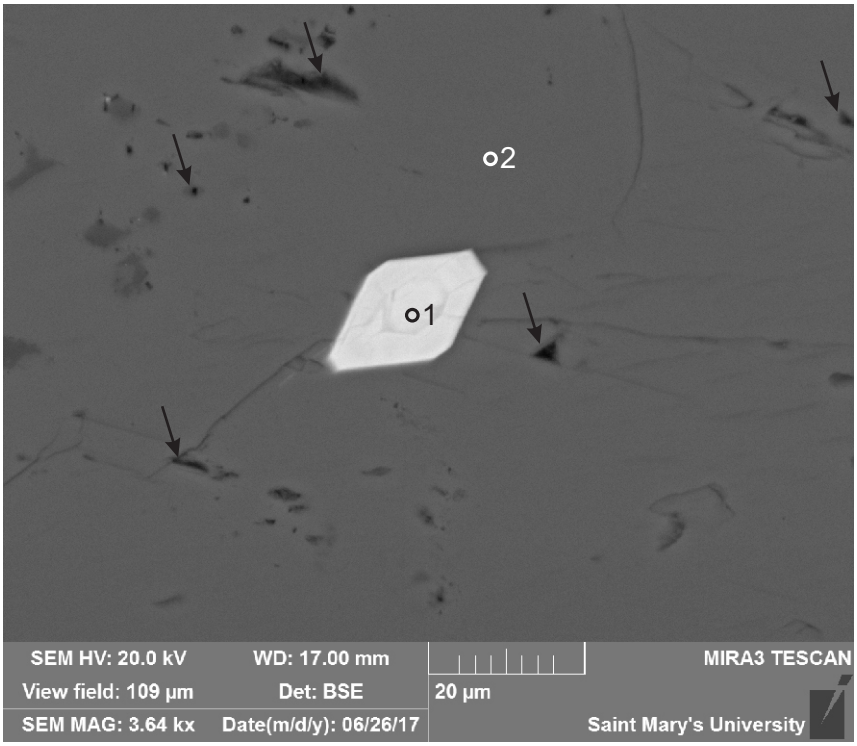
1:Quartz
2:Albite
3:Quartz
4:K-Feldspar
5:K-Feldspar
6:Albite +

Figure 1-1A.9: Sample 195.1L site 3. Holocrystalline rock. Similar to site 2.3, granitic mineralogy. Made up of Quartz (1 & 3) with K-Feldspar (4 & 5) and Albite (2 & 6). Majority of crystals are subhedral forming an interlocking texture.



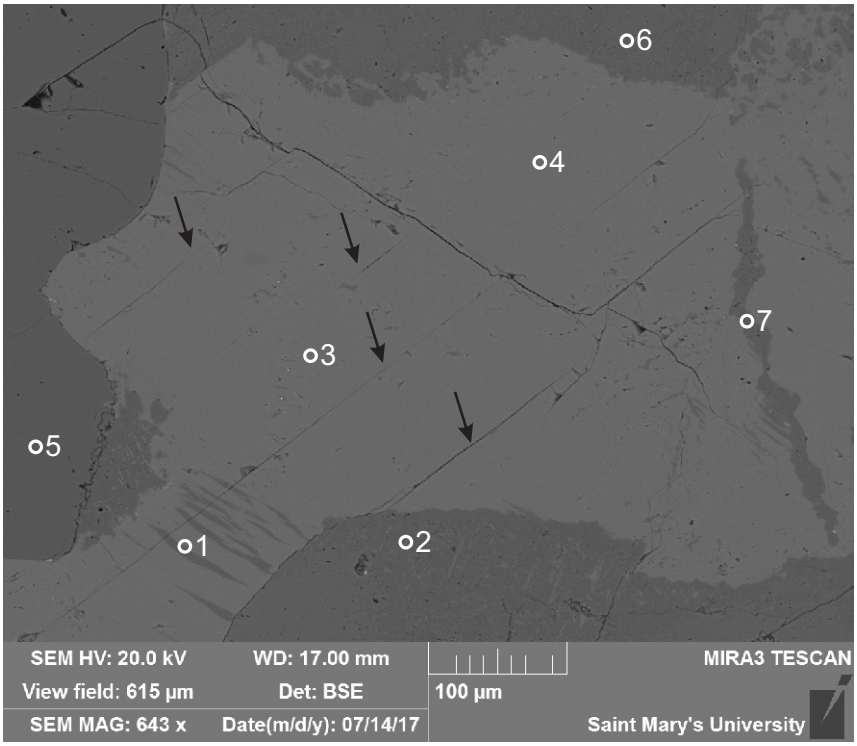
1:Zincite
2:Zincite
3:Albite
4:K-Feldspar
5:K-Feldspar

Figure 1-1A.10: Sample 195.1L site 3.1. This site contains zincite (1, 2) precipitated in a void in K-Feldspar (4, 5) that also contains patches of albite (3).



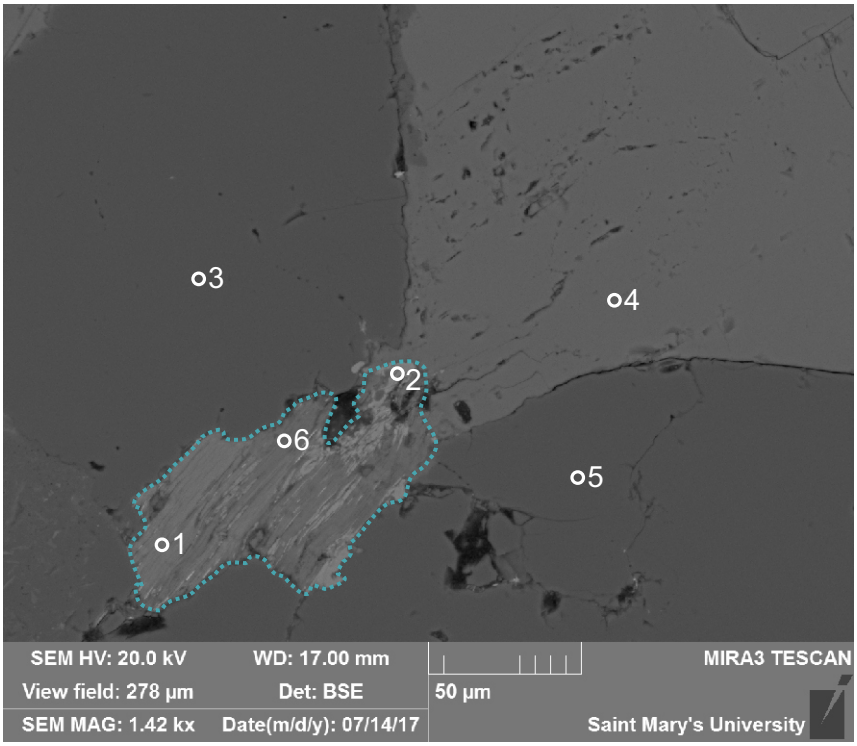
1:Zircon
2:K-Feldspar

Figure 1-1A.11: Sample 195.1L site 3.2. This site contains euhedral zircon (1) as inclusion in K-Feldspar (2). Voids are marked by arrows.



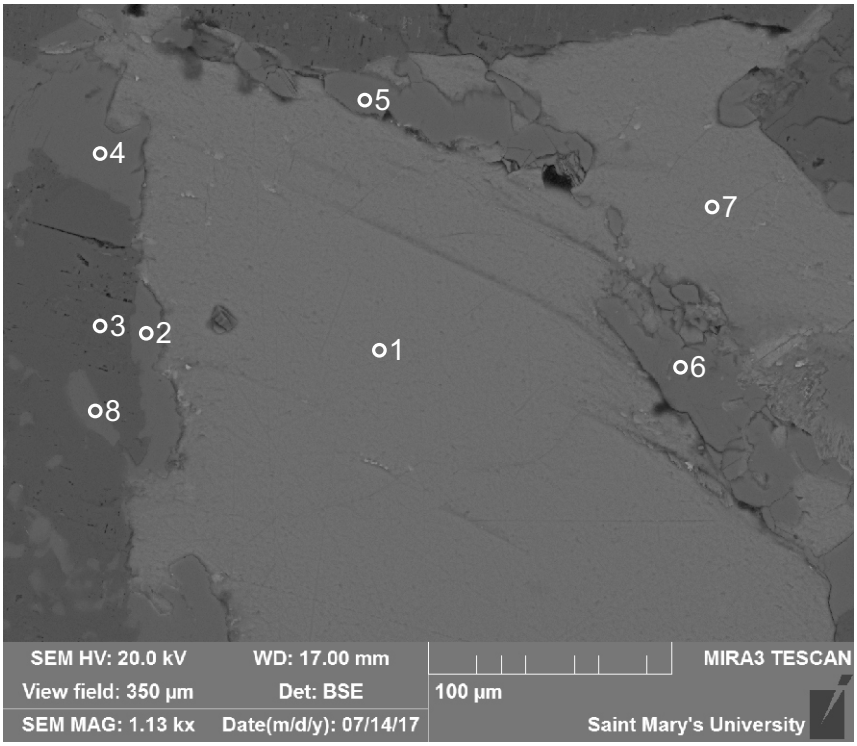
1:Albite +
2:Labradorite + Albite
3:K-Feldspar
4:K-Feldspar
5:Quartz
6:Oligoclase
7:Albite

Figure 1-1A.12: Sample 195.1L site 3.3. This site consists of albite (1) intergrown with K-Feldspar (3, 4). Albite veinlet (7) is cutting K-Feldspar (3, 4). Cleavage of K-Feldspar is indicated by arrows.



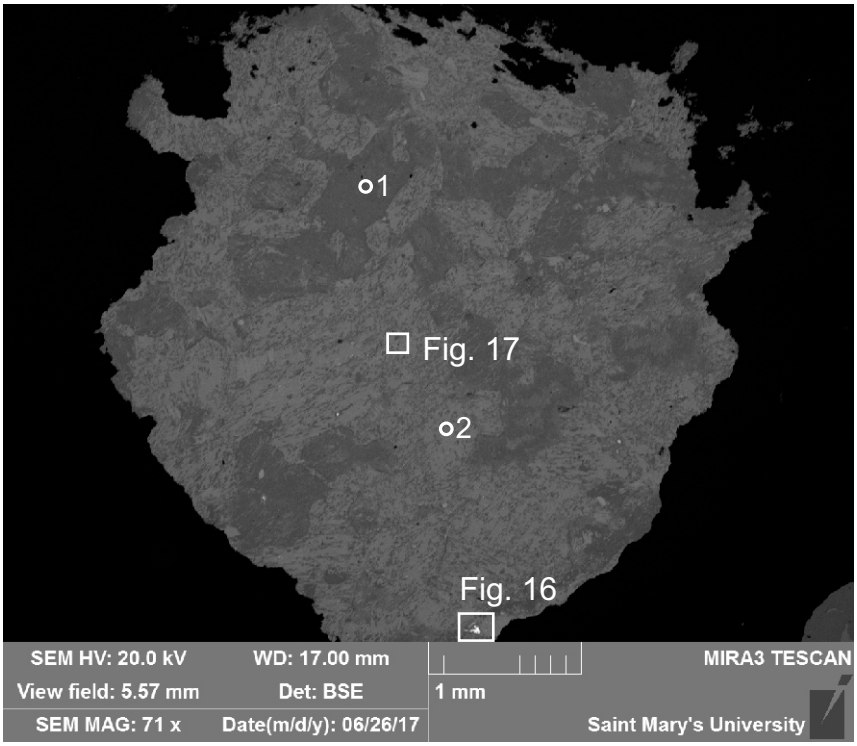
1:Biotite
2:Chlorite
3:Quartz
4:K-Feldspar
5:Quartz
6:Chlorite

Figure 1-1A.13: Sample 195.1L site 3.4. Replacement texture is outlined (blue dotted line); in a partly (1,2,6) chloritized biotite.



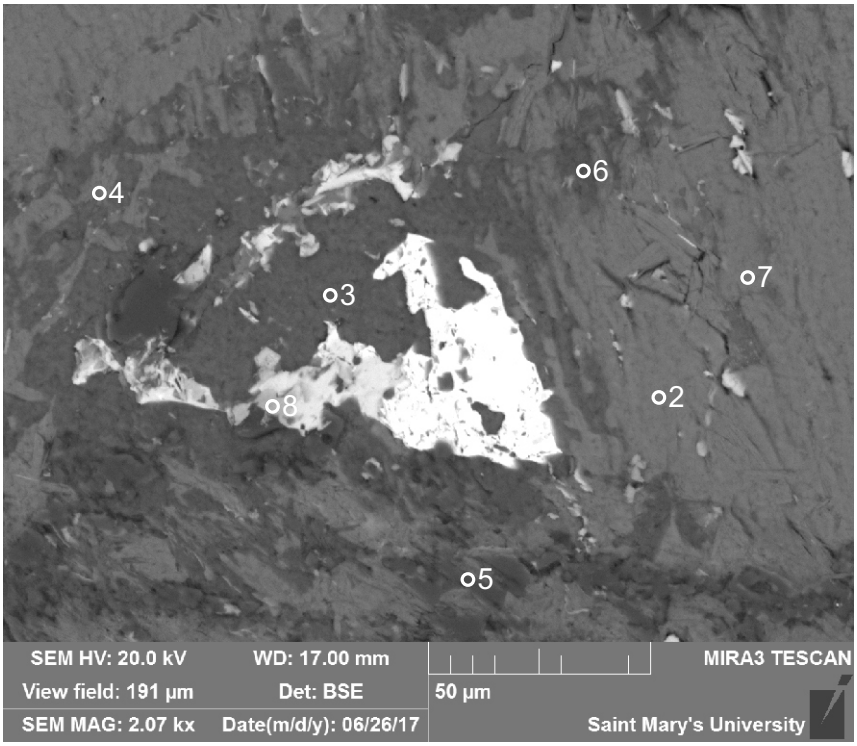
1:Biotite
2:K-Feldspar
3:Albite +
4:K-Feldspar
5:K-Feldspar
6:K-Feldspar
7:Biotite
8:K-Feldspar

Figure 1-1A.14: Sample 195.1L site 3.5. This site consists of a large biotite crystal (1) in contact with albite (3) and K-Feldspar (4, 8). Most of the K-Feldspar is concentrated in the intergranular boundary between the biotite (1) and surrounding albite (3).



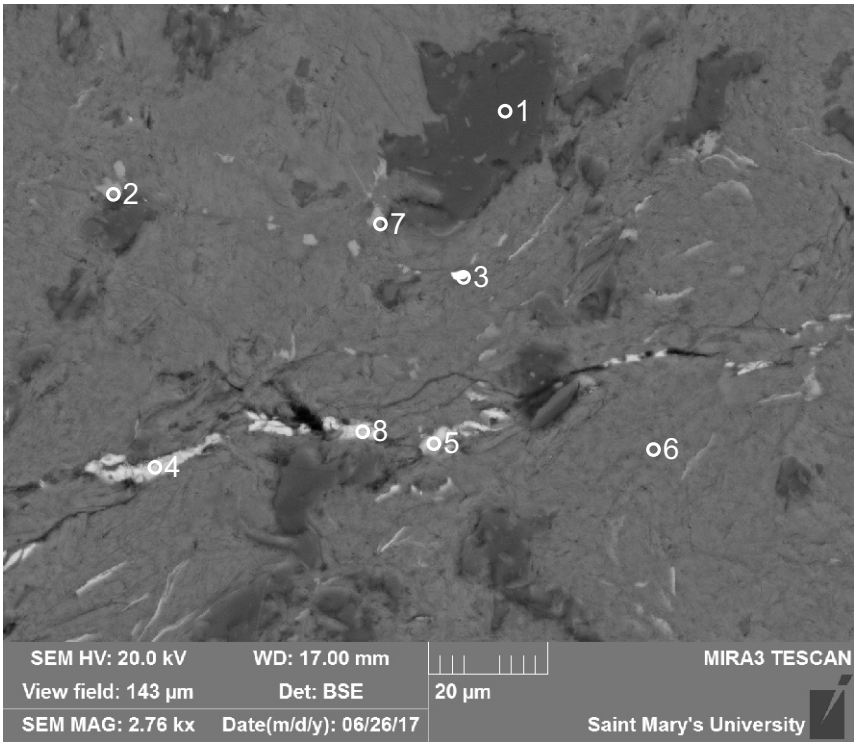
1:Andesine
2:Quartz + Chlorite

Figure 1-1A.15: Sample 195.1L site 4. Deformed mingled texture. No fabric noted but looks deformed. Dominant minerals are andesine (1), chlorite (2), and quartz.



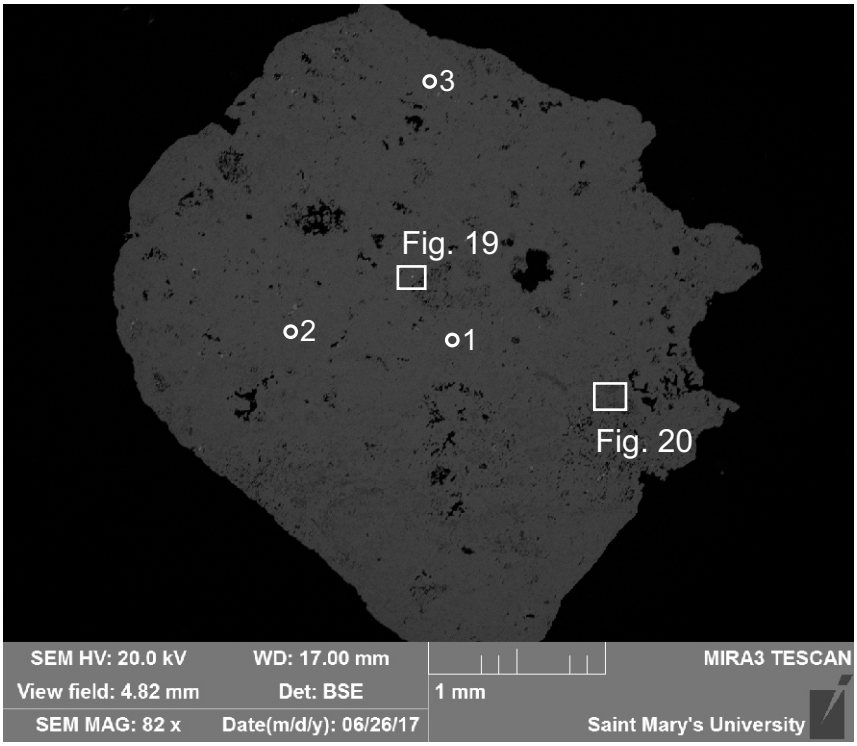
1:Barite
2:Chlorite
3:Muscovite +
4:Chlorite
5:Quartz + Chlorite
6:Muscovite +
7:Chlorite
8:Monazite +

Figure 1-1A.16: Sample 195.1L site 4.1. In this rock monazite (8) is scattered throughout. Likely a later product of crystallization. This site appears as deformed rock with muscovite (6) partly altered to chlorite (2, 4, 7).



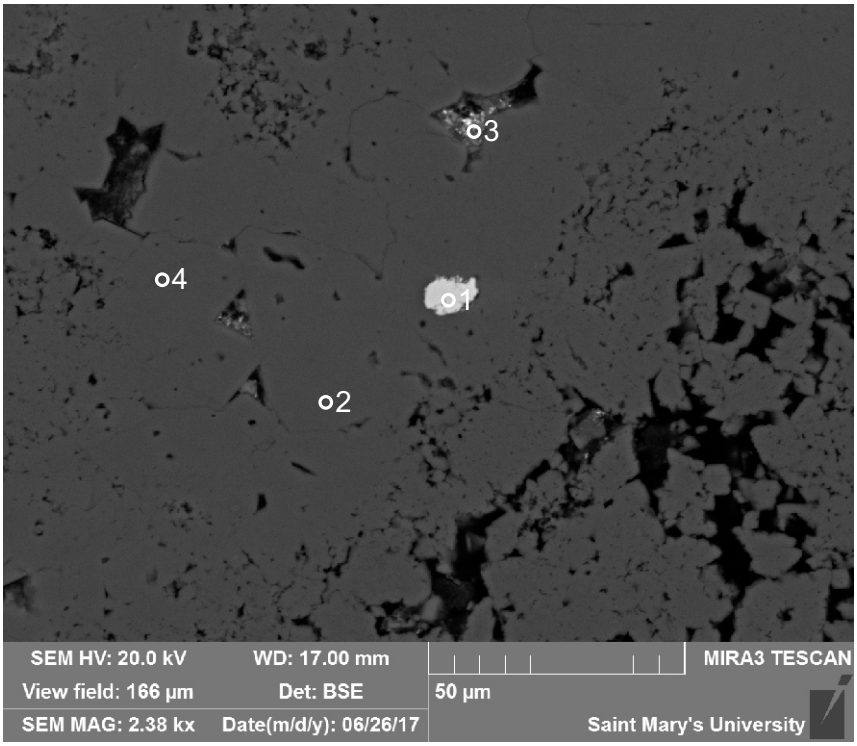
1:Quartz
2:TiO_2 +
3:Monazite +
4:Pyrite +
5:Pyrite +
6:Chlorite
7:TiO_2 +
8:Pyrite +

Figure 1-1A.17: Sample 195.1L site 4.2. This site consists of pyrite (4, 5, & 8) filling fractures, quartz patches (1) and chlorite (6) as matrix with scattered TiO_2 (2, 7) grains.



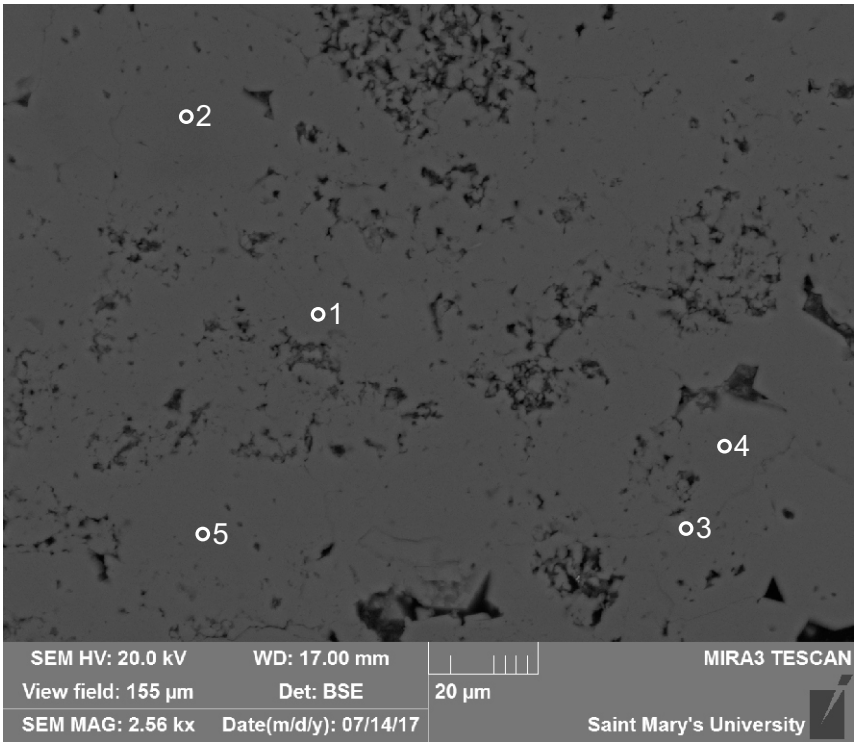
1:Dolomite
2:Dolomite
3:Dolomite

Figure 1-1A.18: Sample 195.1L site 5. Porous dolostone.



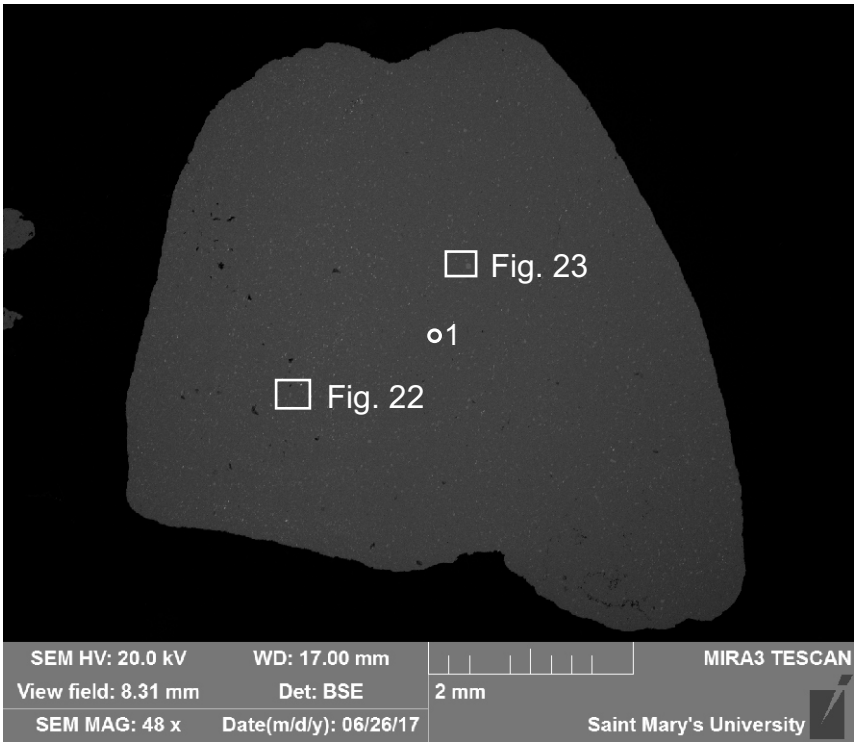
1:Pyrite
2:Dolomite
3:Mix
4:Dolomite

Figure 1-1A.19: Sample 195.1L site 5.1. This site consists of pyrite (1) in voids and dolomite (2 & 4).



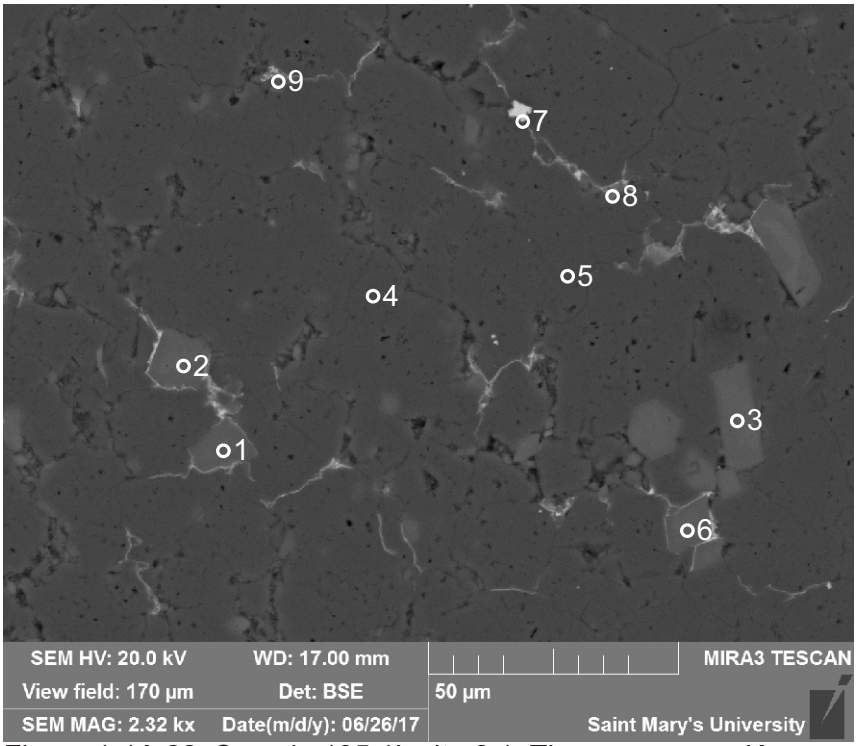
1:Dolomite
2:Dolomite
3:K-Feldspar + Dolomite
4:Dolomite
5:Dolomite

Figure 1-1A.20: Sample 195.1L site 5.2. This site contains largely pure dolomite (1, 2, 4, 5) with occasional microscopic K-Feldspar (3).



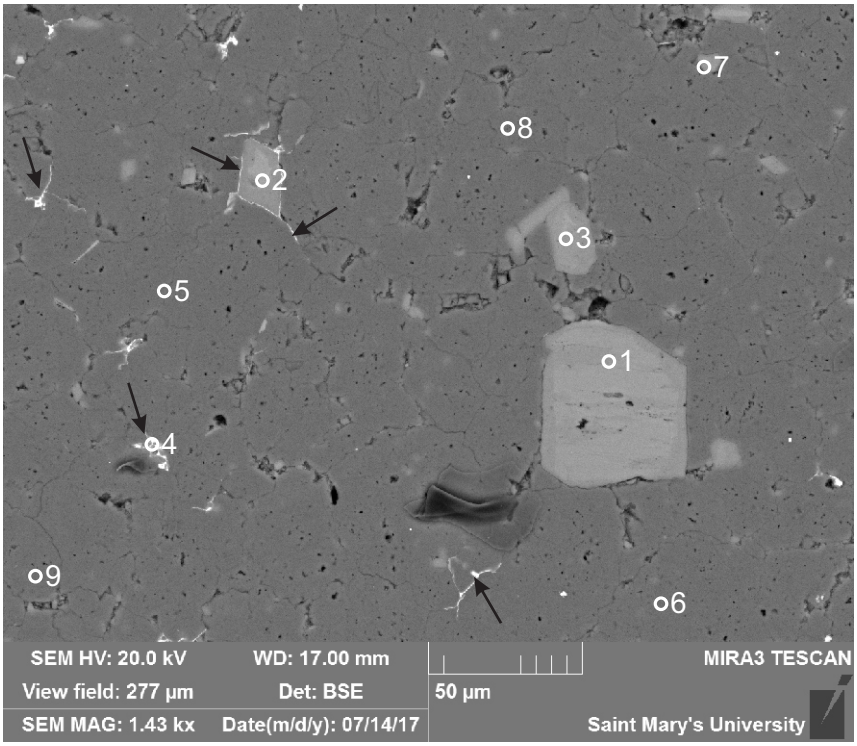
1:Mix

Figure 1-1A.21: Sample 195.1L site 6. Dolostone.



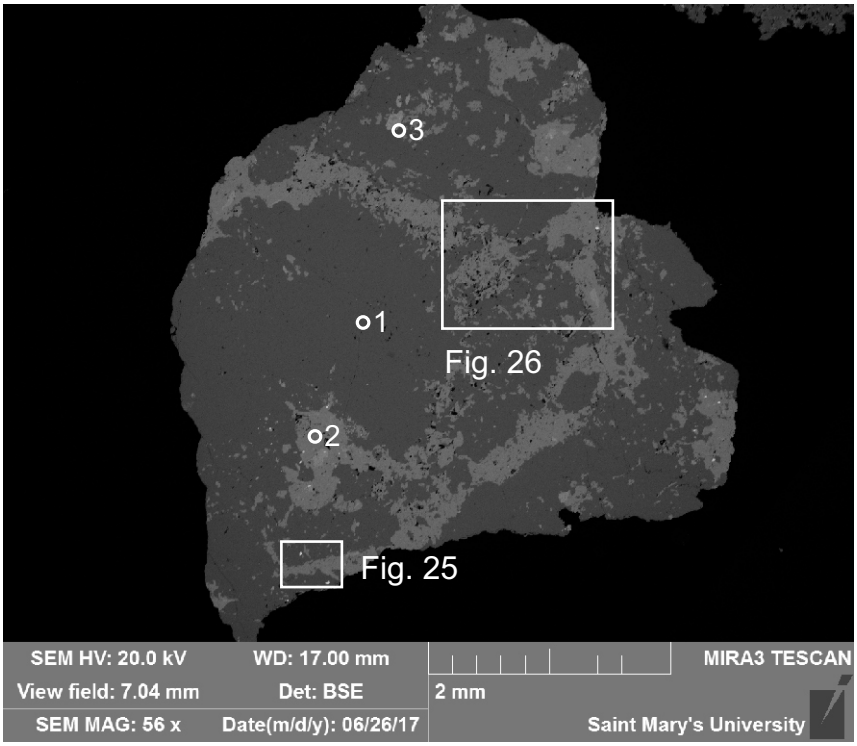
1:K-Feldspar
2:K-Feldspar
3:K-Feldspar
4:Dolomite
5:Dolomite +
6:K-Feldspar
7:Pyrite
8:Mix
9:Mix

Figure 1-1A.22: Sample 195.1L site 6.1. There are some K-feldspar grains (2,3,6) surrounded by dolomite (4 & 5), and pyrite (7) filling fractures and some voids. Pyrite is likely diagenetic.



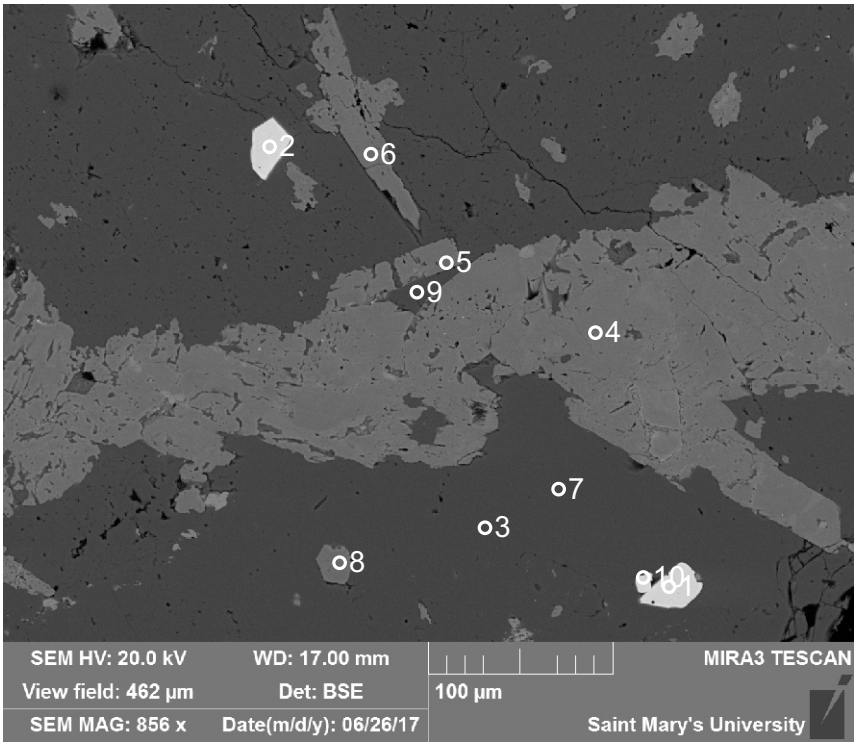
1:K-Feldspar
2:K-Feldspar
3:K-Feldspar
4:Mix
5:Dolomite +
6:Dolomite
7:K-Feldspar
8:Dolomite
9:Dolomite

Figure 1-1A.23: Sample 195.1L site 6.2. Arrows indicate intergranular, and pore precipitation minerals (too small to analyse).



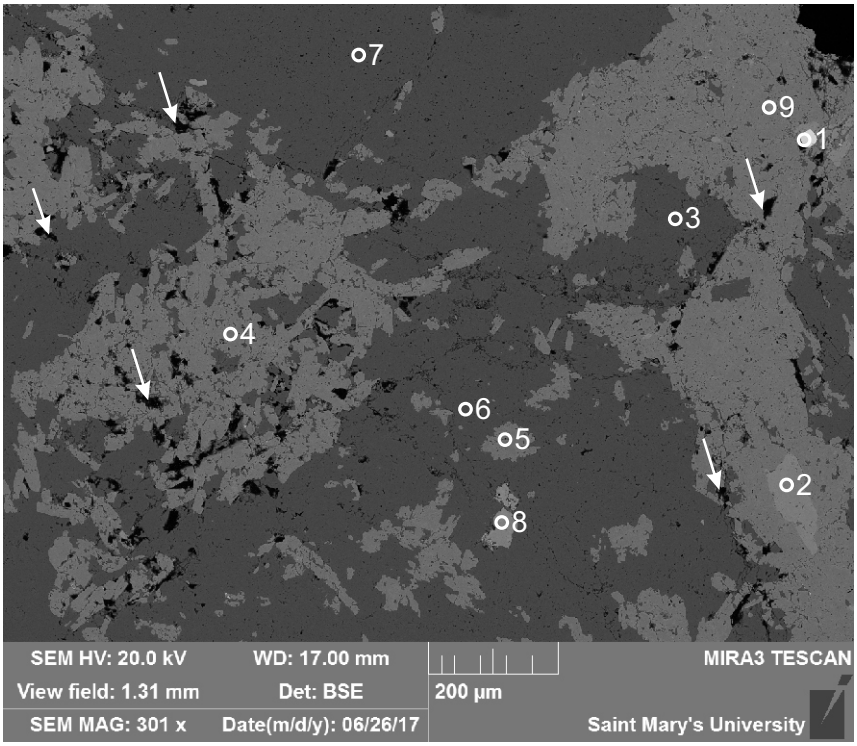
1:Quartz
2:Epidote
3:Titanite +

Figure 1-1A.24: Sample 195.1L site 7. The rock in this site may be hydrothermal, probably deformed vein, because is dominated by quartz (1) and epidote (2).



1:Zircon
2:Zircon
3:Quartz
4:Epidote
5:Epidote
6:Epidote
7:Quartz
8:Epidote
9:Quartz
10:Zircon

Figure 1-1A.25: Sample 195.1L site 7.1. This site consists of zircon (1, 2, & 10) as inclusions in quartz (3) and epidote vein (4).



1:Zircon
2:Titanite +
3:Albite
4:Epidote
5:Epidote
6:Albite
7:Albite
8:Titanite
9:Apatite + Fluorite

Figure 1-1A.26: Sample 195.1L site 7.2. This site consists of minor titanite (2 & 8). Large albite crystals (6 & 7) with likely secondary epidote (4 & 5) that appears to be replacing albite. Abundant voids are present, examples indicated by arrows.

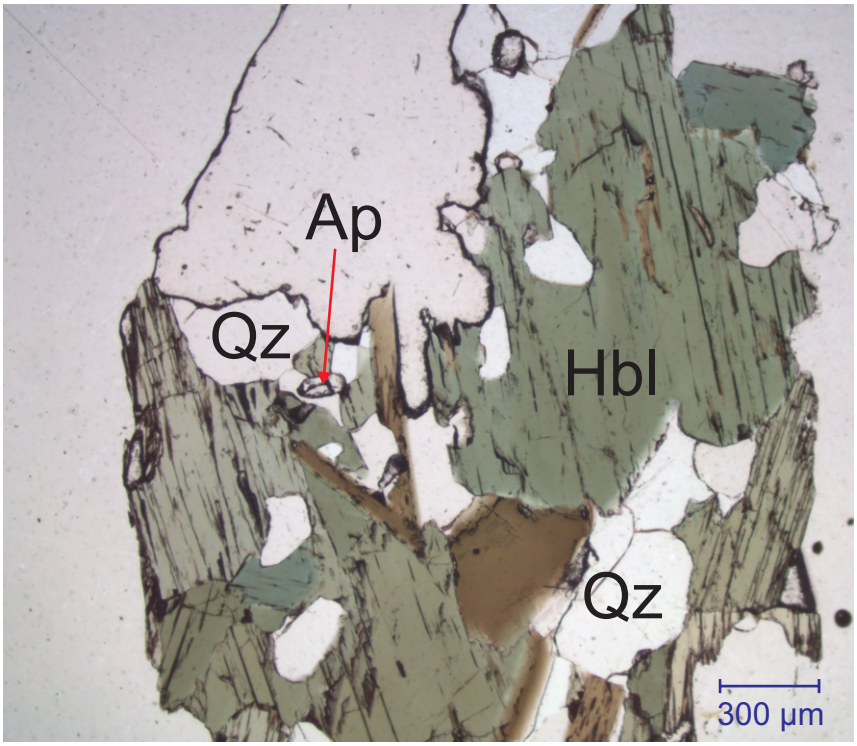


Figure 1-1A.27: Microphotograph. Sample 195.1L. Transmitted light, ppl, 4x. Granule from site 1. Holocrystalline. Dominant minerals are quartz and hornblende.

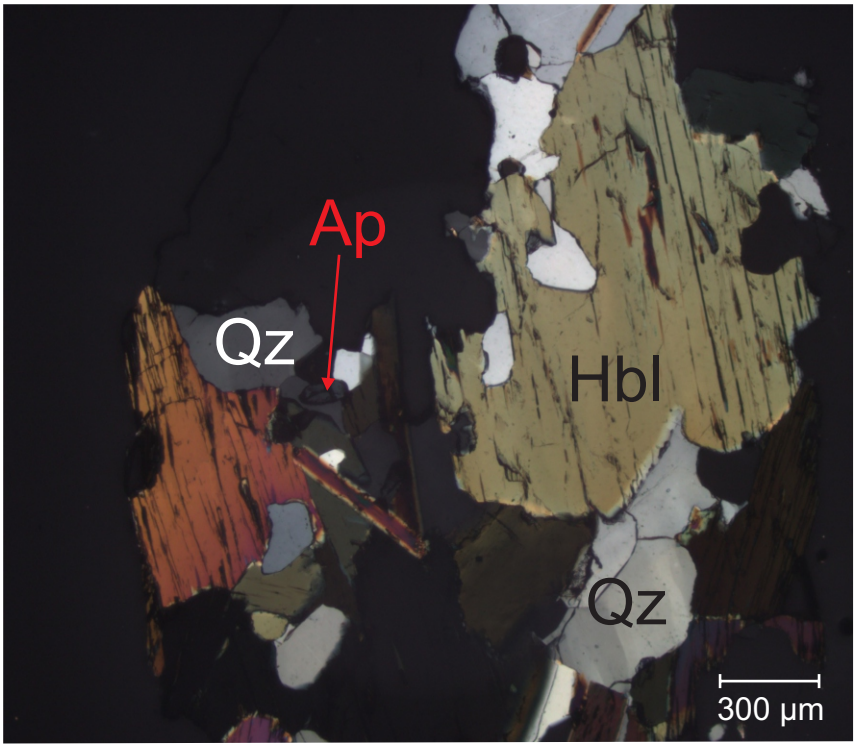


Figure 1-1A.28: Microphotograph. Sample 195.1L. Transmitted light, xpl, 4x. Granule from site 1.

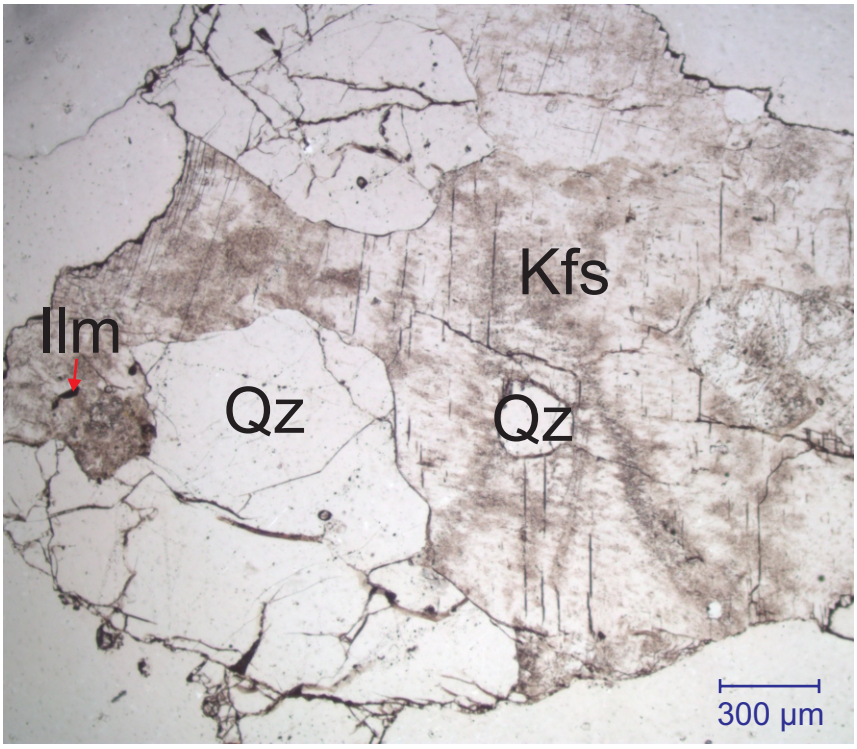


Figure 1-1A.29: Microphotograph. Sample 195.1L. Transmitted light, ppl, 4x. Granule from site 2. Holocrystalline. Granitoid rock.

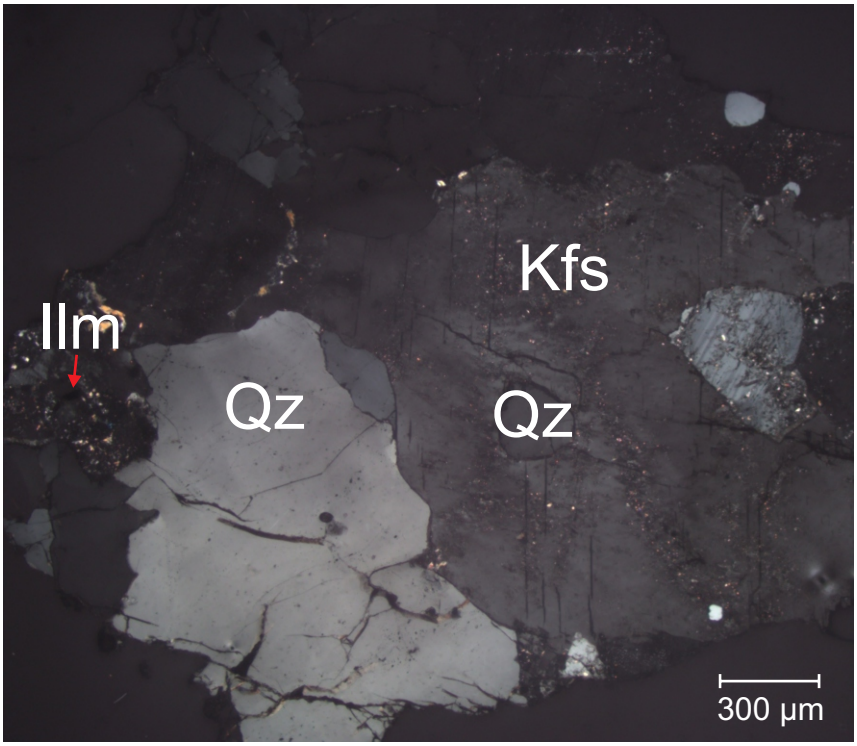


Figure 1-1A.30: Microphotograph. Sample 195.1L. Transmitted light, xpl, 4x. Granule from site 2. Igneous rock.

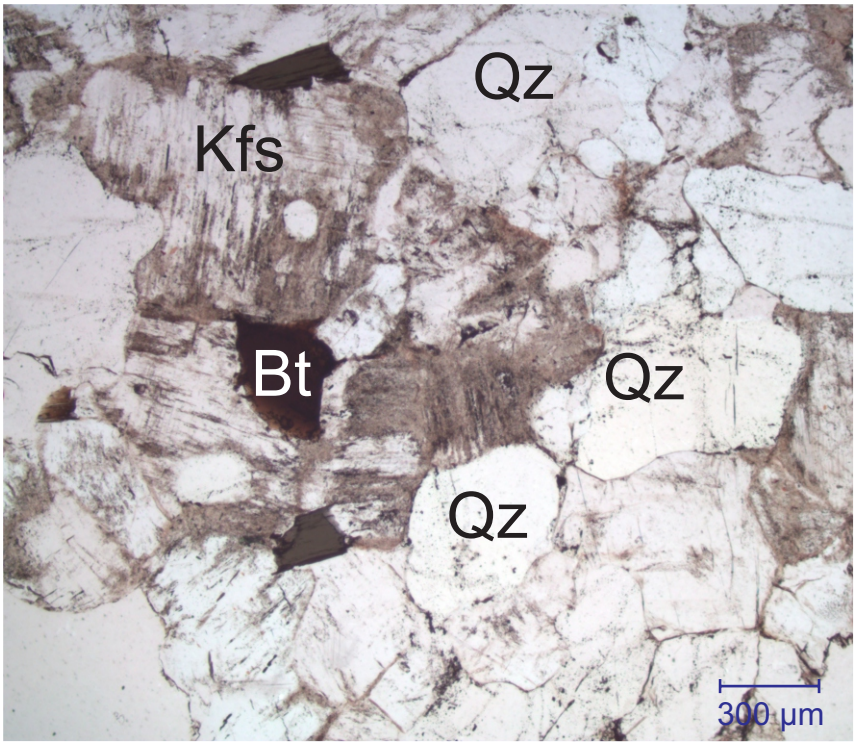


Figure 1-1A.31: Microphotograph. Sample 195.1L. Transmitted light, ppl, 4x. Granule from site 3. Holocrystalline, granitic rock.

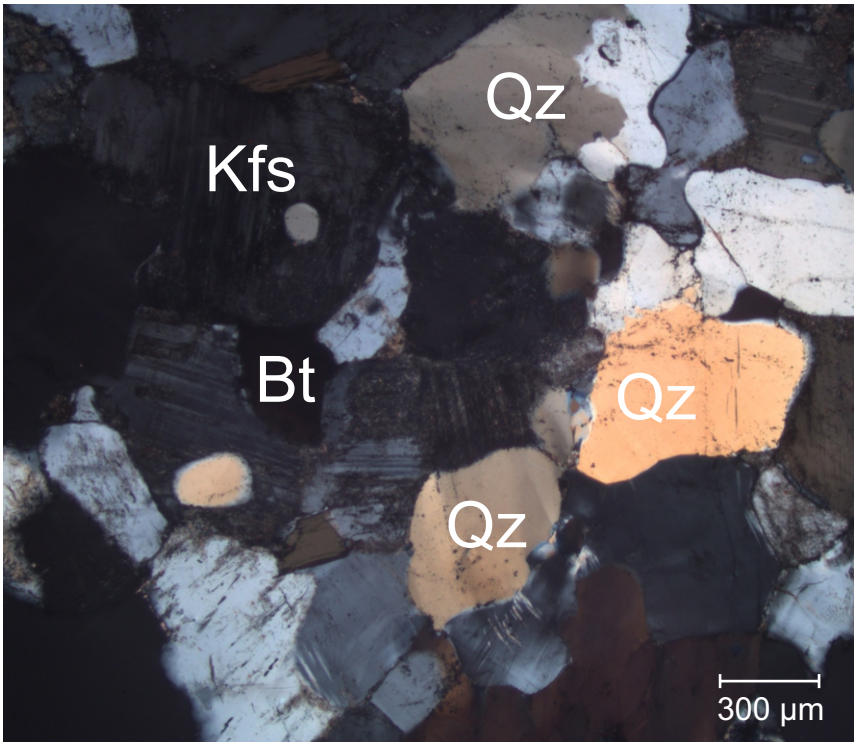


Figure 1-1A.32: Microphotograph. Sample 195.1L. Transmitted light, xpl, 4x. Granule from site 3.

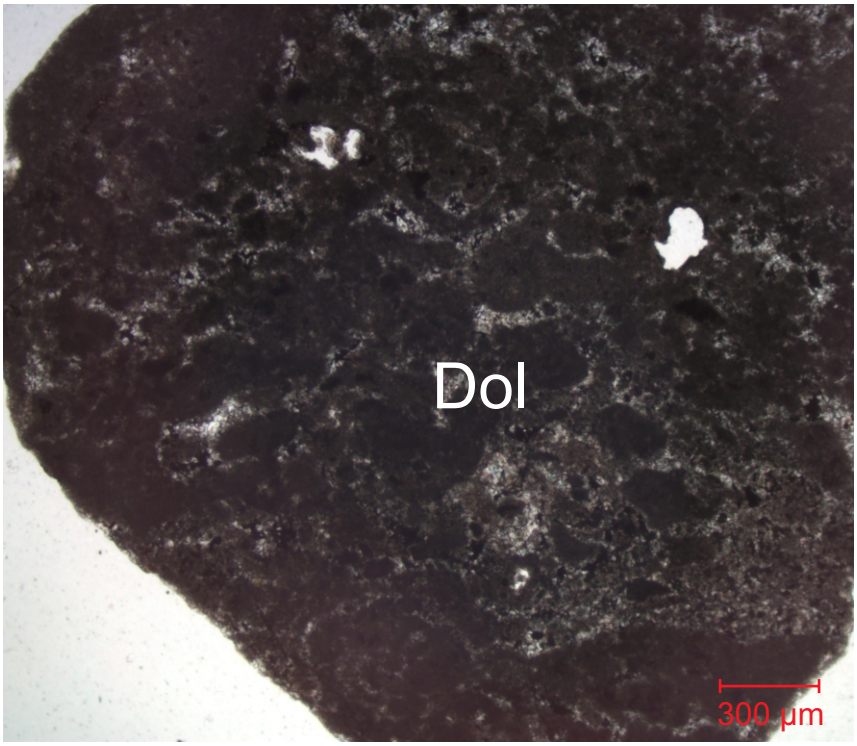


Figure 1-1A.33: Microphotograph. Sample 195.1L. Transmitted light, ppl, 4x. Granule from site 5. Dolostone. Made up of largley dolomite and minor chlorite.

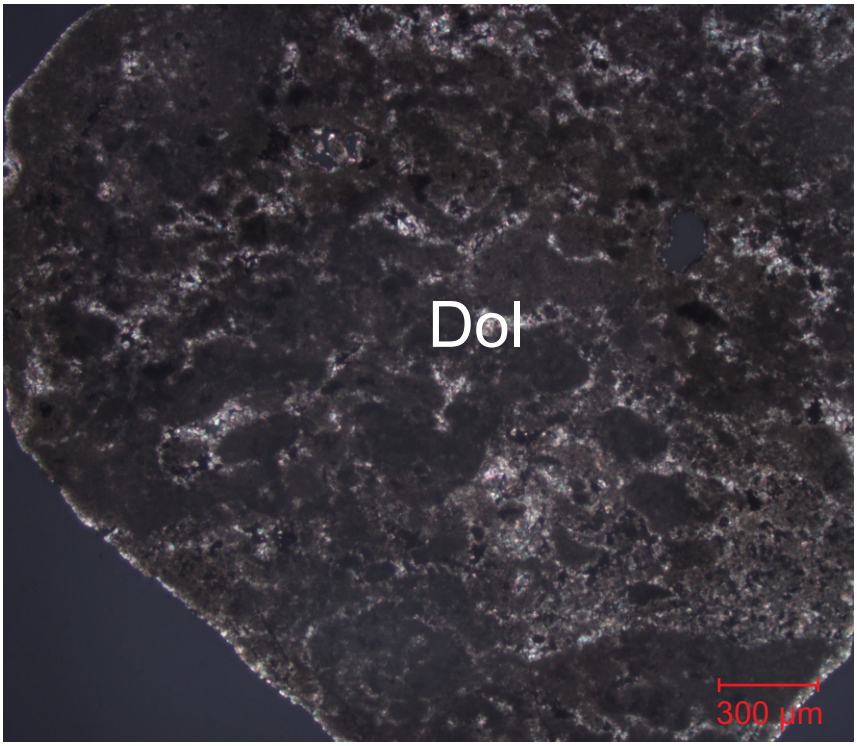


Figure 1-1A.34: Microphotograph. Sample 195.1L. Transmitted light, xpl, 4x. Granule from site 5. Dolostone.

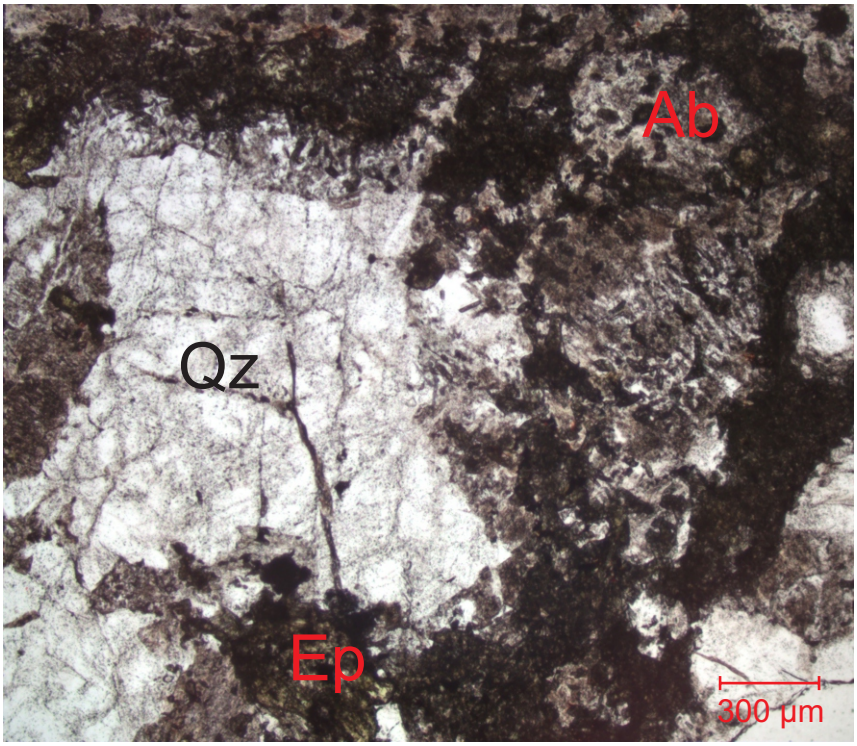


Figure 1-1A.35: Microphotograph. Sample 195.1L. Transmitted light, ppl, 4x. Granule from site 7. Holocrystalline. Small epidote crystals are secondary replacing and surrounding albite.

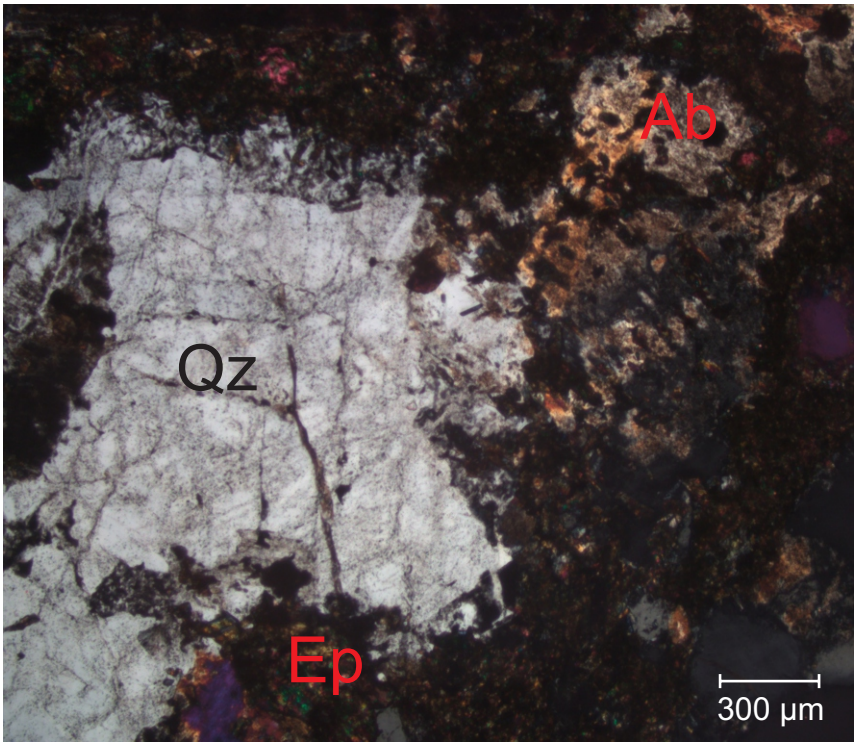


Figure 1-1A.36: Microphotograph. Sample 195.1L. Transmitted light, xpl, 4x. Granule from site 7. Small epidote crystal can be spotted in albite by their second order birefringence.

Table 1-1A.1: Scanning electron microscope chemical analyses of Granules from Flemish Cap (Sample 195.1L).

Sample	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	Cr2O3	CoO	ZnO	SrO	ZrO2	BaO	La2O3	Ce2O3	Nd2O3	HfO2	WO3	PtO2	Total	Actual Total
5.559.1L	1	1	Qz	100.00																									100	128
5.559.1L	1	2	Hbl	48.64	0.96	9.03	15.20	0.43	11.76	11.68	1.33	0.97																	100	115
5.559.1L	1	3	Qz	100.00																									100	105
5.559.1L	1	4	Ap	0.41						53.45			42.05		2.68												1.41		100	101
5.559.1L	1.1	1	Ttn	30.37	37.94	1.27	0.89			28.78			0.75																100	101
5.559.1L	1.1	2	Ttn	32.90	36.93	1.67	0.81			27.70																			100	110
5.559.1L	1.1	3	Hbl	50.86	0.62	7.72	14.47	0.25	12.75	11.59	1.07	0.68																	100	112
5.559.1L	1.1	4	Hbl	50.38	0.64	7.70	14.49	0.44	12.91	11.67	1.07	0.68																	100	112
5.559.1L	1.1	5	Qz	100.00																									100	121
5.559.1L	1.2	1	Qz	100.00																									100	117
5.559.1L	1.2	2	Ap							49.32			44.58		4.54												1.56		100	116
5.559.1L	1.2	3	Hbl	49.42	0.55	7.03	13.79	0.40	12.63	11.53	1.05	0.60																	97	106
5.559.1L	1.2	4	Bt	39.70	2.07	14.83	16.88		13.02			9.49																	96	103
5.559.1L	1.2	5	Qz	100.00																									100	88
5.559.1L	1.2	6	Qz	100.00																									100	129
5.559.1L	2	1	Qz	100.00																									100	122
5.559.1L	2	2	Qz	100.00																									100	115
5.559.1L	2	3	Kfs	66.58		17.94					1.67	13.82																	100	115
5.559.1L	2	4	Zr	31.13		0.41	0.54			0.85											65.45					1.63			100	110
5.559.1L	2	5	Kfs	66.08		17.84					0.49	15.59																	100	103
5.559.1L	2.1	1	Zr	30.48						1.07											68.45								100	114
5.559.1L	2.1	2	TiO2	5.53	88.64	1.59	0.62			3.61																			100	111
5.559.1L	2.1	3	Ilm		52.24		45.73	2.03																					100	108
5.559.1L	2.1	4	Ttn +	15.12	65.92	4.48	0.90			10.20		0.46			2.91														100	114
5.559.1L	2.1	5	Czo	42.20		32.41	1.50			23.89																			100	113
5.559.1L	2.1	6	Ab	65.40		21.96	0.72			1.05	9.22	1.65																	100	117
5.559.1L	2.1	7	Kfs	66.05		17.77					0.24	15.94																	100	118
5.559.1L	2.1	8	Ab	68.30		18.79	0.54			0.89	11.30	0.18																	100	119
5.559.1L	2.2	1	Qz + Ab	84.31		9.41				0.45	5.69	0.14																	100	112
5.559.1L	2.2	2	Olig	61.07		24.60				6.65	7.52	0.16																	100	113
5.559.1L	2.2	3	Kfs	66.45		17.76					0.51	15.28																	100	112
5.559.1L	2.2	4	Kfs	66.05		17.99					0.53	15.43																	100	112
5.559.1L	2.2	5	Ab +	68.17		18.49				0.28	9.74	3.32																	100	114
5.559.1L	2.2	6	Kfs	66.09		17.92					0.47	15.52																	100	112
5.559.1L	3	1	Qz	100.00																									100	122
5.559.1L	3	2	Ab	63.95		22.46				4.27	9.06	0.25																	100	114
5.559.1L	3	3	Qz	100.00																									100	110
5.559.1L	3	4	Kfs	65.71		17.95					1.27	14.15										0.92							100	84
5.559.1L	3	5	Kfs	65.45		17.98					1.18	14.33										1.07							100	128
5.559.1L	3	6	Ab +	63.36		24.16				1.76	8.11	2.60																	100	91
5.559.1L	3.1	1	Zincite	2.39		0.92						0.84							95.85										100	124
5.559.1L	3.1	2	Zincite	0.91								0.34							98.74										100	131
5.559.1L	3.1	3	Ab	69.08		18.97				0.29	10.97	0.69																	100	119
5.559.1L	3.1	4	Kfs	66.05		17.78					0.59	15.58																	100	117
5.559.1L	3.1	5	Kfs	65.28		17.92					0.87	14.94										0.97							100	119
5.559.1L	3.2	1	Zr	31.01																	66.87					2.12			100	121
5.559.1L	3.2	2	Kfs	65.58		18.07					0.96	14.49										0.90							100	116

Table 1-1A.1: Scanning electron microscope chemical analyses of Granules from Flemish Cap (Sample 195.1L).

Sample	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	Cr2O3	CoO	ZnO	SrO	ZrO2	BaO	La2O3	Ce2O3	Nd2O3	HfO2	WO3	PtO2	Total	Actual Total
5.559.1L	3.3	1	Ab +	69.13		19.03				0.38	11.28	0.18																	100	113
5.559.1L	3.3	2	Lab + Ab	60.74		27.39	0.32			0.90	6.03	4.62																	100	108
5.559.1L	3.3	3	Kfs	65.49		17.90					0.83	14.74										1.04							100	112
5.559.1L	3.3	4	Kfs	65.35		18.02					1.07	14.56										1.00							100	112
5.559.1L	3.3	5	Qz	100.00																									100	115
5.559.1L	3.3	6	Olig	63.68		22.93				4.12	8.88	0.39																	100	111
5.559.1L	3.3	7	Ab	67.12		20.31				1.88	10.57	0.12																	100	113
5.559.1L	3.4	1	Bt	39.19	3.46	14.96	16.54	0.25	11.99			9.39				0.22													96	105
5.559.1L	3.4	2	Chl	32.24	0.29	7.76	15.11		0.70	28.59		0.32																	85	102
5.559.1L	3.4	3	Qz	100.00																									100	117
5.559.1L	3.4	4	Kfs	65.68		17.85					0.97	14.61										0.89							100	114
5.559.1L	3.4	5	Qz	100.00																									100	119
5.559.1L	3.4	6	Chl	28.31	0.25	18.59	21.04	0.31	16.17			0.34																	85	97
5.559.1L	3.5	1	Bt	38.70	3.60	14.20	18.07	0.36	11.62			9.46																	96	105
5.559.1L	3.5	2	Kfs	65.17		17.97					0.62	15.04										1.20							100	111
5.559.1L	3.5	3	Ab +	66.03		21.31				2.33	9.74	0.59																	100	111
5.559.1L	3.5	4	Kfs	65.40		18.00					0.66	14.85										1.09							100	111
5.559.1L	3.5	5	Kfs	64.98		18.01	0.52				0.69	14.79										1.03							100	112
5.559.1L	3.5	6	Kfs	65.26		17.77	0.43				0.55	14.98										1.01							100	114
5.559.1L	3.5	7	Bt	38.36	3.81	14.30	18.49	0.36	11.32			9.36																	96	103
5.559.1L	3.5	8	Kfs	65.42		17.96					0.76	14.88										0.99							100	112
5.559.1L	4	1	Andesine	59.39		25.61	0.24			7.51	6.80	0.45																	100	107
5.559.1L	4	2	Qz + Chl	64.10	1.30	9.47	16.91		8.02			0.19																	100	114
5.559.1L	4.1	1	Brt											36.78				-0.05		1.73		61.54							100	115
5.559.1L	4.1	2	Chl	55.63		15.28					1.00	12.18										0.91							85	98
5.559.1L	4.1	3	Ms +	52.00	1.78	26.19	5.92		2.50			11.60																	100	105
5.559.1L	4.1	4	Chl	55.50		15.24					0.74	12.70										0.82							85	102
5.559.1L	4.1	5	Qz + Chl	88.77		3.79	5.06		2.21			0.17																	100	116
5.559.1L	4.1	6	Ms +	52.99	0.29	30.68	4.32		2.24			9.49																	100	105
5.559.1L	4.1	7	Chl	56.17		14.97					0.43	12.90										0.54							85	100
5.559.1L	4.1	8	Mnz +	37.74		18.94	13.44			12.70													5.03	9.70	2.44				100	106
5.559.1L	4.2	1	Qz	99.39			0.34			0.27																			100	119
5.559.1L	4.2	2	TiO2 +	4.16	88.85	2.21	3.21		1.57																				100	105
5.559.1L	4.2	3	Mnz +	9.71		5.76	6.82		5.12				26.48										12.74	26.67	6.71				100	105
5.559.1L	4.2	4	Py +	3.99		1.61	28.36		1.05					64.99															100	200
5.559.1L	4.2	5	Py +	5.97		2.16	28.38		1.90			0.28		59.89														1.43	100	183
5.559.1L	4.2	6	Chl	32.08		16.10	11.43			10.80													4.28	8.25	2.07				85	96
5.559.1L	4.2	7	TiO2	11.04	72.50	4.34	7.72		3.18	0.30						0.30	0.62												100	103
5.559.1L	4.2	8	Py +	3.27		1.58	27.93		1.46		0.26			65.50															100	208
5.559.1L	5	1	Dol	28.61	0.16	16.57	2.33		1.21			5.12																	54	56
5.559.1L	5	2	Dol	34.22		13.05				0.95	4.38	1.40																	54	55
5.559.1L	5	3	Dol				15.32			0.35				38.33															54	48
5.559.1L	5.1	1	Py				28.38			0.64				70.99															100	233
5.559.1L	5.1	2	Dol	2.15		0.87	15.31		0.57					35.09															54	57
5.559.1L	5.1	3	Mix	31.38		1.32	54.41		4.05	7.98	0.67					0.19													100	100
5.559.1L	5.1	4	Dol	1.77		0.85	15.08		0.79		0.14			35.37															54	57
5.559.1L	5.2	1	Dol						22.36	31.64																			54	55

Table 1-1A.1: Scanning electron microscope chemical analyses of Granules from Flemish Cap (Sample 195.1L).

Sample	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	Cr2O3	CoO	ZnO	SrO	ZrO2	BaO	La2O3	Ce2O3	Nd2O3	HfO2	WO3	PtO2	Total	Actual Total
5.559.1L	5.2	2	Dol						22.33	31.67																			54	55
5.559.1L	5.2	3	Kfs + Dol	56.37		14.58			6.35	9.14		13.56																	100	97
5.559.1L	5.2	4	Dol						22.39	31.61																			54	55
5.559.1L	5.2	5	Dol						22.45	31.55																			54	55
5.559.1L	6	1	Mix	28.38	0.61	5.36	3.06		24.79	34.03		3.77																	100	73
5.559.1L	6.1	1	Kfs	66.53		17.41						16.06																	100	117
5.559.1L	6.1	2	Kfs	66.07		17.61					0.50	15.17										0.64							100	117
5.559.1L	6.1	3	Kfs	65.94		17.62					0.36	15.44										0.64							100	118
5.559.1L	6.1	4	Dol	54.00																									54	57
5.559.1L	6.1	5	Dol +	3.29					39.36	56.71		0.64																	100	58
5.559.1L	6.1	6	Kfs	65.79		17.83						15.75										0.62							100	118
5.559.1L	6.1	7	Py	0.51			27.49		0.92	1.83		0.12		69.13															100	209
5.559.1L	6.1	8	Mix	15.09		3.23	14.73		14.34	19.20		2.52		30.89															100	107
5.559.1L	6.1	9	Mix	39.96		4.25	10.45		9.38	14.48		3.16		18.32															100	106
5.559.1L	6.2	1	Kfs	65.94		17.83					0.56	14.94										0.74							100	113
5.559.1L	6.2	2	Kfs	64.67		18.48					0.25	14.91										1.69							100	112
5.559.1L	6.2	3	Kfs	66.89		17.48						15.64																	100	110
5.559.1L	6.2	4	Mix	38.89		9.99	6.09		7.94	14.81		7.20		15.07															100	100
5.559.1L	6.2	5	Dol +	8.58		1.88	0.63		36.09	51.41		1.41																	100	58
5.559.1L	6.2	6	Dol	0.39					21.74	31.56						0.32													54	55
5.559.1L	6.2	7	Kfs	65.93		17.41				0.49	0.52	15.04										0.61							100	113
5.559.1L	6.2	8	Dol	0.49					22.13	31.38																			54	55
5.559.1L	6.2	9	Dol	0.46			0.26		21.92	31.22						0.14													54	54
5.559.1L	7	1	Qz	100.00																									100	120
5.559.1L	7	2	Ep	41.10		25.53	9.97			23.40																			100	104
5.559.1L	7	3	Ttn +	24.91	44.12	2.55	7.04			21.37																			100	91
5.559.1L	7.1	1	Zr	31.41																	68.59								100	120
5.559.1L	7.1	2	Zr	31.21																	68.79								100	118
5.559.1L	7.1	3	Qz	100.00																									100	120
5.559.1L	7.1	4	Ep	41.10		24.47	10.92			23.51																			100	110
5.559.1L	7.1	5	Ep	41.36	0.34	24.72	10.40	0.26		22.92																			100	109
5.559.1L	7.1	6	Ep	41.40		25.64	9.70	0.26		23.00																			100	108
5.559.1L	7.1	7	Qz	100.00																									100	122
5.559.1L	7.1	8	Ep	41.63		24.25	10.98			23.13																			100	110
5.559.1L	7.1	9	Qz	100.00																									100	119
5.559.1L	7.1	10	Zr	31.72																	68.28								100	117
5.559.1L	7.2	1	Zr	31.25																	68.75								100	116
5.559.1L	7.2	2	Ttn	33.06	34.30	3.42	0.86			28.37																			100	114
5.559.1L	7.2	3	Ab	70.21		18.79					10.99																		100	106
5.559.1L	7.2	4	Ep	41.21		24.84	10.68			23.27																			100	109

Table 1-1A.1: Scanning electron microscope chemical analyses of Granules from Flemish Cap (Sample 195.1L).

Sample	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	Cr2O3	CoO	ZnO	SrO	ZrO2	BaO	La2O3	Ce2O3	Nd2O3	HfO2	WO3	PtO2	Total	Actual Total
5.559.1L	7.2	5	Ep	41.19		25.91	8.95	0.33		23.62																			100	112
5.559.1L	7.2	6	Ab	69.86		18.61					11.53																		100	119
5.559.1L	7.2	7	Ab	69.88		18.54					11.58																		100	114
5.559.1L	7.2	8	Ttn +	33.23	32.64	4.26	0.91			27.42					1.54														100	114
5.559.1L	7.2	9	Ap + Fl				0.34			48.17			43.32		6.62												1.55		100	117
			Notes																											
			"+" indicates more than one mineral present																											

Appendix 1-1B: SEM-BSE images for Flemish Cap Granules with EDS Mineral Analyses and Microphotographs.
Sample 2008061-195.2M

Flemish Cap Sample 195.2M Lithology Summary Notes

Granule 1 (Sites 1, 1.1, 1.2) Microphotographs: Figures 1-1B.24, 1-1B.15Holocrystalline granitoid rock or andesite. Quartz is more of an accessory mineral along with biotite and magnetite. Andesine, albite, K-feldspar, and magnetite are present.Smaller inclusions of quartz can be seen in Figure 1-1B.3 in andesine. Replacement texture can be seen in the micas (Fig. 1-1B.4).

Granule 2 (Sites 2, 2.1) Microphotographs: Figures 11-B.26, 11-1B.27
Largely intermediate size feldspar crystals (K-feldspar, albite, and oligoclase). Apatite crystals are commonly seen with monazite rims. Zircon and K-feldspar is present, and ilmenite tends to fill voids. There are empty voids present as well.

Granule 3 (Site 3) Microphotographs: Figures 1-1B.28, 1-1B.29
Probably quartz granitoid vein with some K-feldspar filling fractures and some large independent K-feldspar crystals.

Granule 4 (Sites 4, 4.1) Microphotographs: None
Silty dolostone with what must be diagenetic pyrite and some quartz that seems to have suffered some dissolution due to contrast from outer edges of crystal inward.

Granule 5 (Sites 5, 5.1) Microphotographs: Figures 1-1B.30, 1-1B.31
Holocrystalline feldspathic rock. Oligoclase and K-feldspar are the dominant minerals present, with some albite and titanium-magnetite.

Granule 6 (Sites 6, 6.1, 6.2) Microphotographs: Figures 1-1B.32, 1-1B.33Holocrystalline rock with intergrowths of orthopyroxene, andesine, K-feldspar, and quartz. Some ilmenite and apatite are also present. Voids are common.

Granule 7 (Sites, 7, 7.1) Microphotographs: Figures 1-1B.34, 1-1B.35Holocrystalline rock of granitoid composition. Common minerals include K-feldspar,quartz, and andesine. Some ilmenite is also present. Myrmekitic texture is observed between biotite and quartz with apatite crystals growing in biotite.

Granule 8 (Site 8) Microphotographs: None
Sandstone with mostly quartz and minor chlorite, apatite, and muscovite. Zircon is also present.

Granule 9 (Sites 9, 9.1) Microphotographs: None
Dolostone made up of dolomite and some calcite with minor apatite. Very porous.

Granule 10 (Sites 10, 10.1) Microphotographs: Figures 1-1B.36, 1-1B.37
Large crystals of quartz surrounded by K-feldspar. Small grains of titanium-magnetite are very dispersed in the K-feldspar. There are patches of albite in the K-feldspar. The rock is very red in colour and the composition suggests that it is an alkaline granitoid rock.

Flemish Cap Sample 195.2M Lithology Summary Notes

Granule 11 (Sites 11, 11.1) Microphotographs: None
Very fine-grained rock made up of quartz, K-feldspar, titanium-magnetite, and other fine minerals that are sub-ten micron in size. This is most likely a mudstone judging from the dark colour in thin section.

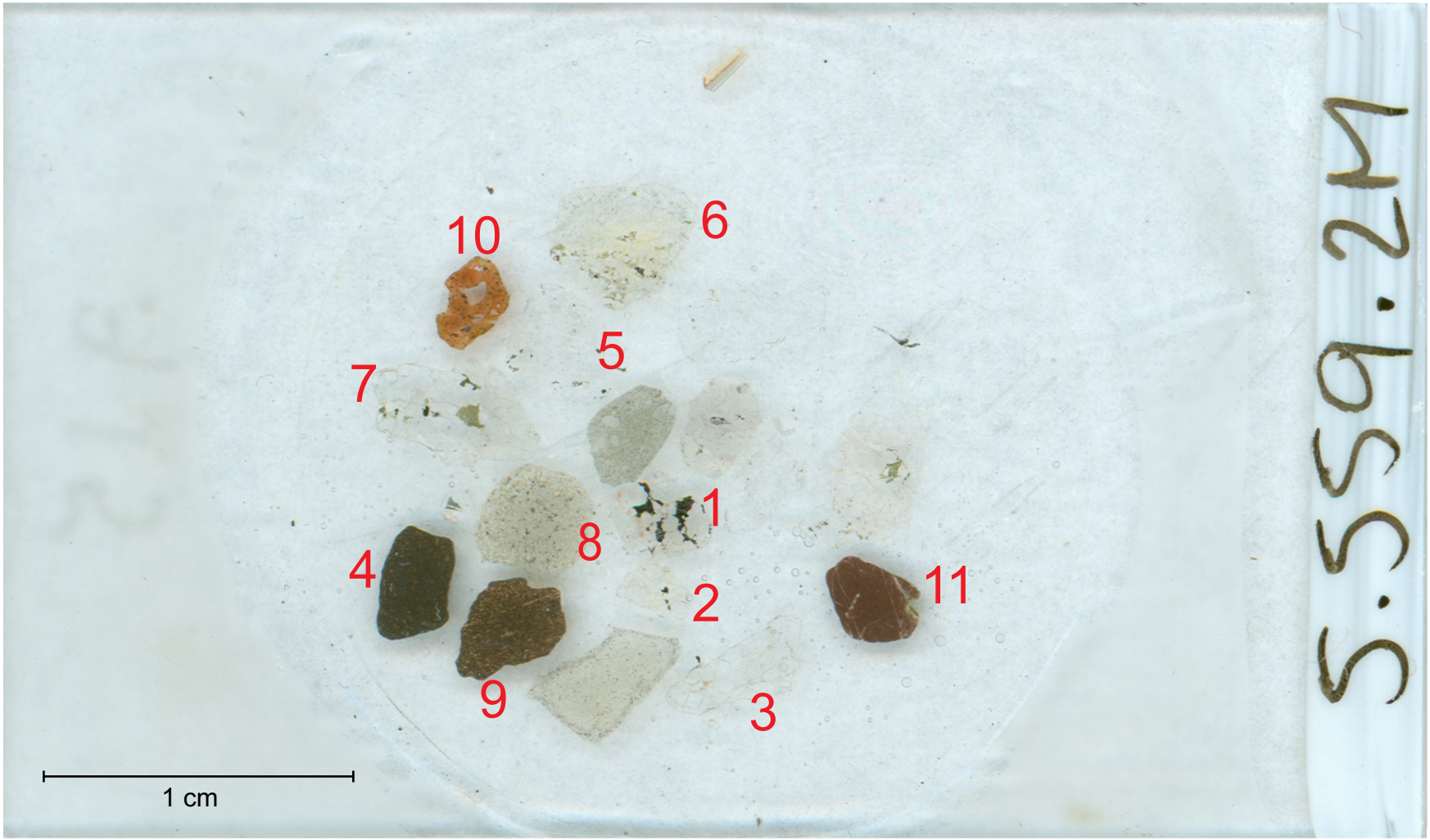
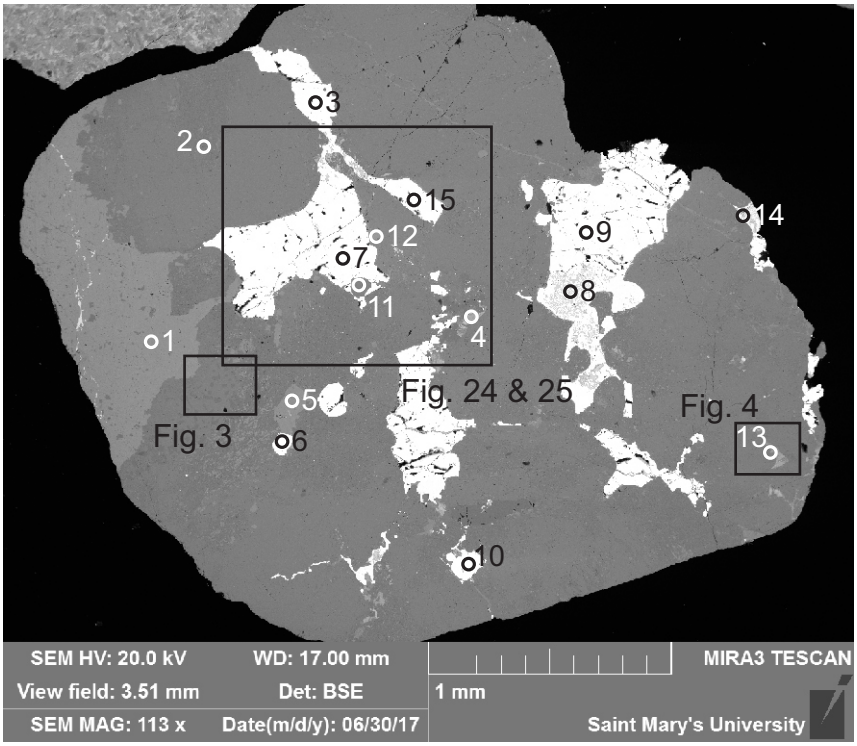
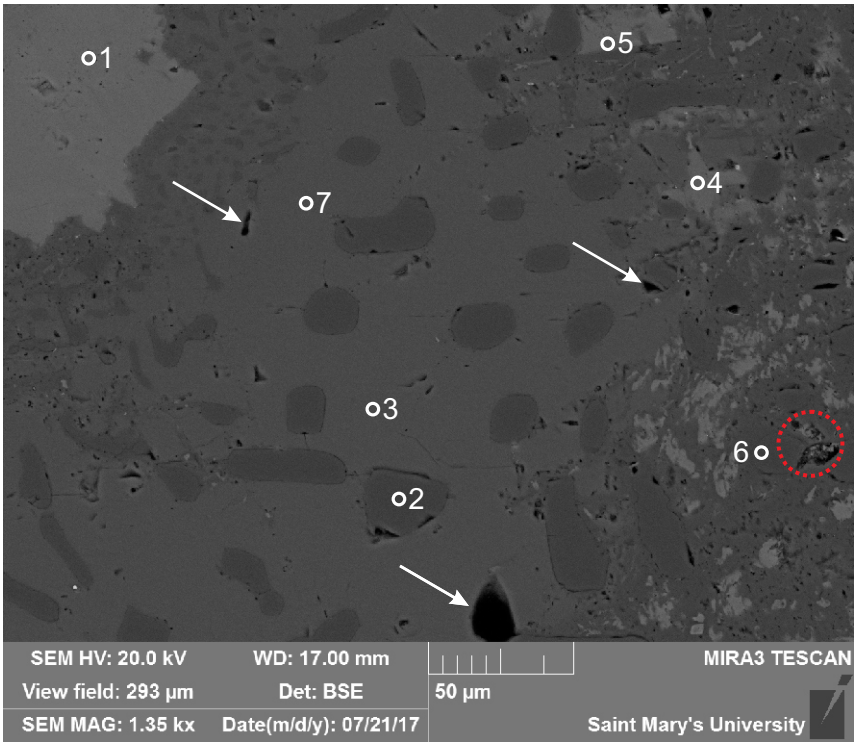


Figure 1-1B.1: Scanned thin section of Flemish Cap sample 195.2M. Granules are numbered in red corresponding to analysed sites.



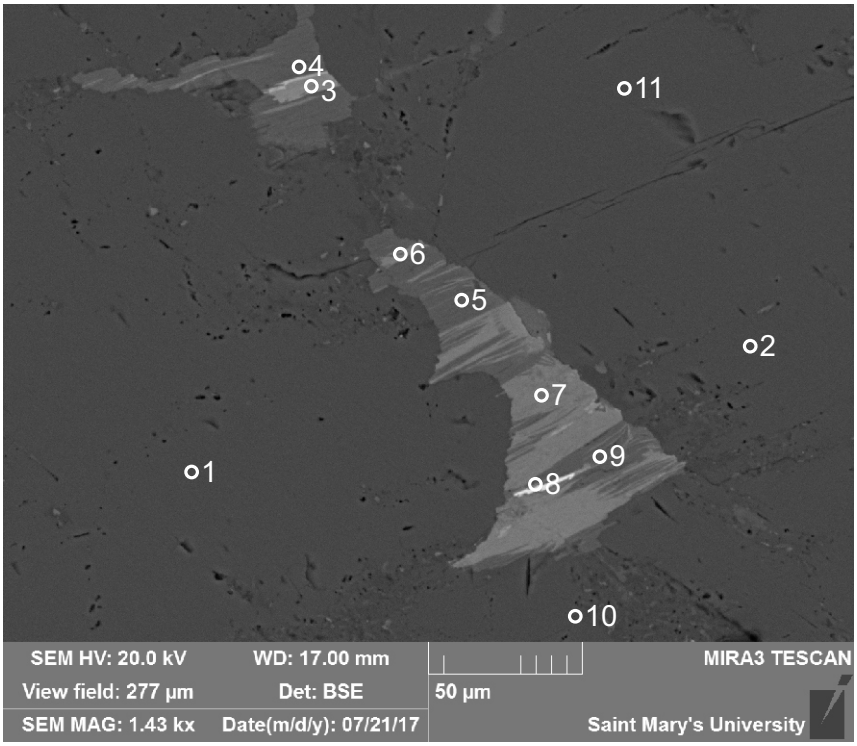
1:K-Feldspar
2:Albite
3:Magnetite
4:Chlorite
5:K-Feldspar
6:Monazite
7:Magnetite
8:TiO_2
9:Magnetite
10:Ilmenite +
11:Oligoclase
12:K-Feldspar
13:Oligoclase
14:Ilmenite +
15:Magnetite

Figure 1-1B.2: Sample 195.2M site 1. Holocrystalline granitoid rock, with plagioclase (albite 2, oligoclase 11, 13) magnetite (3, 7, 9, 15), and K-Feldspar (1, 5, 12) as the dominant minerals.



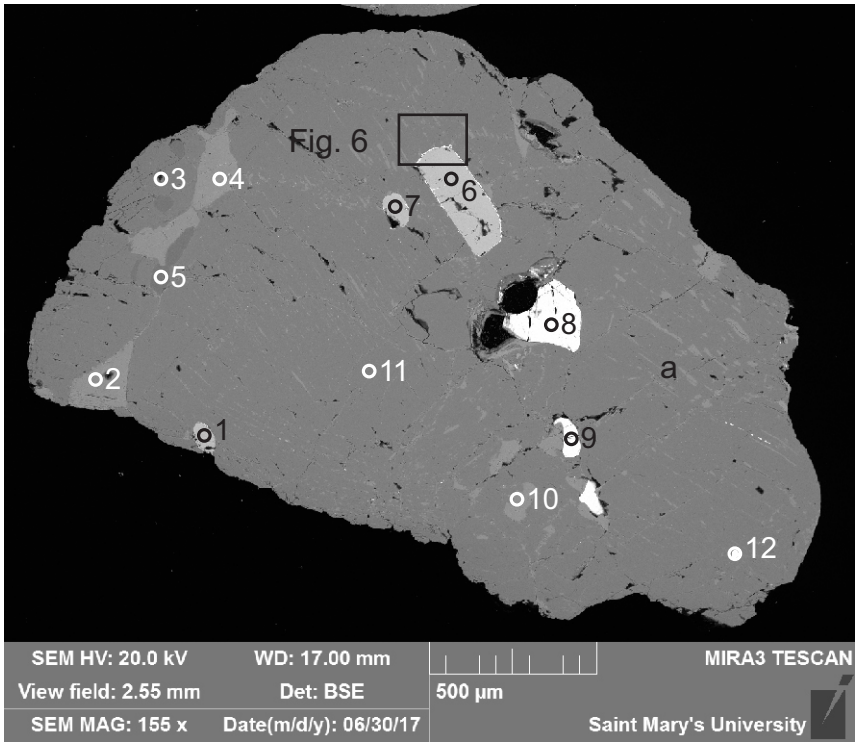
1:K-Feldspar
2:Quartz
3:Andesine
4:K-Feldspar
5:K-Feldspar +
Albite
6:Quartz
7:Andesine

Figure 1-1B.3: Sample 195.2M site 1.1. This site consists of quartz inclusions (2) in andesine (3, 7) and a large relatively euhedral crystal of K-Feldspar (1) all in interlocking textural relationship. A few voids are indicated by arrows. Some voids appear to have mineral precipitation occurring in them (see red circle).



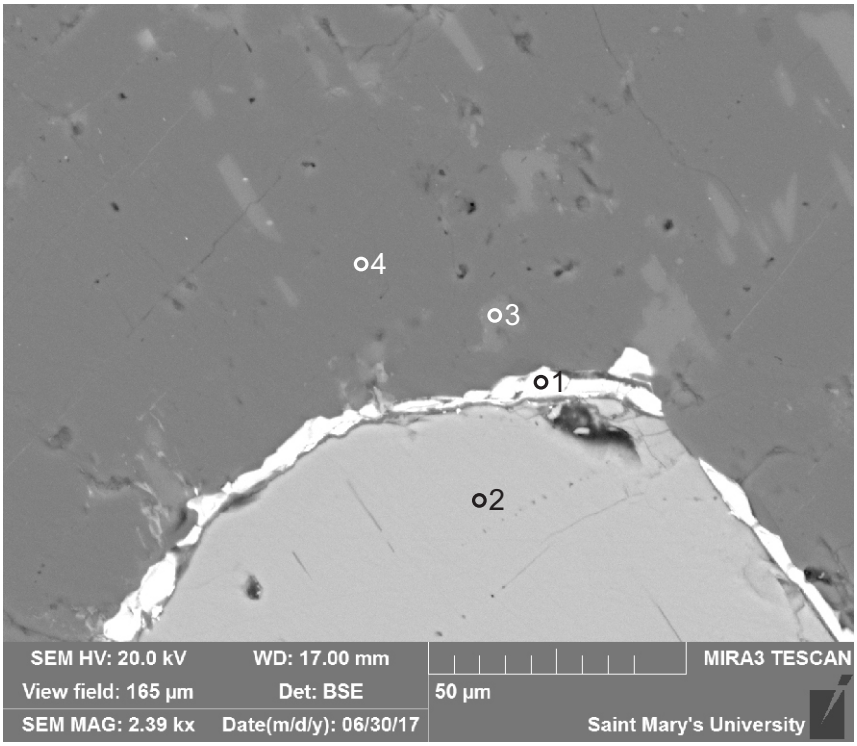
1:Andesine
2:Andesine
3:Epidote
4:Muscovite
5:Muscovite
6:Chlorite-Muscovite
7:Chlorite
8:Ilmenite + (inclusion)
9:Muscovite
10:Oligoclase
11:Oligoclase

Figure 1-1B.4: Sample 195.2M site 1.2. This site contains muscovite (5, 9) partially replaced by chlorite (6 & 7) along cleavage planes, oligoclase (10, 11), and ilmenite (8) inclusion in muscovite. Epidote (3) is likely secondary.



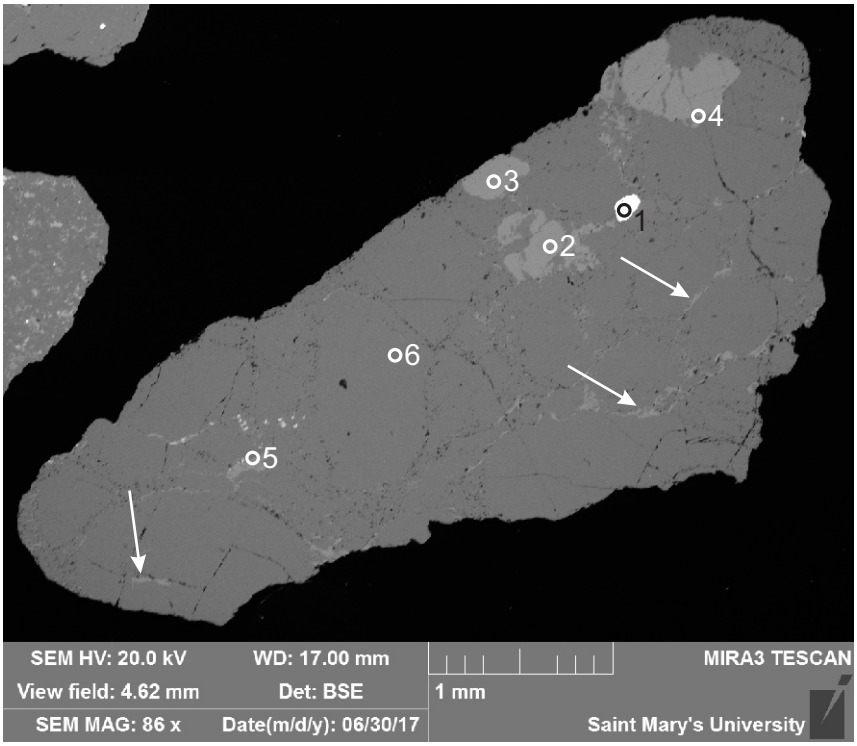
1:Apatite
2:K-Feldspar
3:Oligoclase
4:K-Feldspar
5:Quartz
6:Apatite
7:Apatite
8:Ilmenite
9:Ilmenite
10:K-Feldspar
11:Oligoclase
12:Zircon

Figure 1-1B.5: Sample 195.2M site 2. Holocrystalline rock made up of largely oligoclase (3, 11) with K-feldspar either as exsolution lamellae (position a) (antiperthite) or along grain boundaries (2, 4) of plagioclase grains (3). The oligoclase grain (11) appears to contain apatite (6, 7) and ilmentite (8, 9) inclusions and the large apatite crystal (6) is rimmed by monazite (reaction rim). Diorite.



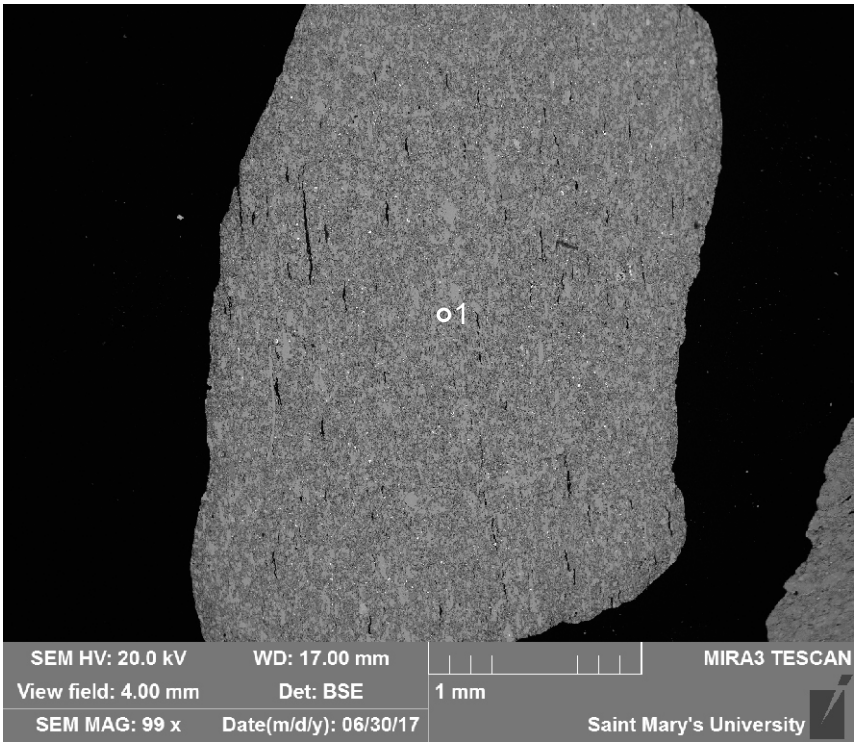
1:Monazite
2:Apatite
3:K-Feldspar
4:Albite

Figure 1-1B.6: Sample 195.2M site 2.1. In this site monazite (1) is rimming apatite (2) (reaction rim). The rest of this site is ocuppied by albite (4) and K-feldspar (3) exsolution lamellae (antiperthite).



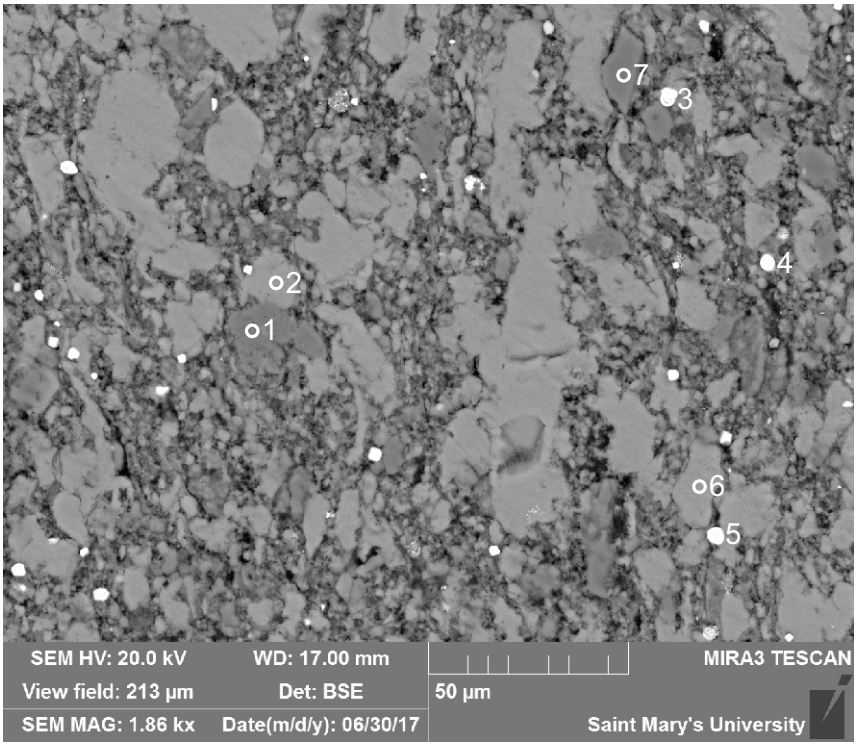
1:Monazite
2:K-Feldspar
3:K-Feldspar
4:K-Feldspar
5:K-Feldspar
6:Quartz

Figure 1-1B.7: Sample 195.2M site 3. Holocrystaline rock largely composed of quartz (6) with K-feldspar filling fractures and voids indicated by arrows and larger K-Feldspar crystals (2, 3, 4). Quartz vein/granitoid.



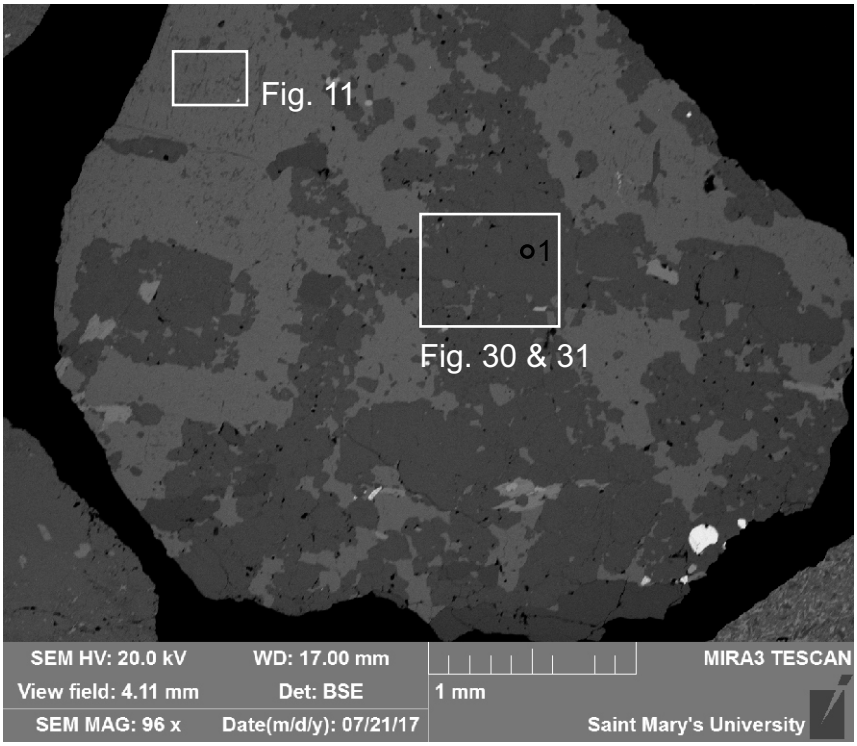
1:Mix

Figure 1-1B.8: Sample 195.2M site 4. Fine grained carbonate rock with minor silica.



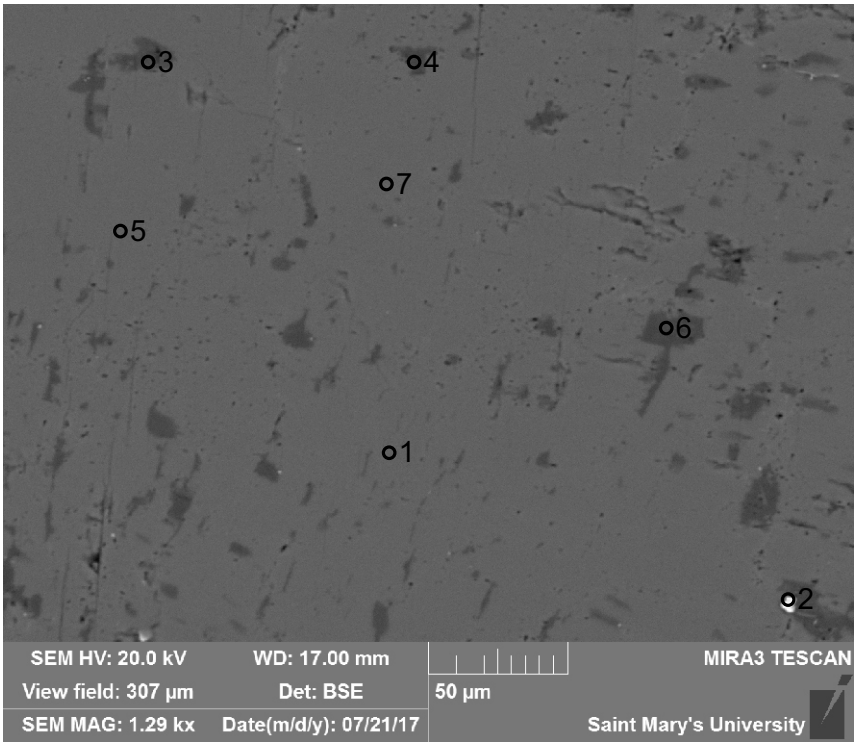
1:Dolomite
2:Calcite
3:Pyrite
4:Pyrite +
5:Pyrite
6:Calcite
7:Quartz

Figure 1-1B.9: Sample 195.2M site 4.1. This rock is porous, with pyrite (3, 4, 5) forming in between grains. Main minerals include calcite (2, 6), and equal amounts of quartz (7) and dolomite (1).



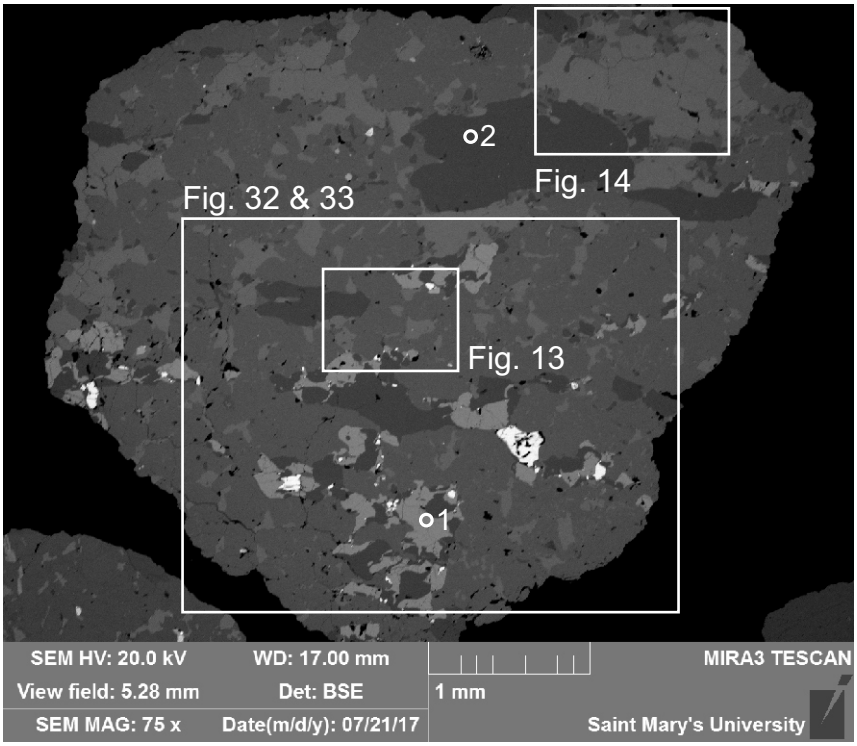
1:Oligoclase

Figure 1-1B.10: Sample 195.2M site 5. Holocrystalline feldspathic rock. Lacks presence of quartz. Common subhedral crystals of oligoclase (1) and K-feldspar.



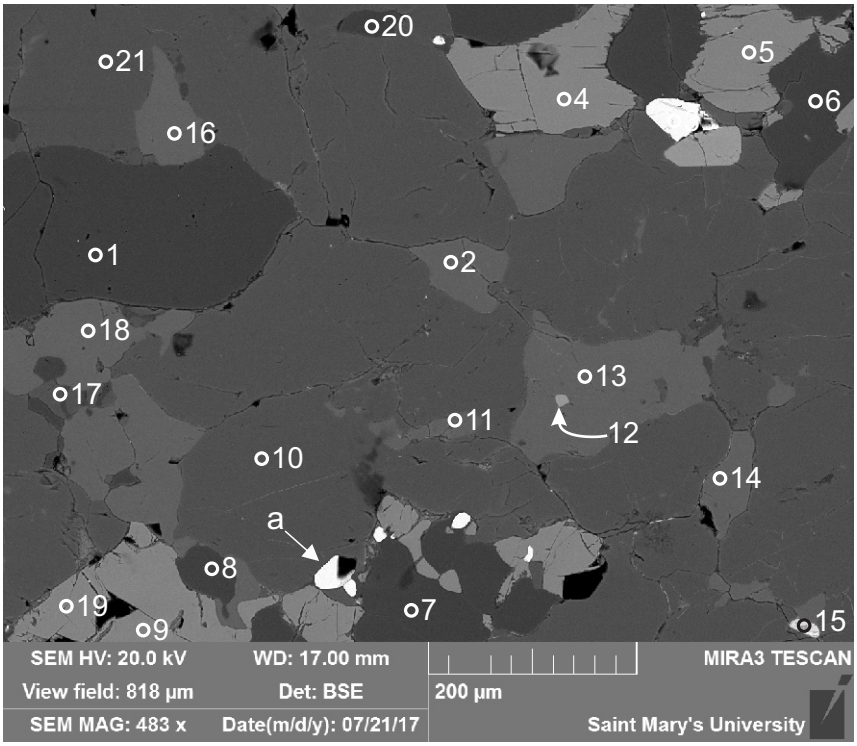
1:K-Feldspar
2:Ti-Magnetite + K-Feldspar
3:Oligoclase
4:Albite
5:K-Feldspar
6:Oligoclase
7:K-Feldspar

Figure 1-1B.11: Sample 195.2M site 5.1. This site consists of K-Feldspar (1, 7) with likely synchronous oligoclase (3, 6) due to their inclusions and patchy texture and later Ti-Magnetite (2).



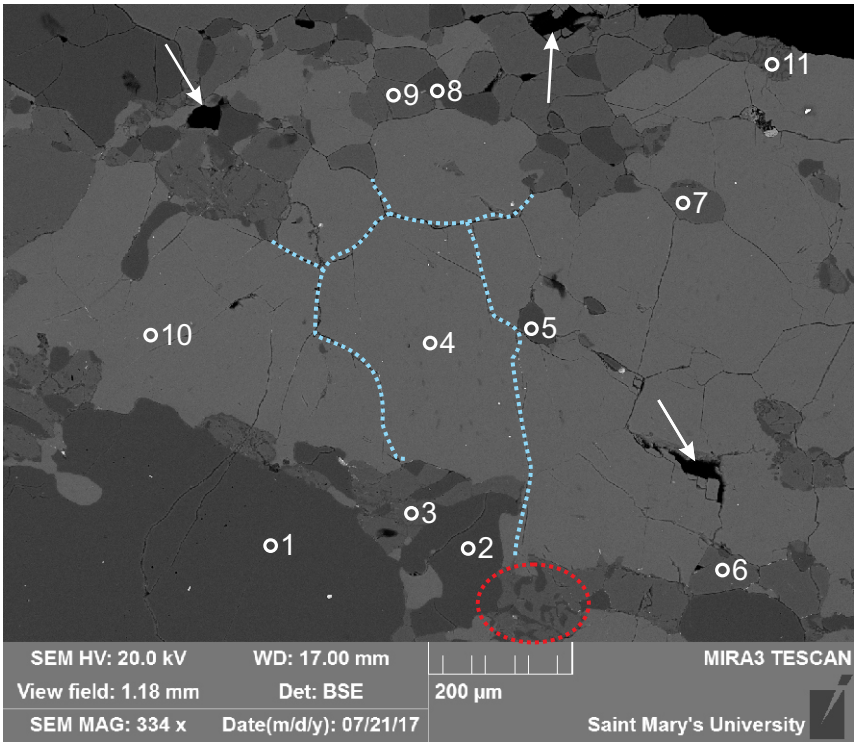
1:Orthopyroxene
2:Quartz

Figure 1-1B.12: Sample 195.2M site 6. Holocrystalline orthopyroxene (1) bearing rock with both feldspars (plagioclase and K-feldspars), and quartz (2) being the dominant minerals. Diorite.



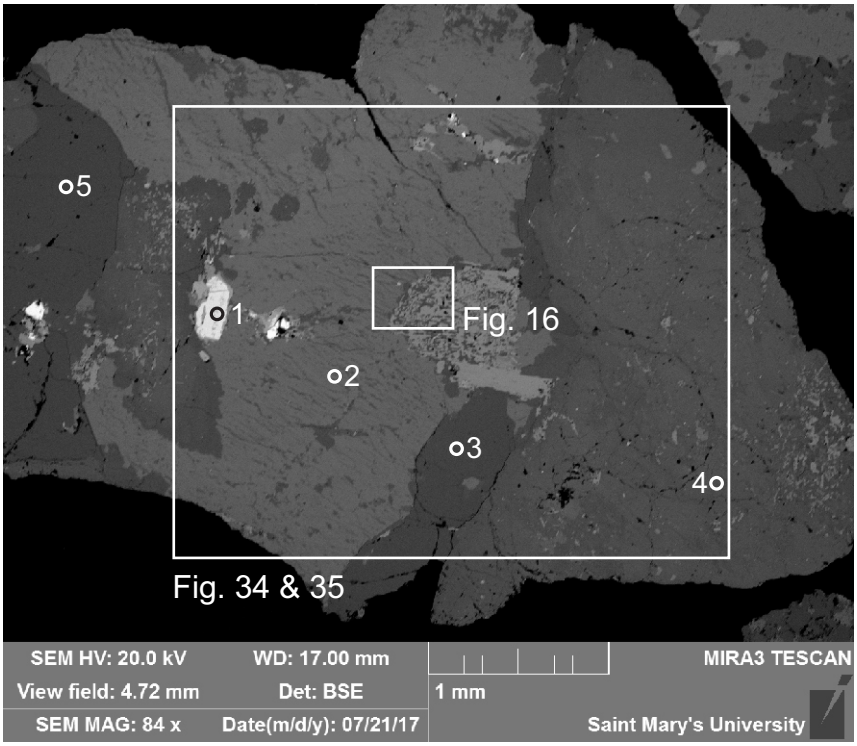
1:Quartz
2:K-Feldspar
3:Magnetite
4:Orthopyroxene
5:Orthopyroxene
6:Quartz
7:Quartz
8:Quartz
9:Orthopyroxene
10:Andesine
11:K-Feldspar
12:Apatite
13:K-Feldspar
14:K-Feldspar
15:Ilmenite +
16:K-Feldspar
17:Andesine
18:K-Feldspar
19:Orthopyroxene
20:Quartz
21:Andesine

Figure 1-1B.13: Sample 195.2M site 6.1. In this site subhedral interlocking crystals are observed of K-Feldspar (2), quartz (1), and orthopyroxene (4). Andesine (10, 17, 21) makes up most of the rock. Apatite (12) and ilmenite (15) appear to be inclusions in andesine (e.g. 10, pos. a). Diorite.



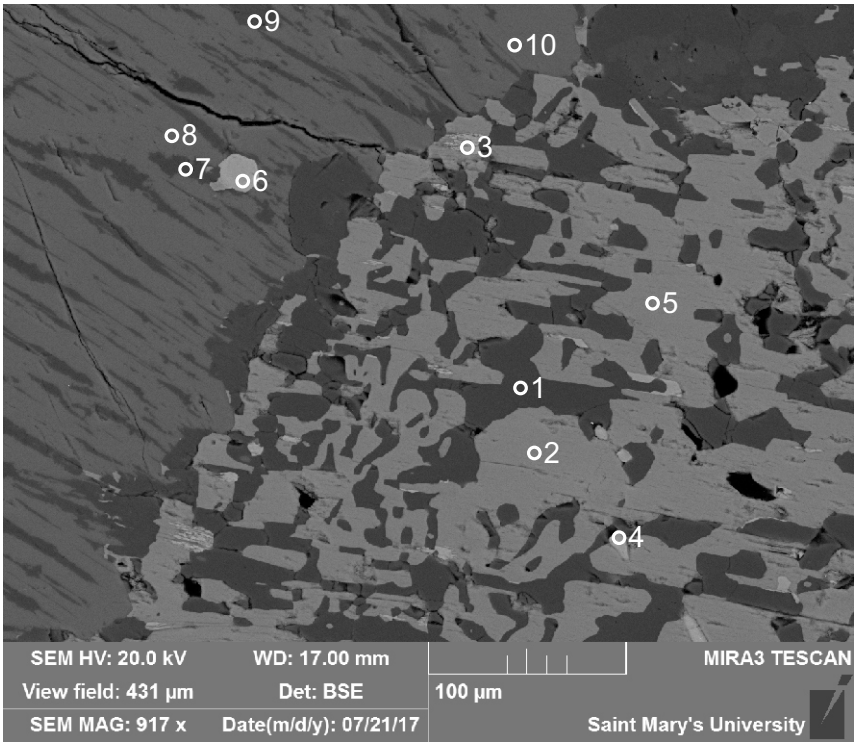
1:Quartz
2:Quartz
3:Andesine
4:K-Feldspar
5:Quartz
6:Andesine
7:Andesine
8:Quartz
9:Andesine
10:K-Feldspar
11:Quartz + Andesine

Figure 1-1B.14: Sample 195.2M site 6.2. In this site crystal boundaries can be seen indicated by dashed lines. Large crystals indicate plutonic nature. Large voids indicated by arrows. In the ellipse, what appears to be quartz and andesine (6) intergrowths.



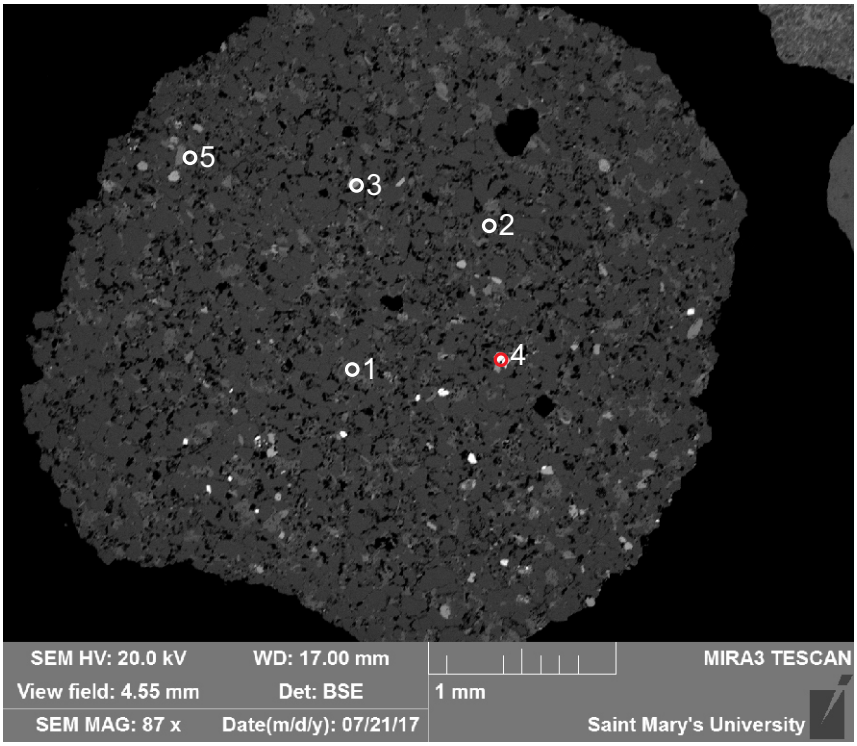
1:Ilmenite
2:K-Feldspar
3:Quartz
4:Andesine
5:Quartz

Figure 1-1B.15: Sample 195.2M site 7. Holocrystalline rock of granitoid composition. Myrmekitic-like texture observed in Fig. 16.



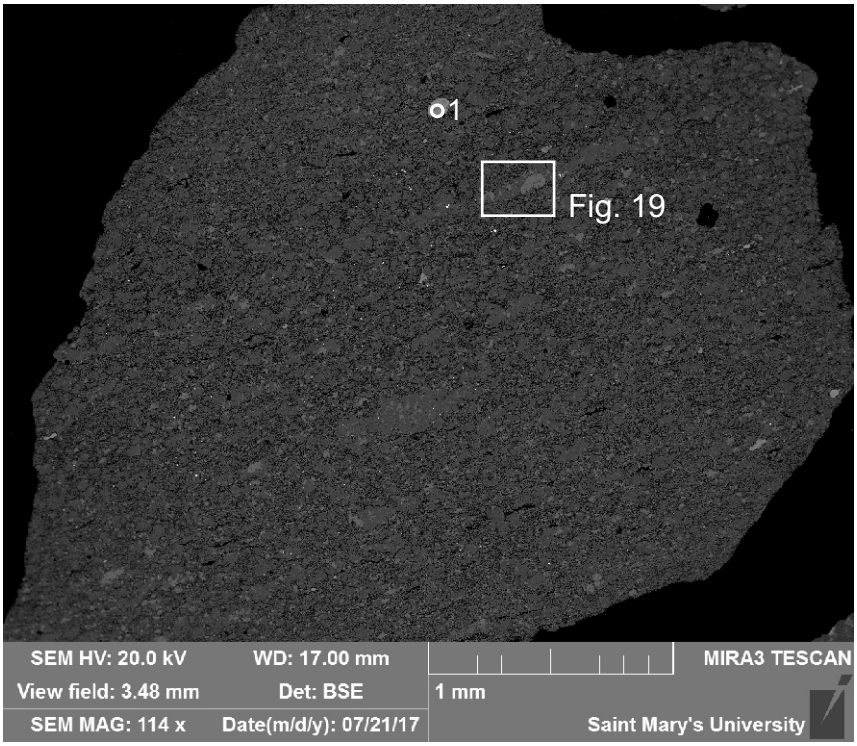
1:Quartz
2:Biotite
3:Mix
4:Apatite
5:Biotite
6:Apatite
7:Albite
8:K-Feldspar
9:Oligoclase
10:K-Feldspar

Figure 1-1B.16: Sample 195.2M site 7.1. Myrmekitic like intergrowth between biotite (2, 5) and quartz (1). Intergrowth of K-Feldspar (8) and albite (7) (perthite) with later apatite (6) inclusions.



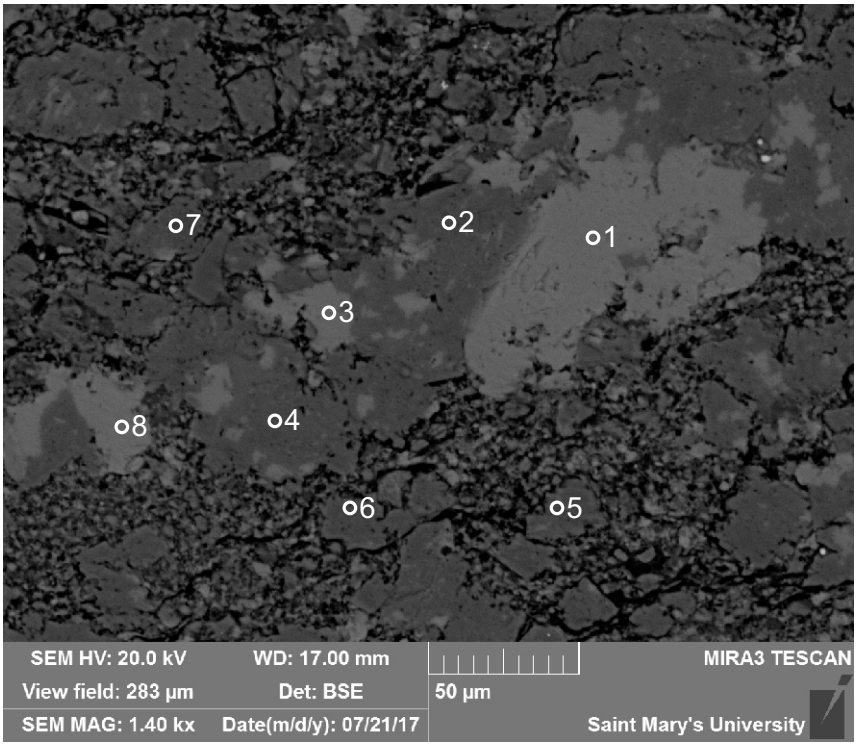
1:Muscovite
2:Quartz +
3:Apatite
4:Zircon
5:Chlorite

Figure 1-1B.17: Sample 195.2M site 8. Sandstone made up of quartz (2) cemented by chlorite (5). Minor minerals include apatite (3) and zircon (4). This is a relatively porous sandstone.



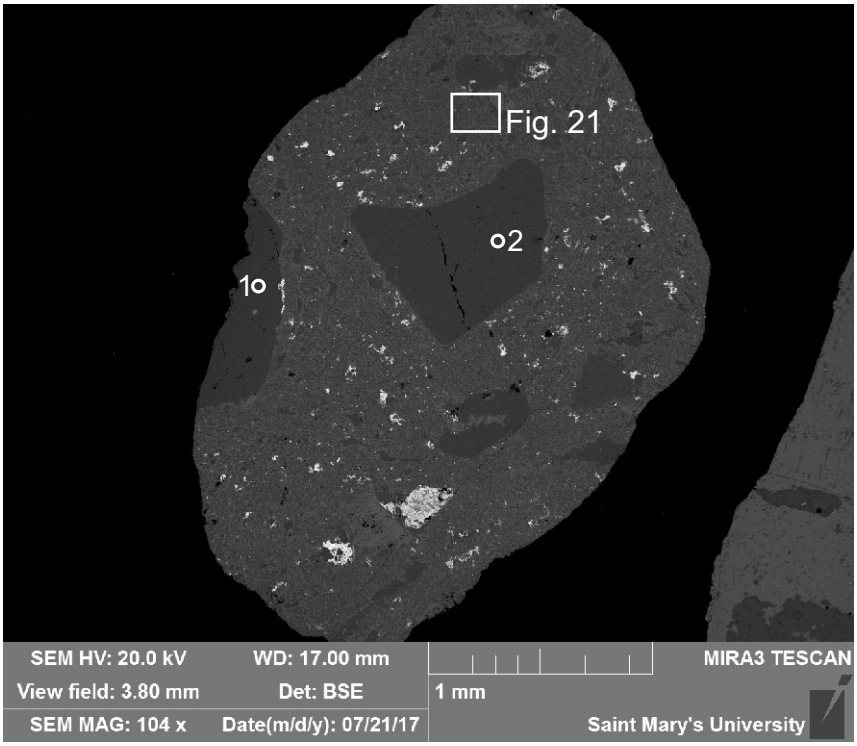
1:Apatite

Figure 1-1B.18: Sample 195.2M site 9. Dolostone, with some calcite but mainly composed of dolomite. Rare apatite (1).



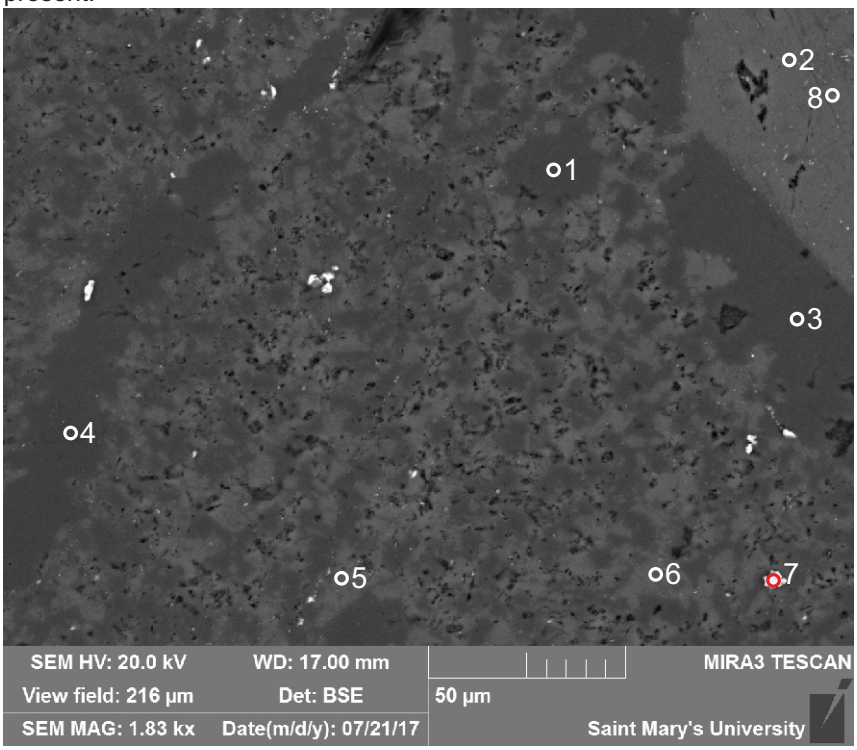
1:Calcite
2:Dolomite
3:Dolomite
4:Dolomite +
5:Dolomite
6:Dolomite
7:Dolomite
8:Calcite

Figure 1-1B.19: Sample 195.2M site 9.1. Porous dolostone with some calcite (1, 8) but mainly dolomite (2, 3, 4, 5, 6, 7).



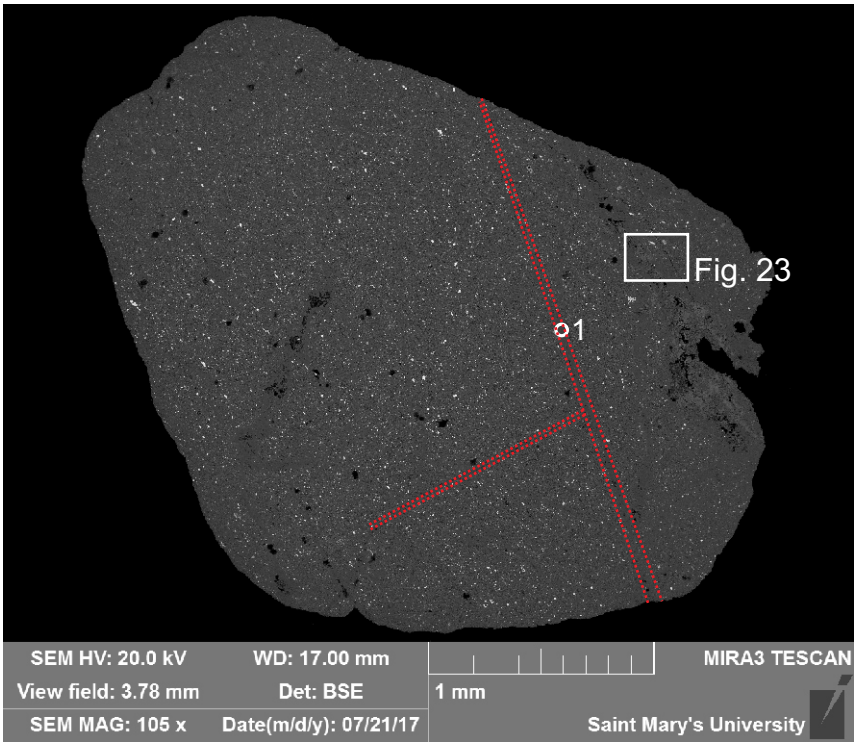
1:Quartz
2:Quartz

Figure 1-1B.20: Sample 195.2M site 10. Granitoid rock. Large quartz grains (1, 2) are surrounded by K-Feldspar and microscopic size, magnetite (white contrast) is throughout the K-Feldspar. Some smaller patches of albite are present.



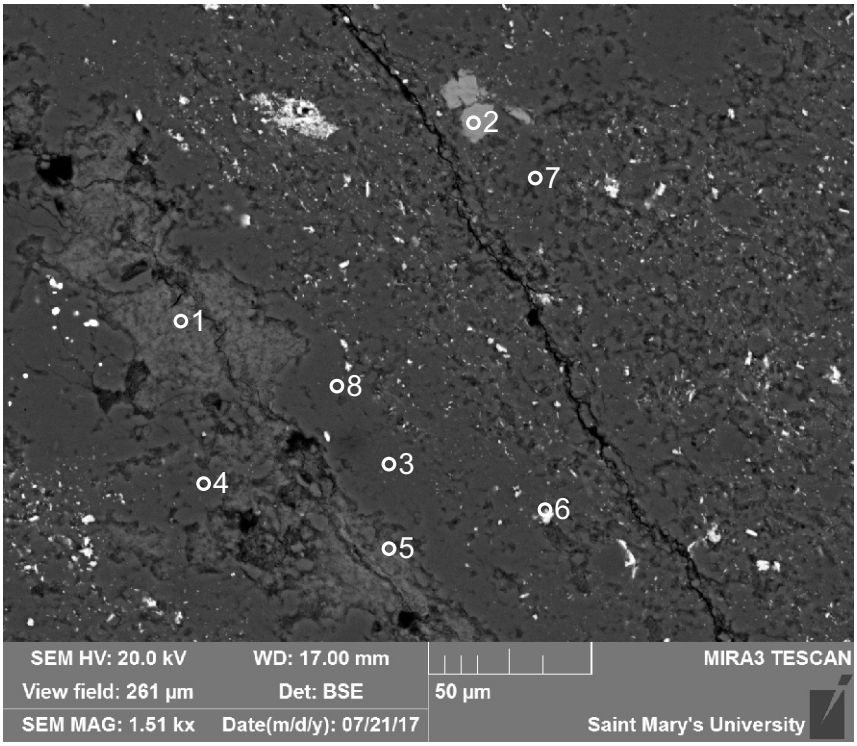
1:Albite
2:K-Feldspar
3:Albite
4:Quartz
5:K-Feldspar
6:K-Feldspar
7:Ti-Magnetite +
8:K-Feldspar

Figure 1-1B.21: Sample 195.2M site 10.1. This site consists of K-feldspar (2, 5, 6, 8), albite (1, 3), quartz (4), and scattered Ti-magnetite grains (7).



1:Quartz

Figure 1-1B.22: Sample 195.2M site 11. Lithified chloritic mudstone. Quartz (1) veinlets cut across the mudstone (indicated by dashed line).



1:Mix
2:Apatite
3:Quartz
4:Quartz +
5:Mix
6:Ti-Magnetite +
7:Quartz
8:Quartz

Figure 1-1B.23: Sample 195.2M site 11.1. This site consists of mainly detrital quartz either as scattered grains (4) or in the form of veinlets (3, 8), Ti-magnetite (6) throughout the rock, chlorite (5) and rare apatite (2).

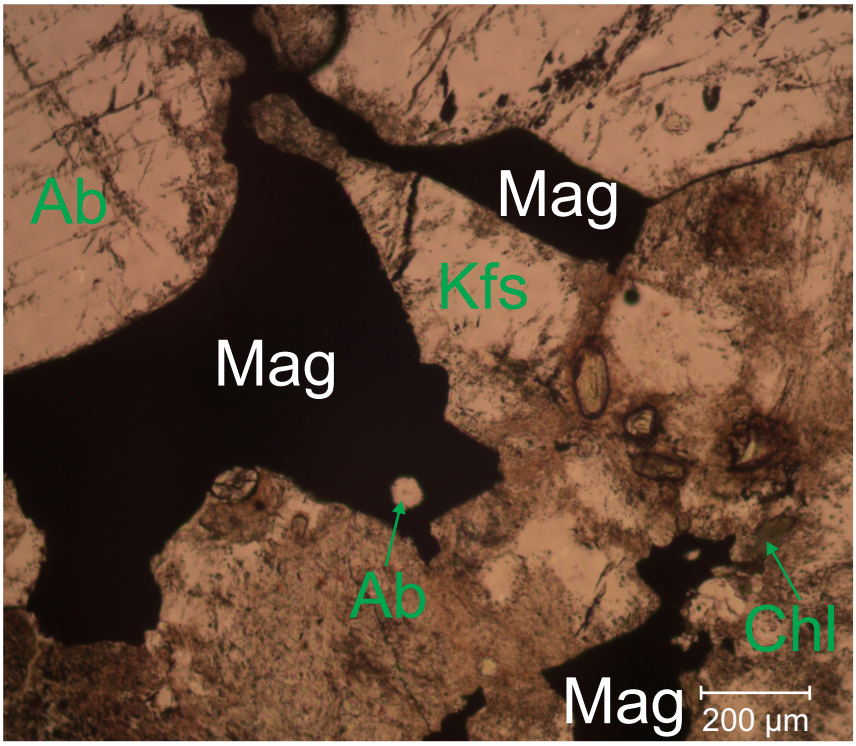


Figure 1-1B.24: Microphotograph. Sample 195.2M. Granule site 1.Transmitted light, ppl, 10x. Holocrystalline granitoid rock.

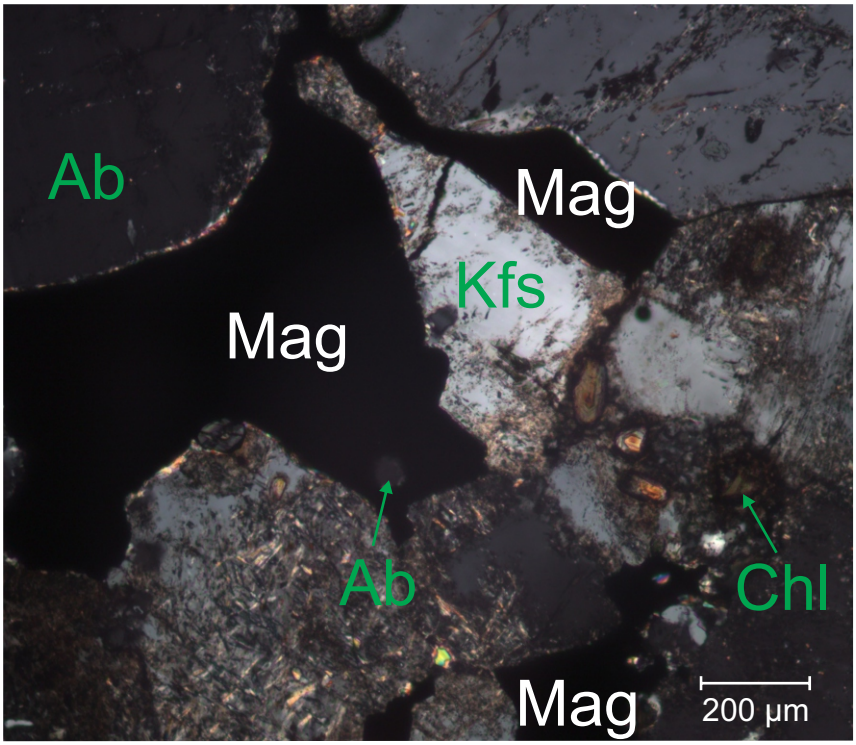


Figure 1-1B.25: Microphotograph. Sample 195.2M. Granule site 1.Transmitted light, xpl, 10x. Holocrystalline granitoid rock.

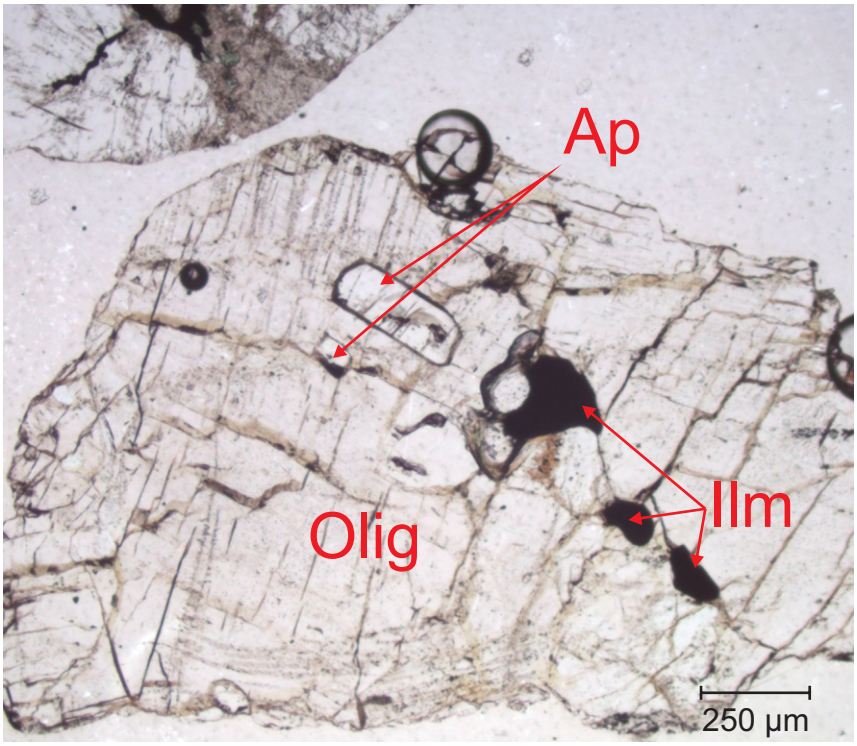


Figure 1-1B.26: Microphotograph. Sample 195.2M. Transmitted light, ppl, 4x. Granule site 2. Patches of K-Feldspar throughout.

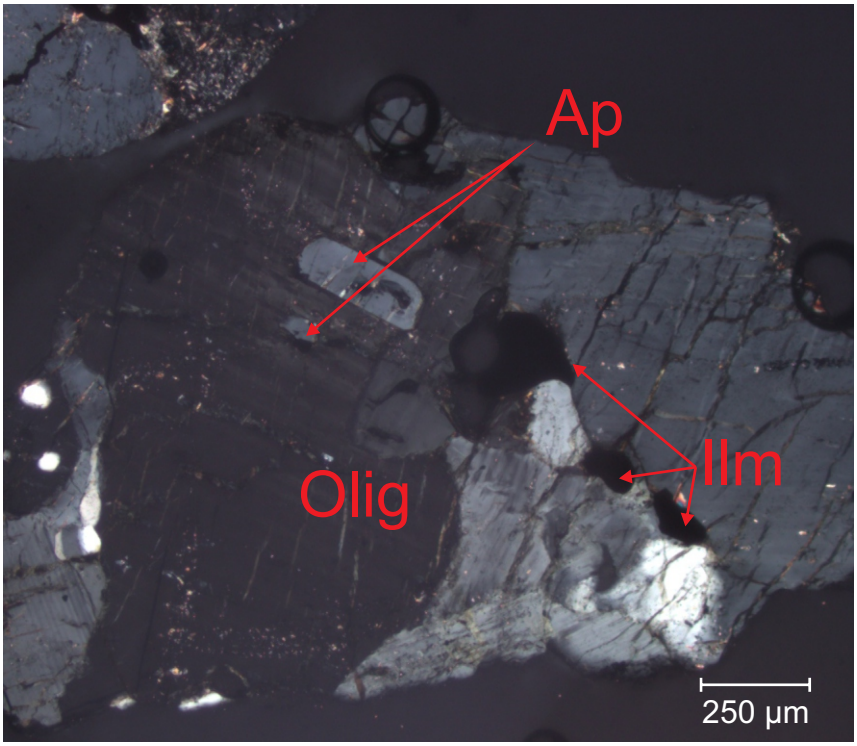


Figure 1-1B.27: Microphotograph. Sample 195.2M. Transmitted light, xpl, 4x. Granule site 2.

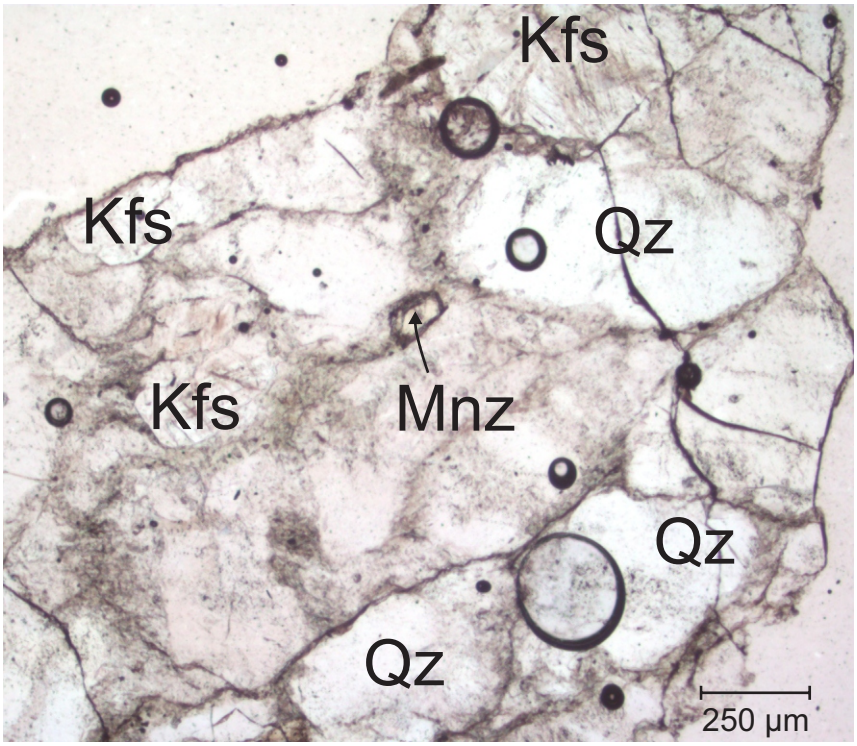


Figure 1-1B.28: Microphotograph. Sample 195.2M. Transmitted light, ppl, 4x. Granule site 3.

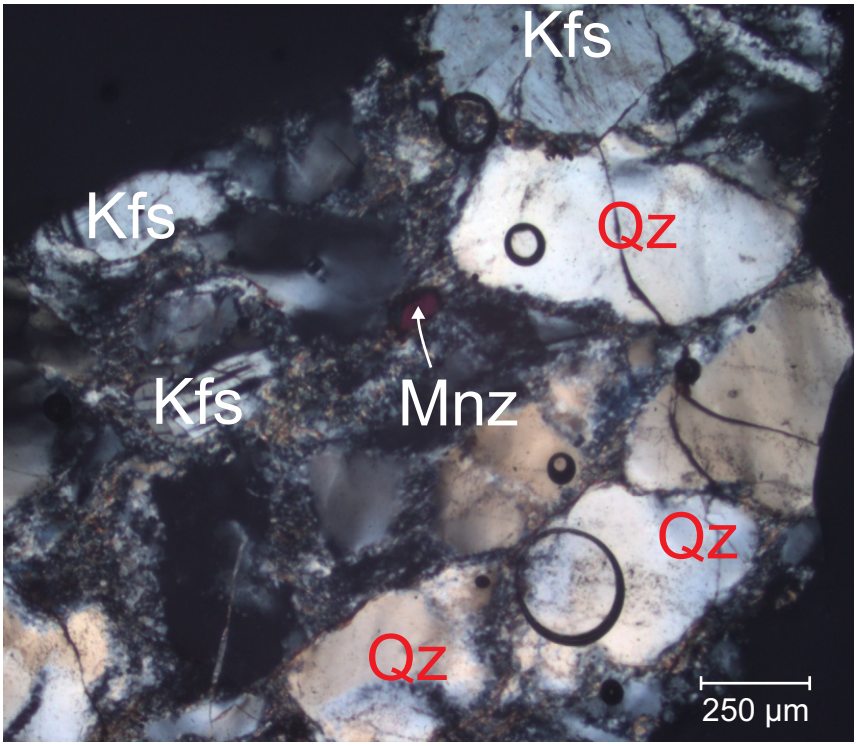


Figure 1-1B.29: Microphotograph. Sample 195.2M. Transmitted light, xpl, 4x. Granule site 3.

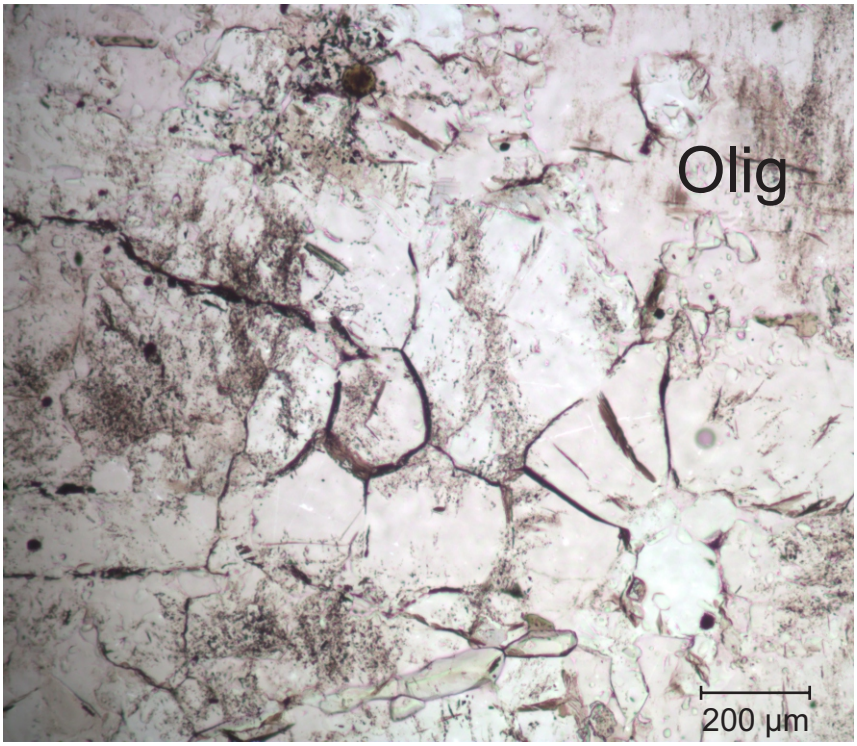


Figure 1-1B.30: Microphotograph. Sample 195.2M. Granule site 5.Transmitted light, ppl, 10x. Holocrystalline feldspathic rock.

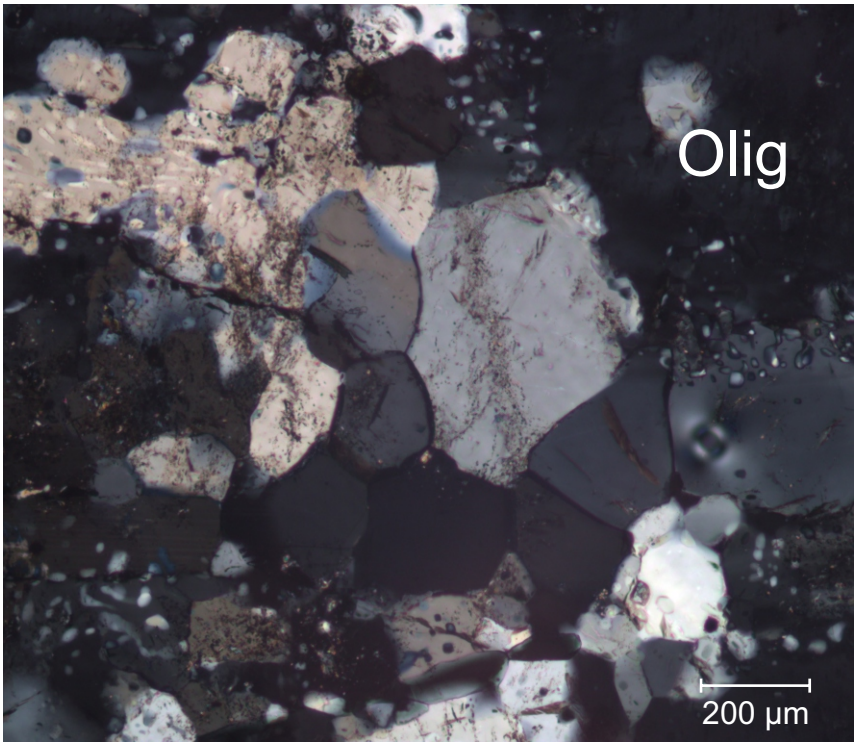


Figure 1-1B.31: Microphotograph. Sample 195.2M. Granule site 5.Transmitted light, xpl, 10x. Holocrystalline feldspathic rock.

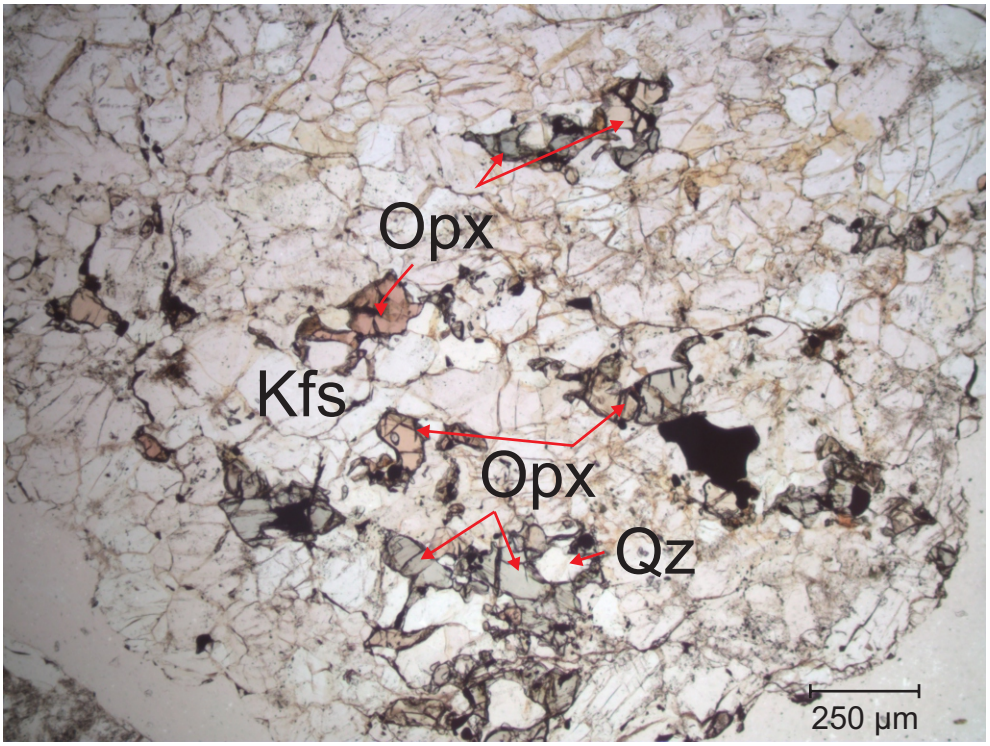


Figure 1-1B.32: Microphotograph. Sample 195.2M. Granule site 6.Transmitted light, ppl, 4x.

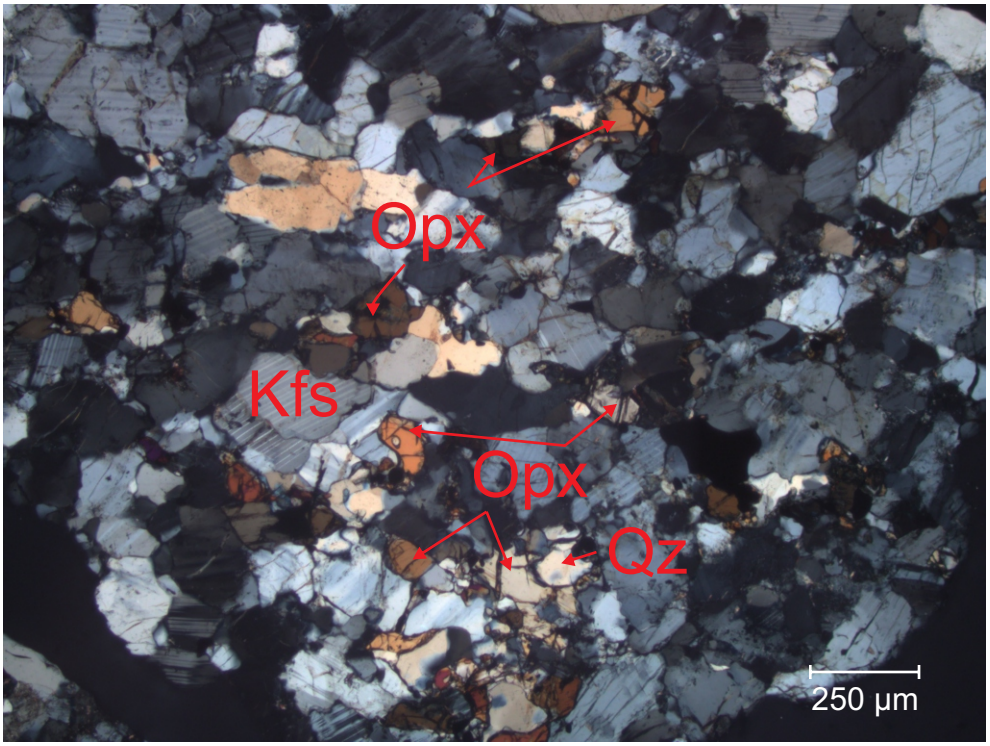


Figure 1-1B.33: Microphotograph. Sample 195.2M. Granule site 6.Transmitted light, xpl, 4x.

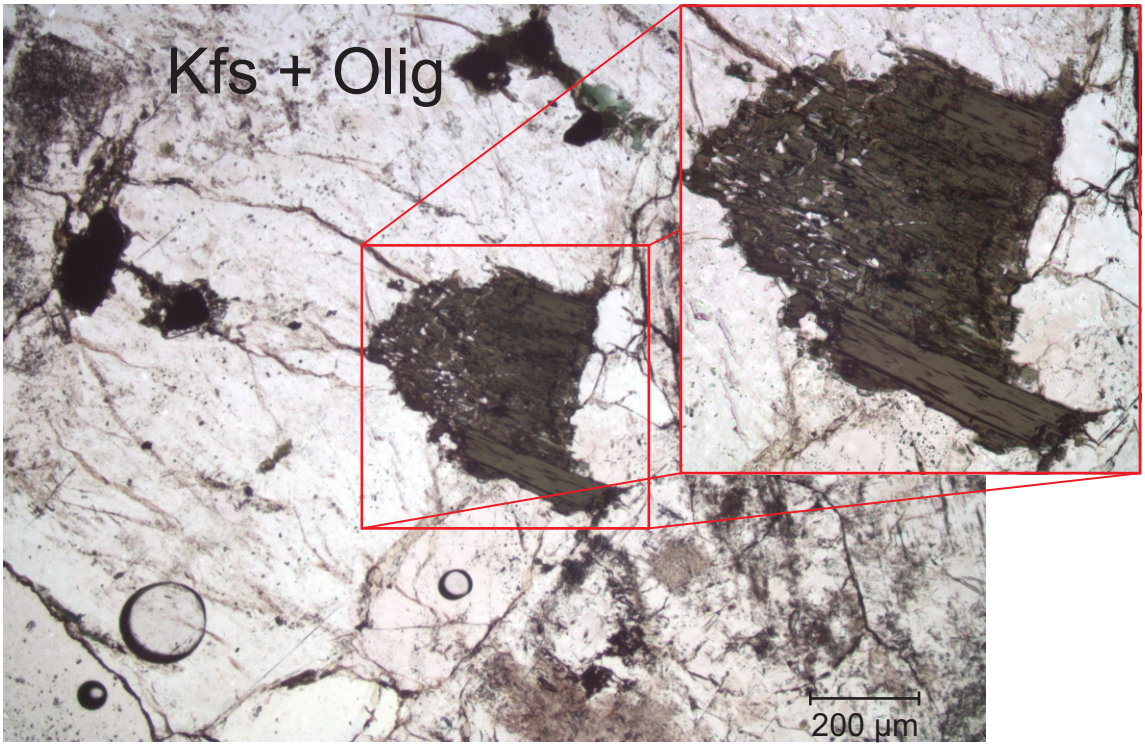


Figure 1-1B.34: Microphotograph. Sample 195.2M. Granule site 7. Transmitted light, ppl, 4x. Enlarged 10x. Holocrystalline granitoid rock.

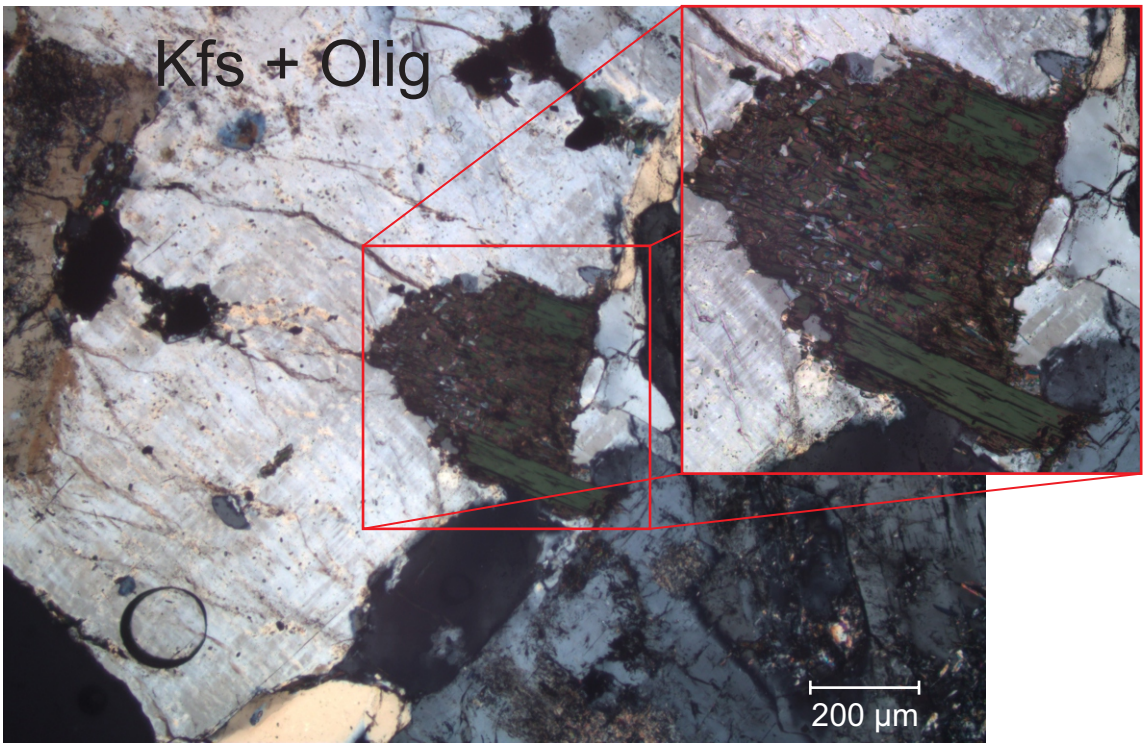


Figure 1-1B.35: Microphotograph. Sample 195.2M. Granule site 7. Transmitted light, xpl, 4x. Enlarged 10x. Holocrystalline granitoid rock.

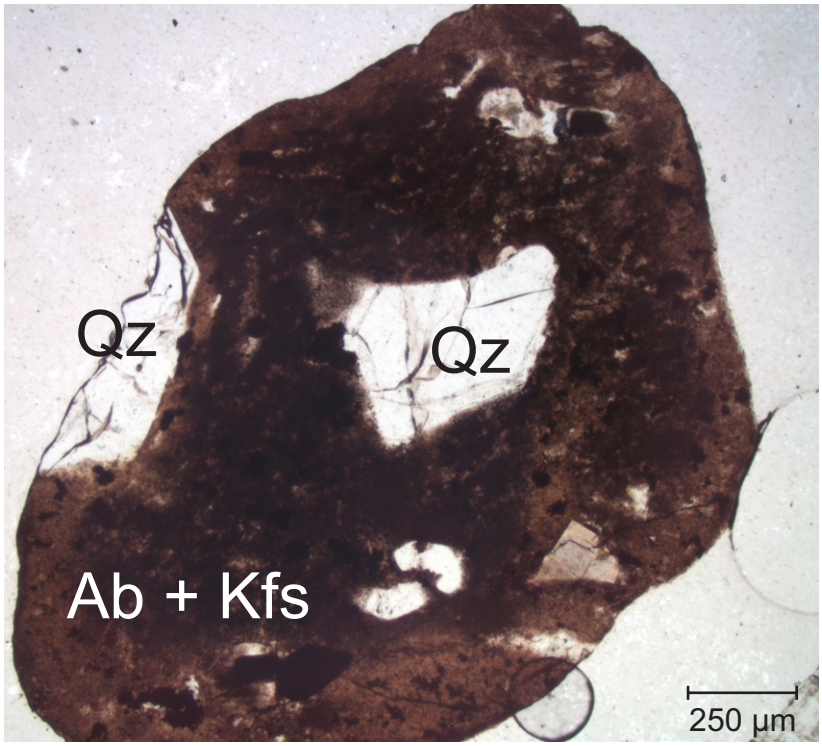


Figure 1-1B.36: Microphotograph. Sample 195.2M. Transmitted light, ppl, 4x. Granule site 10. Granitoid rock.

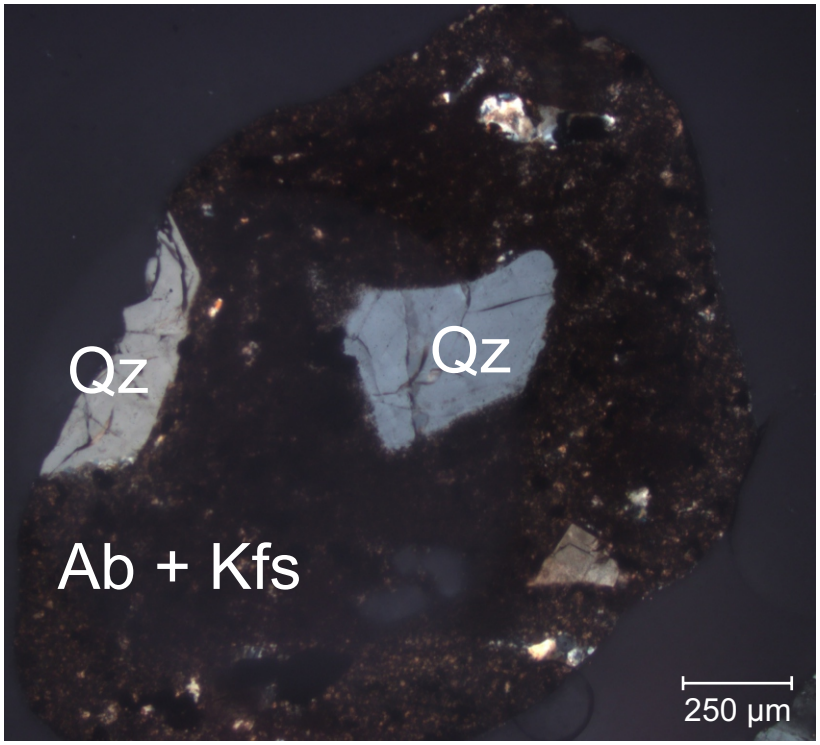


Figure 1-1B.37: Microphotograph. Sample 195.2M. Transmitted light, xpl, 4x. Granule site 10. Granitoid rock.

Table 1-1B.1: Scanning electron microscope chemical analyses of Granules from Flemish Cap. (195.2M).

Sample	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	SrO	ZrO2	Ag2O	BaO	La2O3	Ce2O3	Nd2O3	HfO2	WO3	ThO2	Total	Actual Total
5.559.2M	1	1	Kfs	66.27		17.79					0.80	15.14															100	151
5.559.2M	1	2	Ab	64.99		22.91				1.39	8.99	1.72															100	149
5.559.2M	1	3	Mag				100.00																				100	123
5.559.2M	1	4	Chl	27.71		17.78	26.16	0.47	12.67			0.20															85	139
5.559.2M	1	5	Kfs	66.19		17.74					0.75	15.31															100	161
5.559.2M	1	6	Mnz	2.16						0.71			31.89		0.03						13.52	31.21	11.25			9.25	100	142
5.559.2M	1	7	Mag				100.00																				100	131
5.559.2M	1	8	TiO2 +		97.59		2.41																				100	151
5.559.2M	1	9	Mag				100.00																				100	129
5.559.2M	1	10	Ilm +	1.40	72.98		8.23	1.61		6.73			7.23						1.83								100	151
5.559.2M	1	11	Olig	62.16		23.38	0.63			5.32	8.38	0.14															100	162
5.559.2M	1	12	Kfs	64.53		17.61	2.35		0.91		3.43	11.17															100	160
5.559.2M	1	13	Olig	62.43		23.68				5.66	8.22																100	167
5.559.2M	1	14	Ilm +	32.32	26.41	12.58	12.00	2.68	0.39	9.50	2.04	2.09															100	148
5.559.2M	1	15	Mag				100.00																				100	129
5.559.2M	1.1	1	Kfs + Ab	65.68		17.92					0.45	15.38								0.57							100	117
5.559.2M	1.1	2	Qz	100.00																							100	122
5.559.2M	1.1	3	And	62.60		23.43				5.62	8.21	0.14															100	118
5.559.2M	1.1	4	Kfs	66.25		17.79					0.31	15.65															100	118
5.559.2M	1.1	5	Kfs	66.71		19.46				1.15	4.24	8.18				0.26											100	118
5.559.2M	1.1	6	Qz	100.00																							100	122
5.559.2M	1.1	7	And	62.62		23.64				5.42	8.32																100	118
5.559.2M	1.2	1	And	62.55		23.59				5.39	8.29	0.19															100	117
5.559.2M	1.2	2	And	62.59		23.53				5.38	8.30	0.20															100	117
5.559.2M	1.2	3	Ep	39.97	0.62	20.29	14.16			21.70		0.25															97	107
5.559.2M	1.2	4	Ms	49.76	0.45	28.48	3.72		1.96			10.63															95	107
5.559.2M	1.2	5	Ms	50.34	0.59	26.59	4.43		2.51			10.55															95	109
5.559.2M	1.2	6	Chl-Ms	38.56	0.36	23.36	24.06	0.42	10.23			3.01															100	104
5.559.2M	1.2	7	Chl	27.34		18.92	24.58	0.53	13.63																		85	99
5.559.2M	1.2	8	Ilm +	18.00	31.72	10.05	25.22	5.41	4.48	4.13		0.99															100	117
5.559.2M	1.2	9	Ms	49.07	0.76	28.30	4.46		2.03			10.38															95	108
5.559.2M	1.2	10	Olig	63.00		23.22				5.22	8.56																100	118
5.559.2M	1.2	11	Olig	62.62		23.46				5.32	8.34	0.26															100	117
5.559.2M	2	1	Ap							48.62			43.87		5.69	0.29									1.53		100	167
5.559.2M	2	2	Kfs	65.63		17.87					0.99	14.65								0.87							100	153
5.559.2M	2	3	Olig	62.37		19.24	4.92		1.18	5.84	5.38	0.52				0.55											100	75
5.559.2M	2	4	Kfs	64.72		18.00	1.10		0.46		1.24	13.65								0.83							100	154
5.559.2M	2	5	Qz	100.00																							100	159
5.559.2M	2	6	Ap							48.89			44.12		4.99	0.28									1.72		100	165
5.559.2M	2	7	Ap							48.88			44.02		5.32	0.25									1.53		100	167
5.559.2M	2	8	Ilm		50.46		48.33	0.41	0.79																		100	150
5.559.2M	2	9	Ilm		50.83		48.01	0.45	0.71																		100	154
5.559.2M	2	10	Kfs	65.21		17.82					0.26	15.76								0.96							100	169
5.559.2M	2	11	Olig	63.56		22.39	0.34			4.70	8.64	0.37															100	161
5.559.2M	2	12	Zr	31.07														67.55						1.38			100	181
5.559.2M	2.1	1	Mnz	25.72		11.67	9.57		0.99	9.01			8.92								8.58	20.27	5.26				100	144

Table 1-1B.1: Scanning electron microscope chemical analyses of Granules from Flemish Cap. (195.2M).

Sample	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	SrO	ZrO2	Ag2O	BaO	La2O3	Ce2O3	Nd2O3	HfO2	WO3	ThO2	Total	Actual Total
5.559.2M	2.1	2	Ap							48.92			44.02		5.10	0.32									1.63		100	173
5.559.2M	2.1	3	Kfs	65.59		18.63	0.34			1.17	1.03	13.24															100	160
5.559.2M	2.1	4	Ab	63.52		22.93				4.89	8.50	0.15															100	163
5.559.2M	3	1	Mnz	1.21						0.98			33.21		-0.30						14.34	31.41	11.97			7.17	100	134
5.559.2M	3	2	Kfs	66.05		17.69						16.27															100	154
5.559.2M	3	3	Kfs	66.00		17.75					0.50	15.75															100	150
5.559.2M	3	4	Kfs	66.10		17.66						16.24															100	122
5.559.2M	3	5	Kfs	65.99		17.55					0.30	16.15															100	155
5.559.2M	3	6	Qz	100.00																							100	170
5.559.2M	4	1	Mix	40.99		1.36	0.49		0.92	55.15		0.27		0.82													100	109
5.559.2M	4.1	1	Dol	0.41					21.32	32.27																	54	79
5.559.2M	4.1	2	Cal						0.43	55.57																	56	80
5.559.2M	4.1	3	Py	0.83			27.78			0.44				70.94													100	325
5.559.2M	4.1	4	Py +	1.44			28.40			0.49				69.66													100	318
5.559.2M	4.1	5	Py	0.72			27.64			0.72	0.27			70.64													100	329
5.559.2M	4.1	6	Cal						0.35	54.95							0.70										56	82
5.559.2M	4.1	7	Qz	99.73						0.27																	100	170
5.559.2M	5	1	Olig	65.33		21.6				3.18	9.71	0.23															100	113
5.559.2M	5.1	1	Kfs	65.74		17.8					0.57	15.3								0.58							100	122
5.559.2M	5.1	2	Ti-Mag + Kfs	11.03	5.05	3.44	77.71				0.48	2.29															100	105
5.559.2M	5.1	3	Olig	65.85		21				2.32	9.91	0.94															100	118
5.559.2M	5.1	4	Ab	69.44		18.7					11.5	0.35															100	122
5.559.2M	5.1	5	Kfs	65.75		17.9					0.58	15.2								0.61							100	121
5.559.2M	5.1	6	Olig	65.42		20.7				2.27	9.76	1.89															100	121
5.559.2M	5.1	7	Kfs	65.92	0.23	17.9					0.55	15.5															100	119
5.559.2M	6	1	Opx	53.38		1.62	24.06	0.64	20	0.32																	100	121
5.559.2M	6	2	Qz	100																							100	106
5.559.2M	6.1	1	Qz	100																							100	120
5.559.2M	6.1	2	Kfs	65.48		18.1					0.58	15.1								0.82							100	119
5.559.2M	6.1	3	Mag	0.65		0.67	98.69																				100	95.9
5.559.2M	6.1	4	Opx	53.22		2.02	24.06	0.63	19.7	0.37																	100	115
5.559.2M	6.1	5	Opx	53.33		1.84	23.96	0.65	19.9	0.36																	100	114
5.559.2M	6.1	6	Qz	99.78			0.22																				100	121
5.559.2M	6.1	7	Qz	100																							100	125
5.559.2M	6.1	8	Qz	99.79			0.21																				100	124
5.559.2M	6.1	9	Opx	53.15		2.09	24.2	0.67	19.4	0.44																	100	119
5.559.2M	6.1	10	And	58.96		26				8.19	6.59	0.24															100	119
5.559.2M	6.1	11	Kfs	63.51		17.5	2.73		1.47		0.33	14								0.54							100	117
5.559.2M	6.1	12	Ap	0.92						47.8		0.43	43.6		5.71										1.49		100	127
5.559.2M	6.1	13	Kfs	63.07		17.6	4.61		0.57		0.54	13.6															100	115
5.559.2M	6.1	14	Kfs	65.5		18					0.54	15.2								0.83							100	121
5.559.2M	6.1	15	Ilm +	10.42	59.4	7.13	21.16		1.52	0.37																	100	114
5.559.2M	6.1	16	Kfs	65.44		18.1					0.7	14.9								0.87							100	117
5.559.2M	6.1	17	And	58.2		26.6				8.67	6.38	0.19															100	118
5.559.2M	6.1	18	Kfs	65.63		17.9					0.63	15								0.86							100	117
5.559.2M	6.1	19	Opx	53.47		2.26	22.96	0.62	20.3	0.43																	100	123

Table 1-1B.1: Scanning electron microscope chemical analyses of Granules from Flemish Cap. (195.2M).

Sample	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	SrO	ZrO2	Ag2O	BaO	La2O3	Ce2O3	Nd2O3	HfO2	WO3	ThO2	Total	Actual Total
5.559.2M	6.1	20	Qz	100																							100	119
5.559.2M	6.1	21	And	59.26		25.8				8.03	6.69	0.22															100	116
5.559.2M	6.2	1	Qz	100																							100	123
5.559.2M	6.2	2	Qz	100																							100	125
5.559.2M	6.2	3	And	58.52		26.5				8.7	6.3																100	120
5.559.2M	6.2	4	Kfs	65.48		18					0.82	14.7								0.95							100	119
5.559.2M	6.2	5	Qz	100																							100	122
5.559.2M	6.2	6	And	59.26		25.9				8.18	6.51	0.2															100	123
5.559.2M	6.2	7	And	58.67		25.5	0.6		0.43	8.37	6.16	0.25															100	115
5.559.2M	6.2	8	Qz	100																							100	118
5.559.2M	6.2	9	And	58.69		26.2				8.48	6.45	0.17															100	115
5.559.2M	6.2	10	Kfs	65.65		18.1					0.92	14.6								0.79							100	117
5.559.2M	6.2	11	Qz + And	92.5		4.81				1.29	1.4																100	117
5.559.2M	7	1	Ilm	0.53	52.3		43.51	3.68																			100	99.7
5.559.2M	7	2	Kfs	67.05		18.1					5.52	9.3															100	122
5.559.2M	7	3	Qz	100																							100	132
5.559.2M	7	4	And	60.59		24.5	0.45			6.77	7.42	0.26															100	126
5.559.2M	7	5	Qz	100																							100	104
5.559.2M	7.1	1	Qz	99.63			0.37																				100	123
5.559.2M	7.1	2	Bt	39.78	1.68	14.8	17.16	0.64	12.1			9.85															96	111
5.559.2M	7.1	3	Mix	38.05	1.73	9.18	16.4	0.27	0.62	33.5		0.23															100	110
5.559.2M	7.1	4	Ap	0.94			0.45			47.5		0.2	43.6		5.79										1.54		100	128
5.559.2M	7.1	5	Bt	40.13	1.7	15.1	16.61	0.58	12.1			9.85															96	111
5.559.2M	7.1	6	Ap	0.57						48.2			43.5	0.46	5.69										1.6		100	124
5.559.2M	7.1	7	Ab	69.1		18.9				0.38	11.3	0.35															100	119
5.559.2M	7.1	8	Kfs	66.26		17.9					0.57	15.3															100	117
5.559.2M	7.1	9	Olig	65.44		21.8				3.24	9.32	0.21															100	117
5.559.2M	7.1	10	Kfs	66.15		17.8	0.22				0.59	15.3															100	117
5.559.2M	8	1	Ms	48.7	0.29	30.3	3.563		1.89		0.27	10															95	106
5.559.2M	8	2	Qz +	95.37		1.83	0.9		0.54	1.02		0.34															100	107
5.559.2M	8	3	Ap				0.43	0.53		46.6			43.8		7.07										1.53		100	118
5.559.2M	8	4	Zr	31.34		0.72	0.36			0.32								67.3									100	118
5.559.2M	8	5	Chl	26.22		21.3	24.7		12.8																		85	88.9
5.559.2M	9	1	Ap						0.41	48	0.65		39.6	2.69	8.58												100	100
5.559.2M	9.1	1	Cal	0.75					0.67	54.6																	56	57.3
5.559.2M	9.1	2	Dol	1.879		0.91	0.421		18	32.6		0.17															54	56.7
5.559.2M	9.1	3	Dol	0.464					1.12	52.4																	54	57
5.559.2M	9.1	4	Dol +				4.21		39.3	56.5																	100	56.2
5.559.2M	9.1	5	Dol	0.432			0.319		20	33.3																	54	56.2
5.559.2M	9.1	6	Dol	0.491			0.394		19.8	33.3																	54	56.3
5.559.2M	9.1	7	Dol	0.448					22.4	31.2																	54	56.3
5.559.2M	9.1	8	Cal						0.55	55.5																	56	56.4
5.559.2M	10	1	Qz	100																							100	112
5.559.2M	10	2	Qz	100																							100	113
5.559.2M	10.1	1	Ab	69.12		18.9	0.23			0.2	11.3	0.26															100	120
5.559.2M	10.1	2	Kfs	66.49		17.4	0.91				1.26	13.7				0.2											100	117

Table 1-1B.1: Scanning electron microscope chemical analyses of Granules from Flemish Cap. (195.2M).

Sample	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	SrO	ZrO2	Ag2O	BaO	La2O3	Ce2O3	Nd2O3	HfO2	WO3	ThO2	Total	Actual Total
5.559.2M	10.1	3	Ab	68.87		19.2	0.22			0.52	10.9	0.22															100	120
5.559.2M	10.1	4	Qz	100																							100	123
5.559.2M	10.1	5	Kfs	68.74		16.1	1.43				2.28	11.5															100	120
5.559.2M	10.1	6	Kfs	70.55		15.7	1.41				4.66	7.66															100	121
5.559.2M	10.1	7	Ti-Mag +	6.43	2.99	1.51	87.26	0.78			0.57	0.45															100	95.8
5.559.2M	10.1	8	Kfs	66.72		17	0.91				0.79	14.6															100	118
5.559.2M	11	1	Qz	99.82			0.18																				100	123
5.559.2M	11.1	1	Mix	43.22		19.9	16.59	0.42	18.3	0.31	0.58	0.39				0.32											100	98.8
5.559.2M	11.1	2	Ap	0.53				0.43		47.3			43.5		6.72										1.45		100	124
5.559.2M	11.1	3	Qz	98.98		0.72	0.29																				100	120
5.559.2M	11.1	4	Qz +	94.64		2.89	0.84		1.13			0.51															100	118
5.559.2M	11.1	5	Mix	40.63		20	17.59	0.28	20.8	0.23		0.19				0.22											100	95.9
5.559.2M	11.1	6	Ti-Mag +	14.22	2.04		83.25	0.49																			100	101
5.559.2M	11.1	7	Qz	98.07		0.85	0.53		0.55																		100	120
5.559.2M	11.1	8	Qz	98.61		0.82	0.44					0.13															100	120
			Notes																									
			"+" indicates more than one mineral present																									

Appendix 1-2A: SEM-BSE images for Flemish Cap with EDS Mineral Analyses and Microphotographs Sample 2008061-229.2L

Flemish Cap Sample 229.2L Lithology Summary Notes

Granule 1 (Sites 1, 1.1) Microphotographs: Figures 1-2A.15, 1-2A.16
Holocystalline granitic rock. Igneous textures of intergrowths between andesine, quartz, and biotite. Biotite is chloritized in some parts of the Granule. Zircon is partially infilling a void (Fig. 1-2A.2).

Granule 2 (Sites 2, 2.1) Microphotographs: Figures 1-2A.17, 1-2A.18Epidosite.
Fine-grained rock composed largely of epidote and lesser quartz.
Metemorphic rock with fabric that can be seen in Figure 1-2A.4. Small amounts of calcite, albite, chlorite, and actinolite can be seen with 1.57 kx magnification (Fig. 1-2A.5).

Granule 3 (Sites 3, 3.1, 3.2, 3.3) Microphotographs: Figures 1-2A.19, 1-2A.20, 1-2A.21, 1-2A.22
If extrusive, could be dacite, or if intrusive, granodiorite. Holocrystalline igneous rock with a 2:1 oligoclase to K-feldspar ratio. Dominant minerals are oligoclase, K-feldspar, quartz, with small amounts of biotite. Muscovite and epidote are in smaller amounts and are found as smaller crystals. There is also zircon present (Fig. 1-2A.9).

Granule 4 (Sites 4, 4.1) Microphotographs: Figures 1-2A.23, 1-2A.24
Sandstone. Largely composed of quartz grains. Ankerite appears to be the cement. Smaller amounts of titanium oxide, chloritized biotite, and zircon are present. Chlorite is probably the result of altered ferromagnesian minerals. This sandstone contains litic clasts of similar mineral constituents.

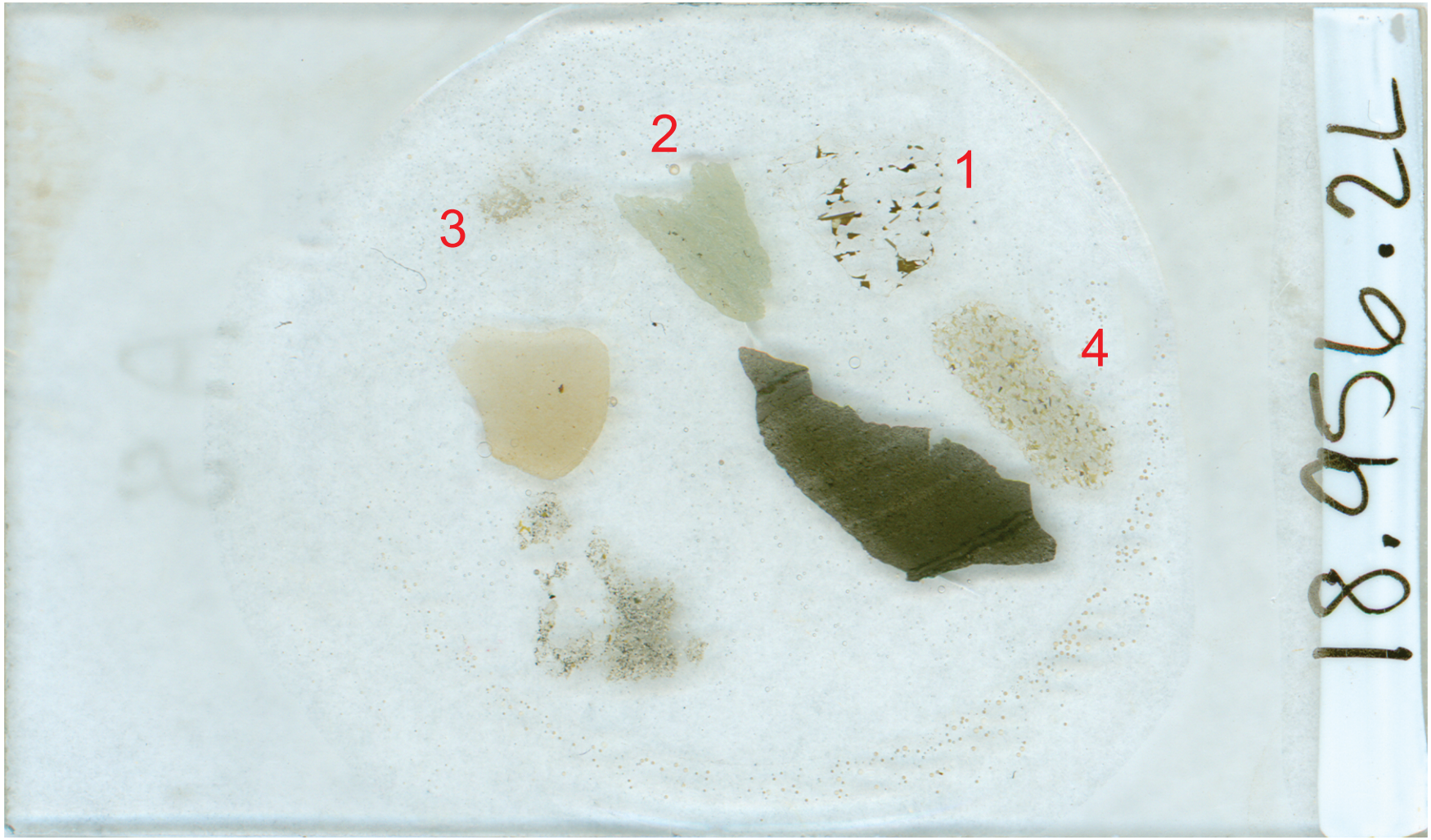
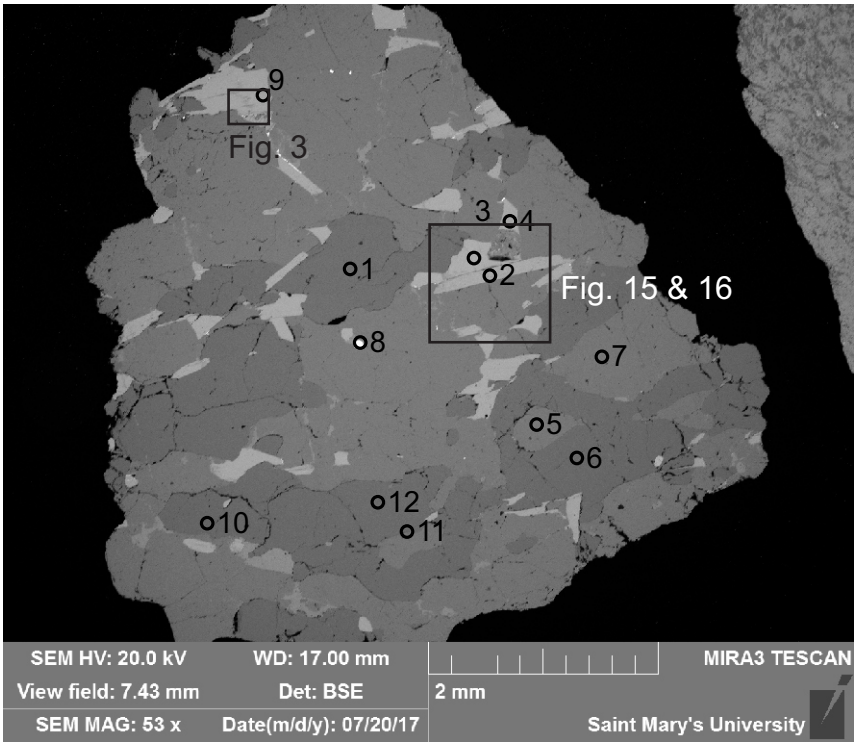
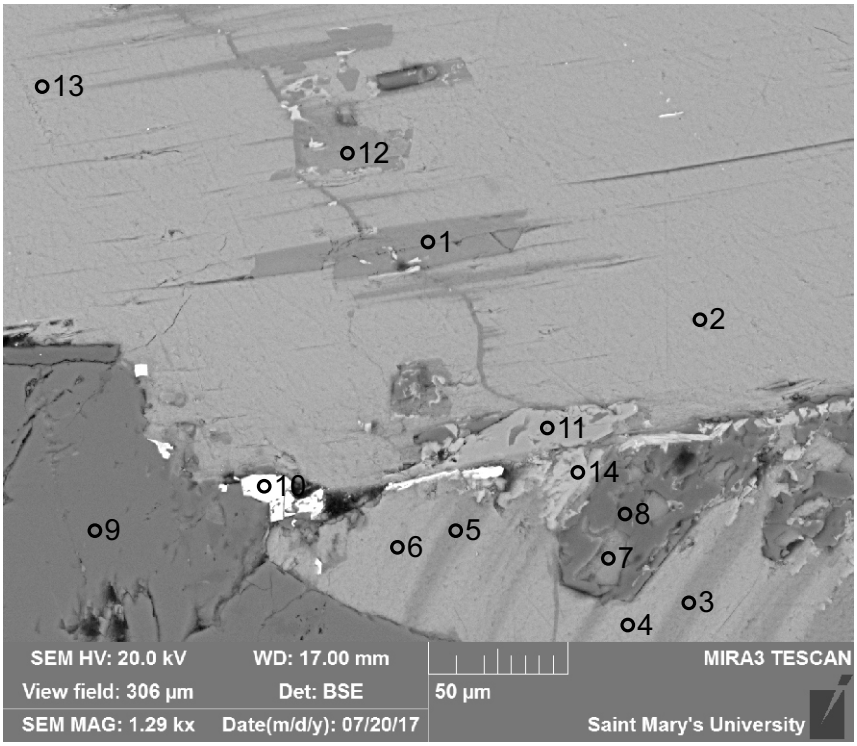


Figure 1-2A.1: Scanned thin section of Flemish Cap sample 229.2L. Granules are numbered in red corresponding to analysed sites.



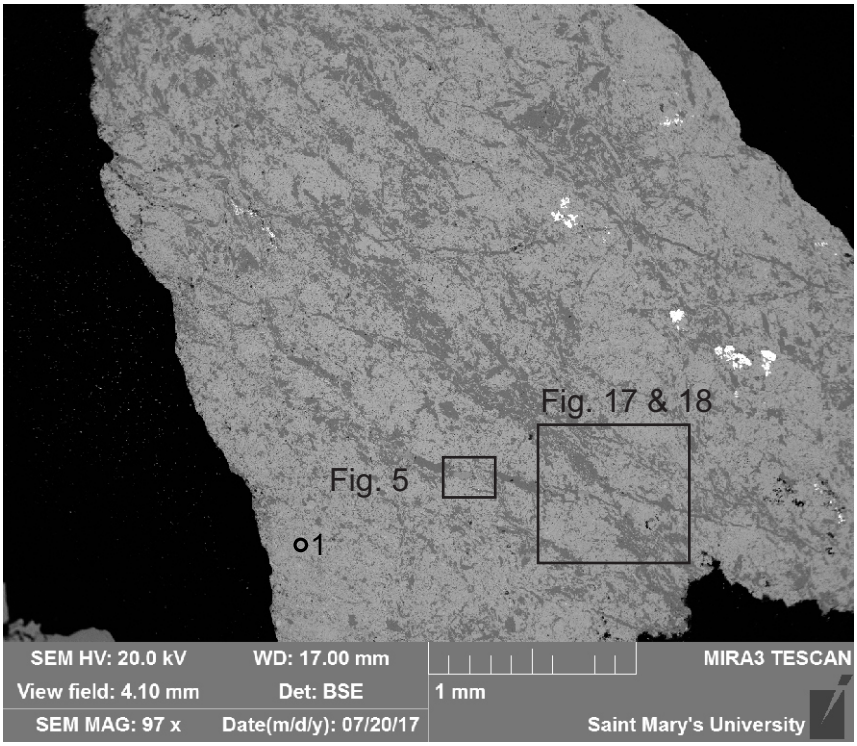
1:Quartz
2:Biotite
3:Biotite
4:Biotite
5:Andesine
6:Quartz
7:Andesine
8:Zircon
9:Biotite
10:Chlorite-Biotite
11:Andesine
12:Quartz

Figure 1-2A.2: Sample 229.2L site 1. Igneous textures with voids present and interlocking grains of andesine (5, 7, 11), quartz (1, 6, 12), and biotite (2-4, 9). Holocrystalline granitoid rock.



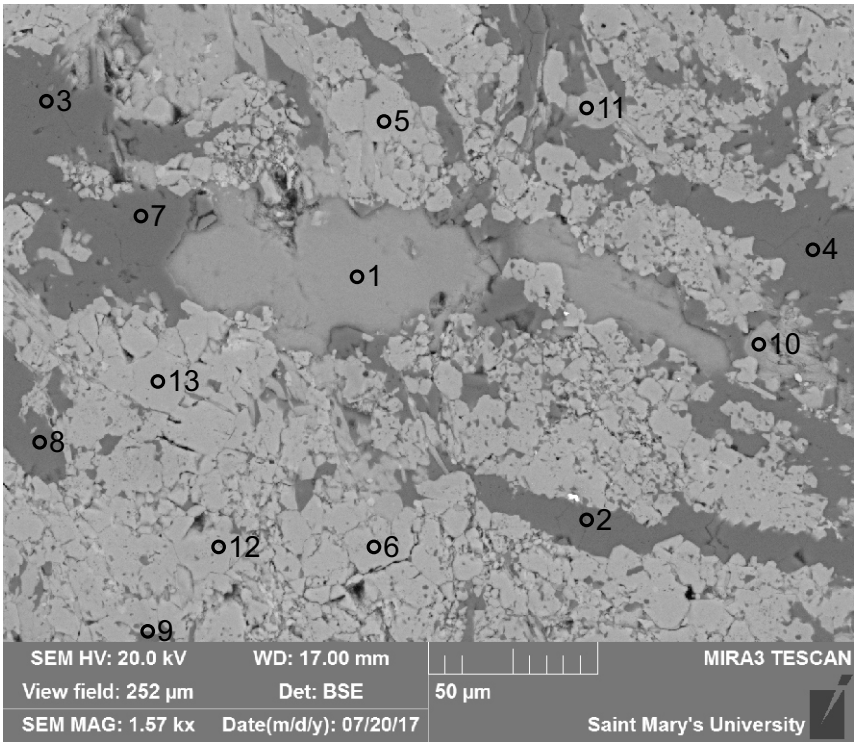
1:Chlorite
2:Biotite
3:Chlorite
4:Biotite
5:Chlorite
6:Biotite
7:Calcite +
8:Quartz +
9:Andesine
10:Magnetite
11:Titanite + Chlorite
12:Chlorite
13:Biotite
14:Titanite

Figure 1-2A.3: Sample 229.2L site 1.1.Biotite is chloritized in areas, can be seen along the planar cleavage of the biotite crystal. (1)



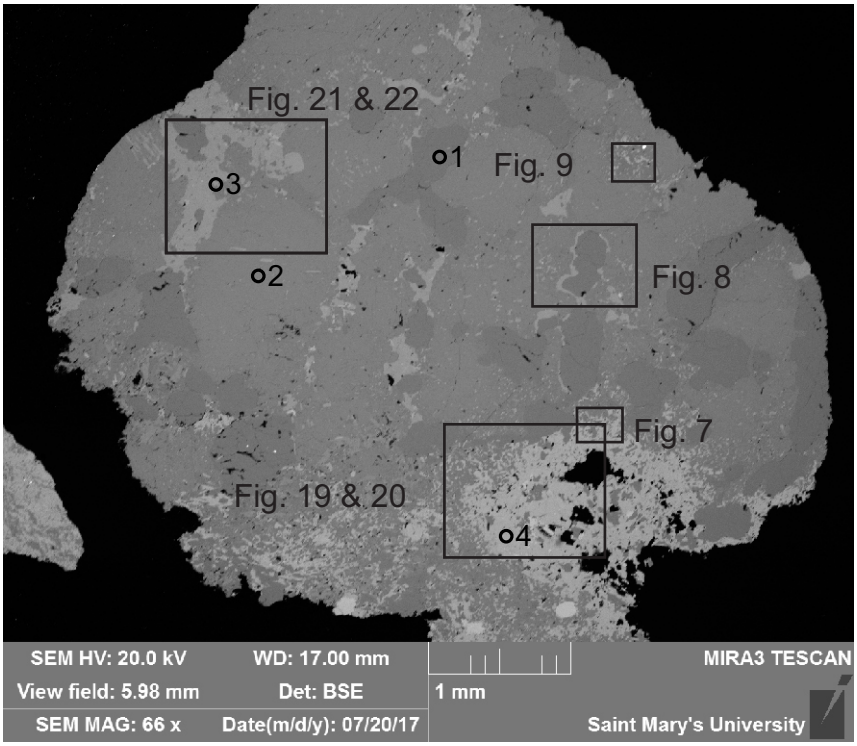
1:Mix

Figure 1-2A.4: Sample 229.2L site 2. Composed mainly of epidote (1), quartz (1), and some albite. Fine grained rock similar to epidosite.



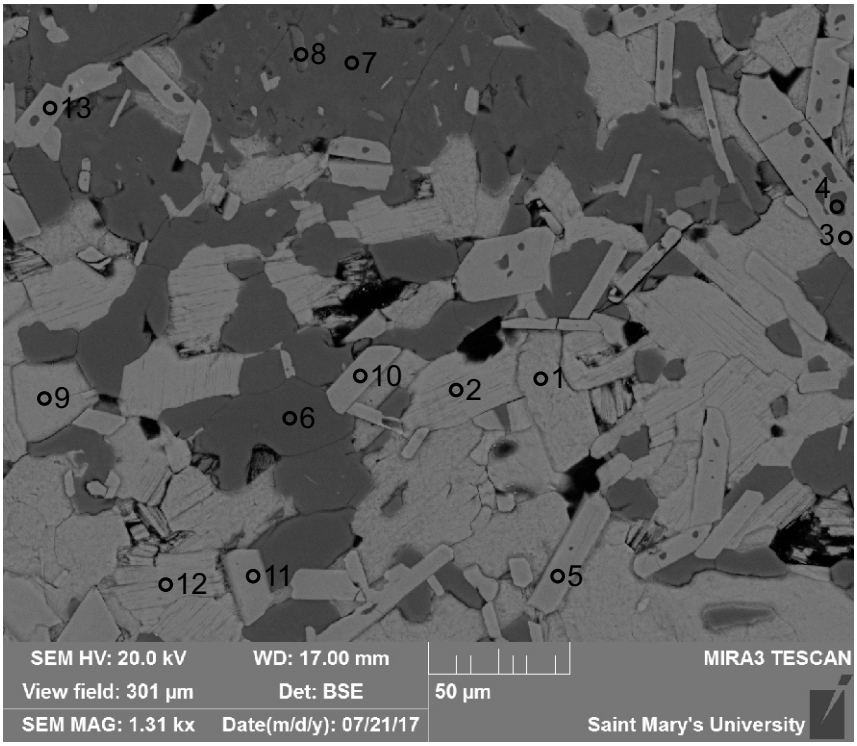
1:Calcite
2:Quartz
3:Quartz
4:Albite
5:Epidote
6:Epidote
7:Quartz
8:Albite
9:Oligoclase
10:Chlorite
11:Actinolite
12:Epidote
13:Epidote

Figure 1-2A.5: Sample 229.2L site 2.1. this site consists of quartz (2, 3, 7) intergrowths with epidote (5, 6, 12, 13). Albite (4, 8, 9) seems to be interlocking with the latter. Calcite (1) may be later.



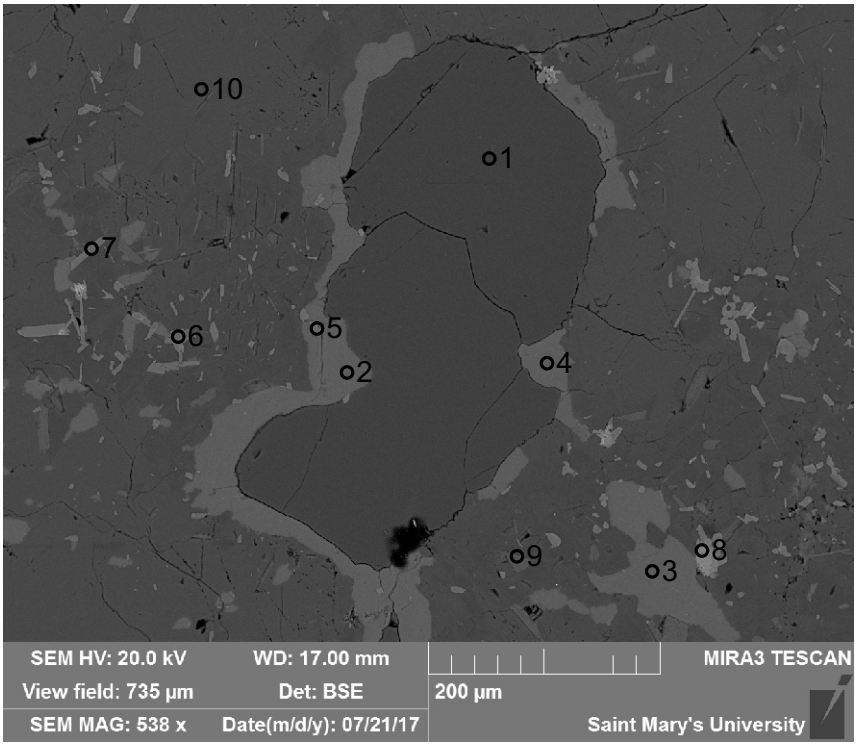
1:Quartz
2:Oligoclase
3:K-Feldspar
4:Biotite

Figure 1-2A.6: Sample 229.2L site 3. Holocrystalline igneous rock of 2:1 oligoclase-K-feldspar ratio. If extrusive could be dacite or if intrusive, could be granodiorite.



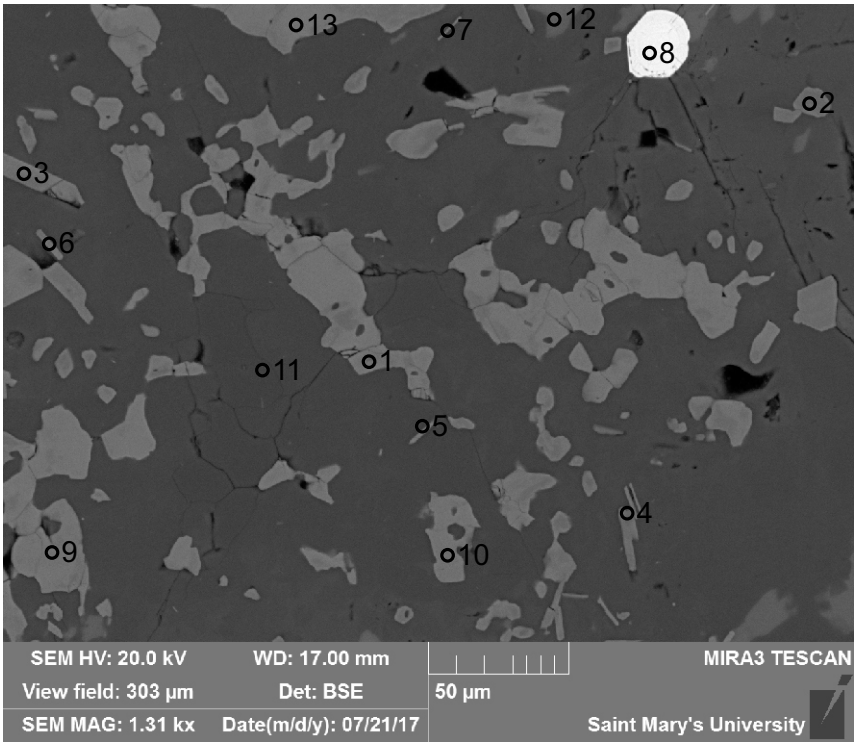
1:Biotite
2:Biotite
3:Epidote
4:Quartz
5:Epidote
6:Quartz
7:Albite
8:Muscovite
9:Biotite
10:Epidote
11:Epidote
12:Biotite
13:Epidote

Figure 1-2A.7: Sample 229.2L site 3.1. this site consists of a plutonic interlocking texture of mainly biotite (2), epidote (10), albite (7), and quartz (4).



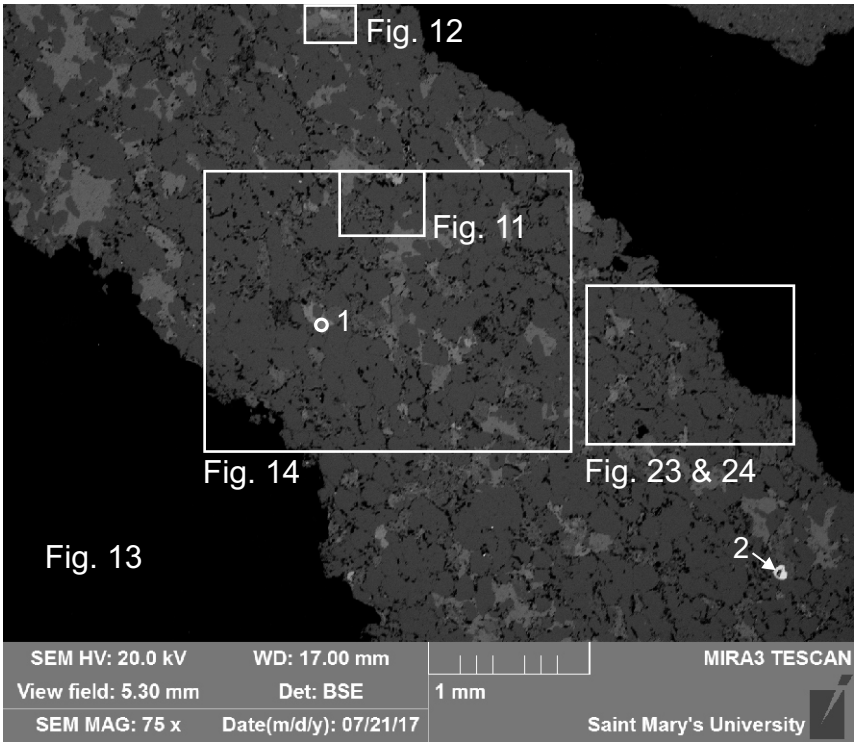
1:Quartz
2:K-Feldspar
3:K-Feldspar
4:K-Feldspar
5:Epidote
6:Epidote
7:Epidote +
8:Titanite
9:Muscovite
10:Oligoclase

Figure 1-2A.8: Sample 229.2L site 3.2. Epidote (2, 4, 5) is rimming quartz in oligoclase matrix, likely to be late.



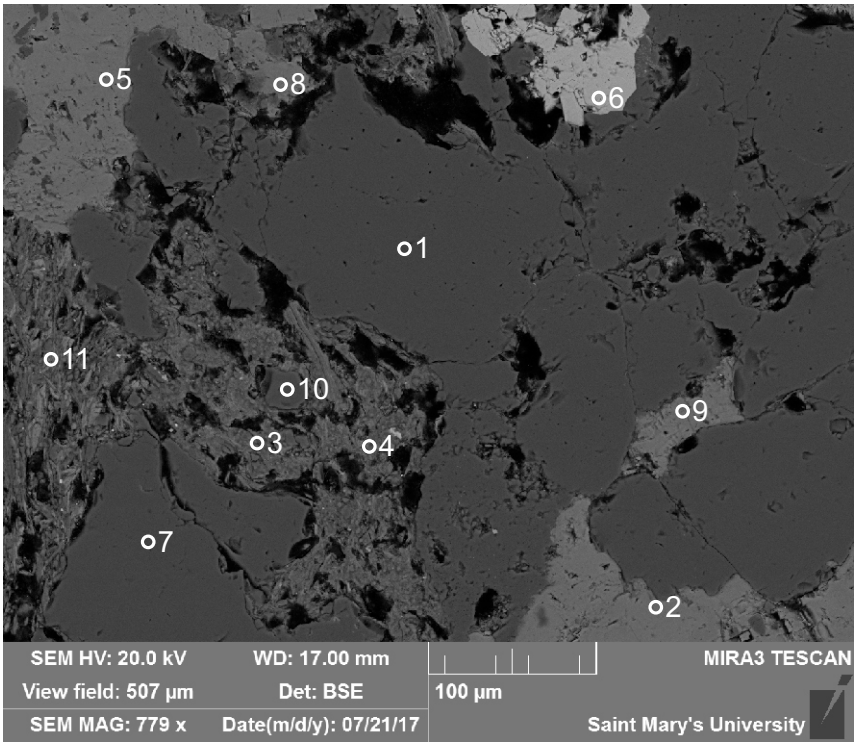
1:Epidote
2:Epidote
3:Epidote
4:Epidote
5:Labradorite
6:Labradorite
7:Labradorite
8:Zircon
9:Epidote
10:Epidote
11:Quartz
12:K-Feldspar
13:Epidote

Figure 1-2A.9: Sample 229.2L site 3.3. This site consists of Epidote (1-4, 9, 10, 13) may be synchronous with K-Feldspar (11) or a later component. Voids are common, one subhedral zircon (8) crystal is present.



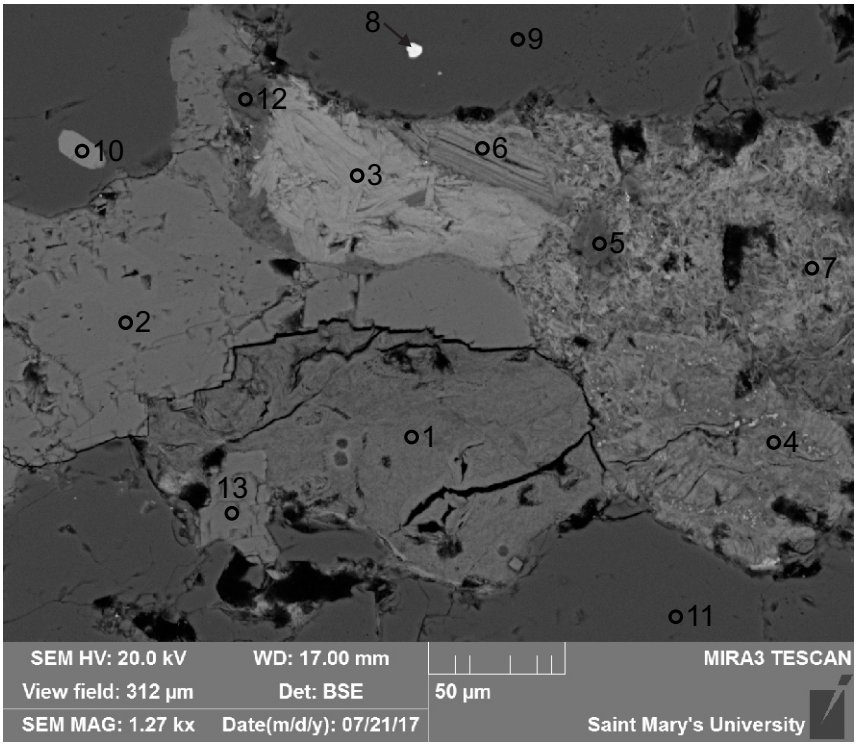
1:Chlorite
2:Zircon

Figure 1-2A.10: Sample 229.2L site 4. Sandstone composed mainly of quartz, with minor amounts of chlorite (1), and very rare zircon (2).



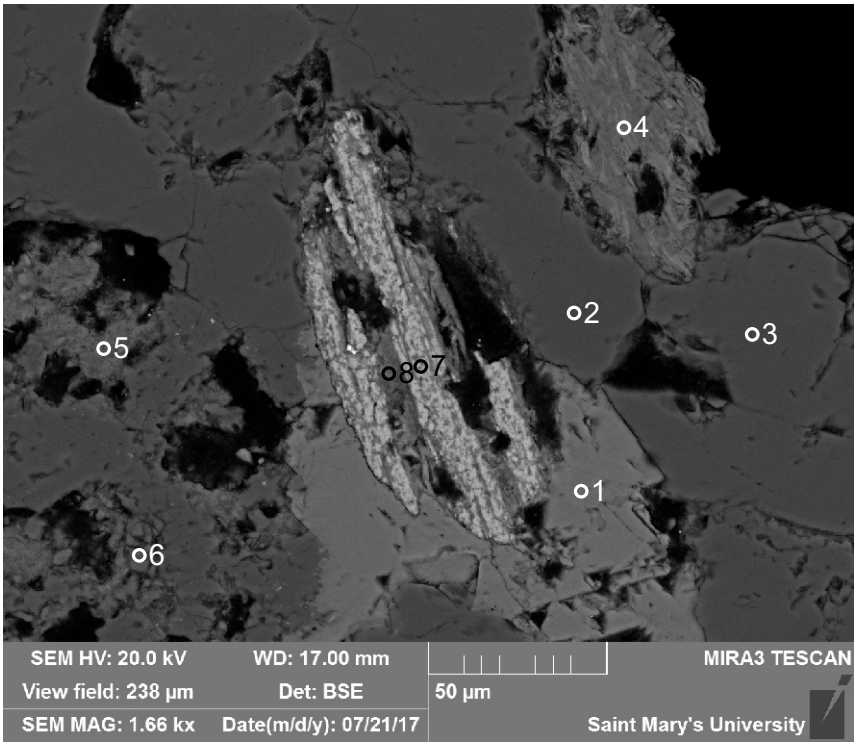
1:Quartz
2:Ankerite
3:Quartz +
4:Muscovite
5:Ankerite
6:TiO_2
7:Quartz
8:Ankerite
9:Ankerite +
10:Quartz
11:Chlorite-Biotite

Figure 1-2A.11: Sample 229.2L site 4.1. This site consists of Quartz (1, 3, 7, 10), ankerite (2, 8), and TiO_2 (6). Also common is muscovite (4) that seems to be broken down/altered, and voids.



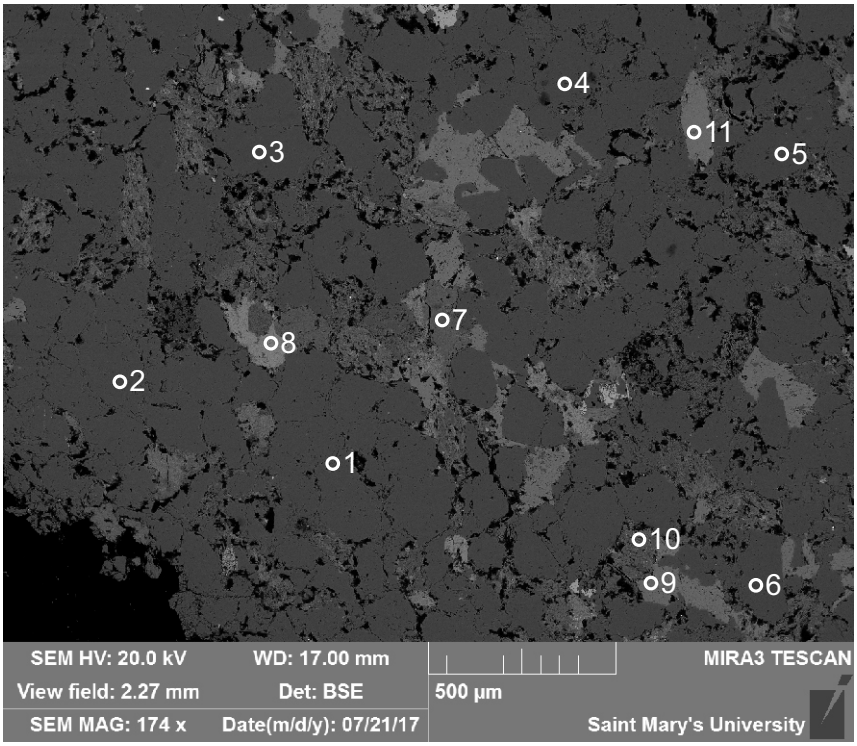
1:Mix
2:Ankerite
3:Chlorite
4:Mix
5:Quartz +
6:Chlorite + Muscovite
7:Chlorite
8:Zircon
9:Quartz
10:Biotite
11:Quartz
12:Quartz + K-Feldspar
13:Ankerite

Figure 1-2A.12: Sample 229.2L site 4.2. Likely a lithic clast found in sandstone Granule 4, consists of ankerite (2, 13), chlorite (3, 7),and minor quartz (5) and some mica (6).



1:Ankerite
2:Quartz
3:Quartz
4:Chlorite + Muscovite
5:Mica (?Biotite) + Chlorite
6:Quartz
7:TiO_2 +
8:Muscovite + Chlorite

Figure 1-2A.13: Sample 229.2L site 4.3. This site consists of mainly quartz (2, 3). TiO_2 (7) and mica and chlorite (8) seem to from mineral alteration.



1:Quartz
2:Quartz
3:Quartz
4:Quartz
5:Quartz
6:Quartz
7:Muscovite +
8:Chlorite
9:Ankerite
10:Muscovite +
11:Chlorite

Figure 1-2A.14: Sample 229.2L site 4.4. This site consists of the rounded quartz (1-6) grains with some ankerite (9) cement, and chlorite (8, 11).

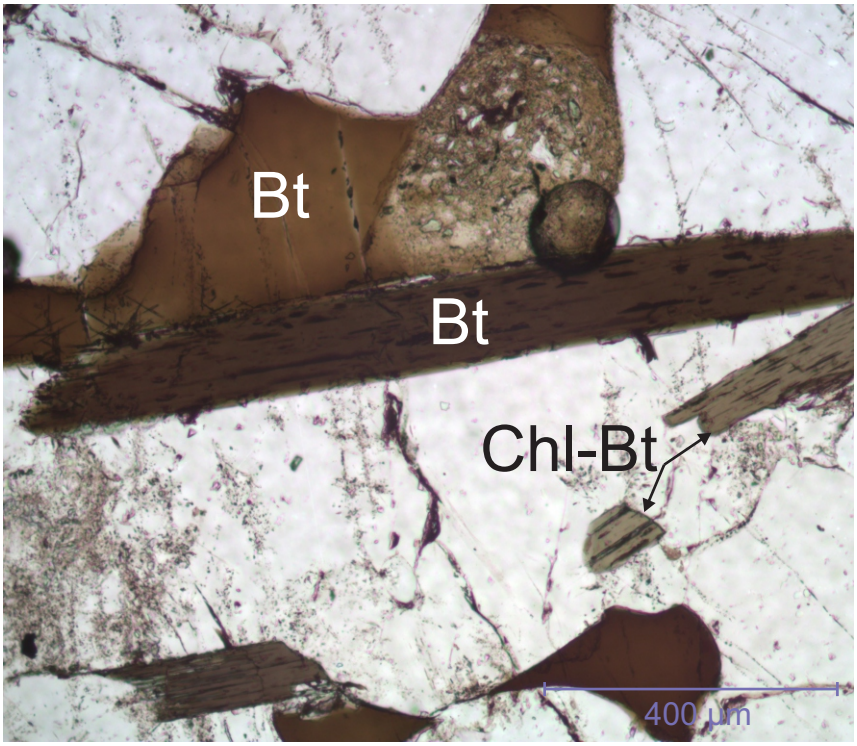


Figure 1-2A.15: Microphotograph. Sample 229.2L. Granule site 1. Transmitted light, ppl, 10x. Granitoid rock.

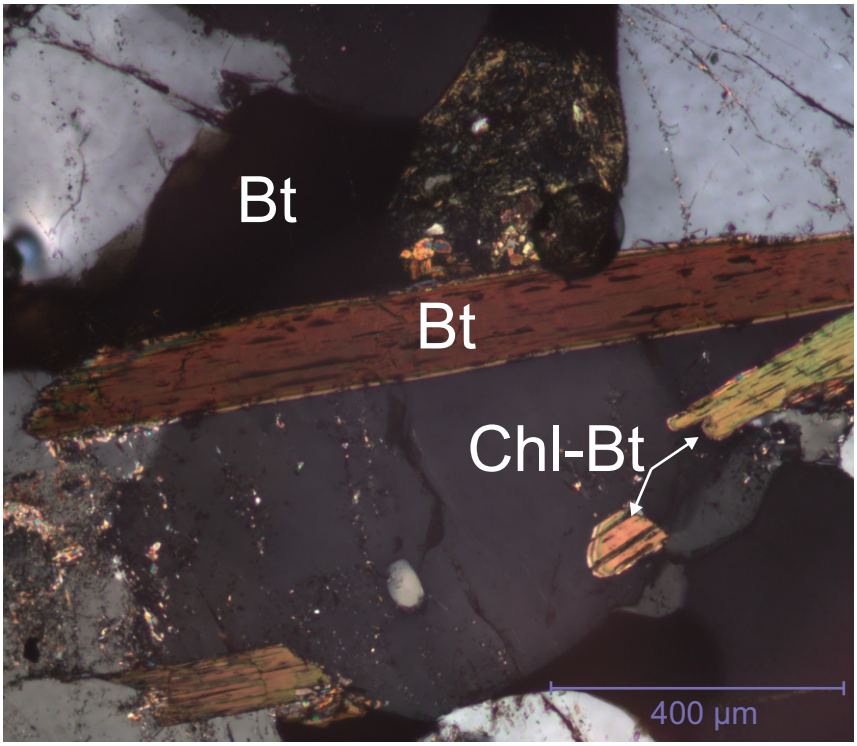


Figure 1-2A.16: Microphotograph. Sample 229.2L. Granule site 1. Transmitted light, xpl, 10x.

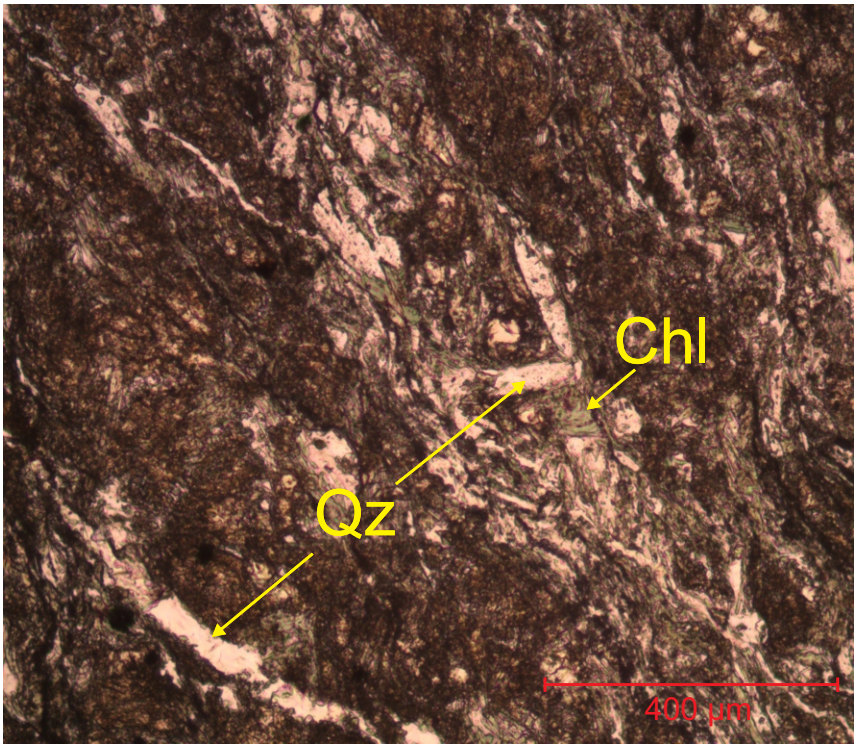


Figure 1-2A.17: Microphotograph. Sample 229.2L. Granule site 2. Transmitted light, ppl, 10x. Fine epidote as seen in Fig. 5, and larger grains of quartz and chlorite. Likely epidosite.

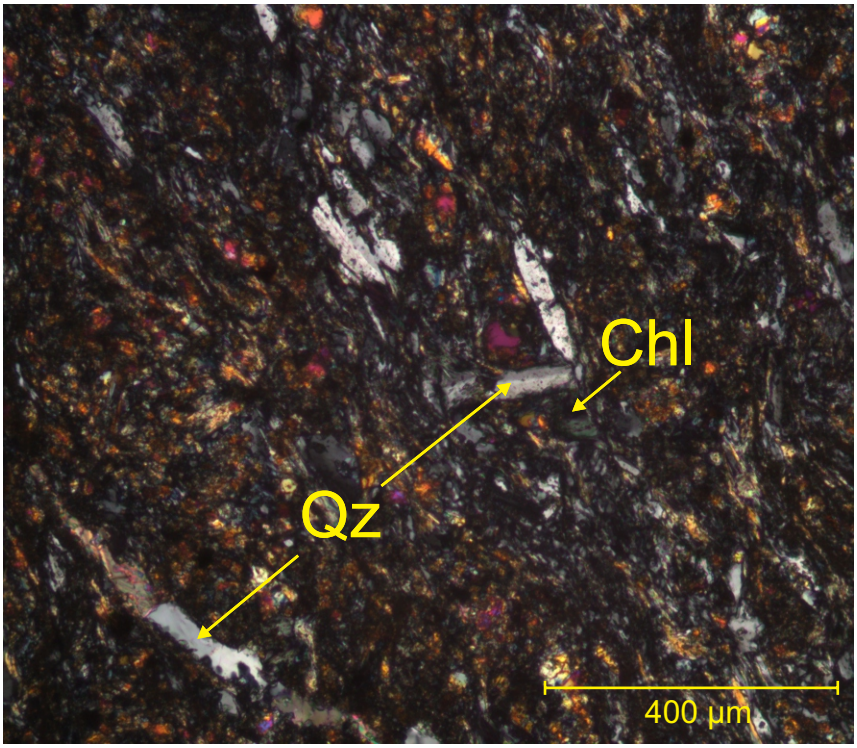


Figure 1-2A.18: Microphotograph. Sample 229.2L. Granule site 2. Transmitted light, xpl, 10x.

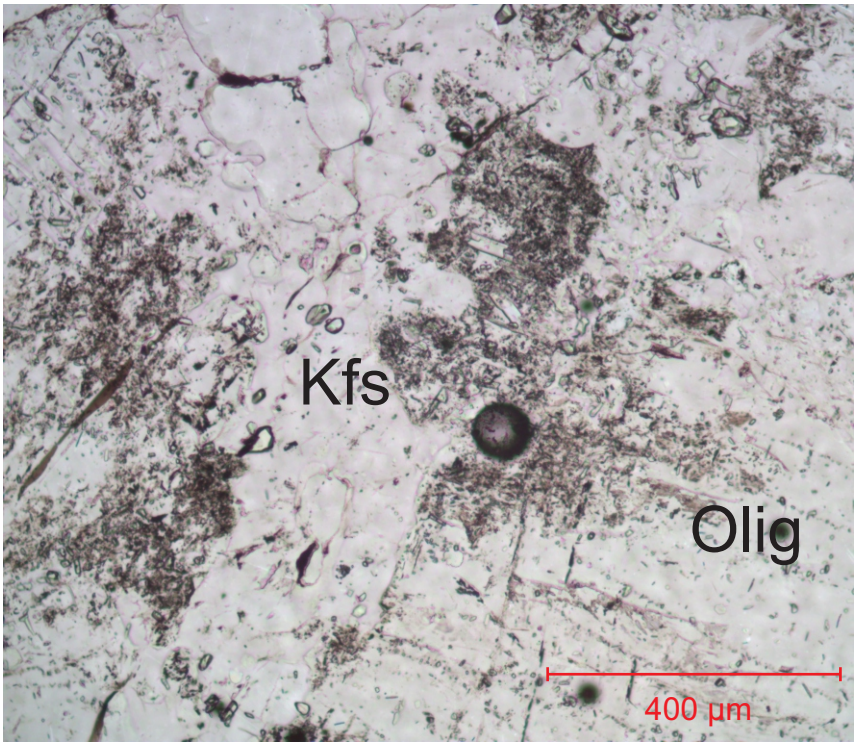


Figure 1-2A.19: Microphotograph. Sample 229.2L. Granule site 3. Transmitted light, ppl, 10x. Igneous rock.

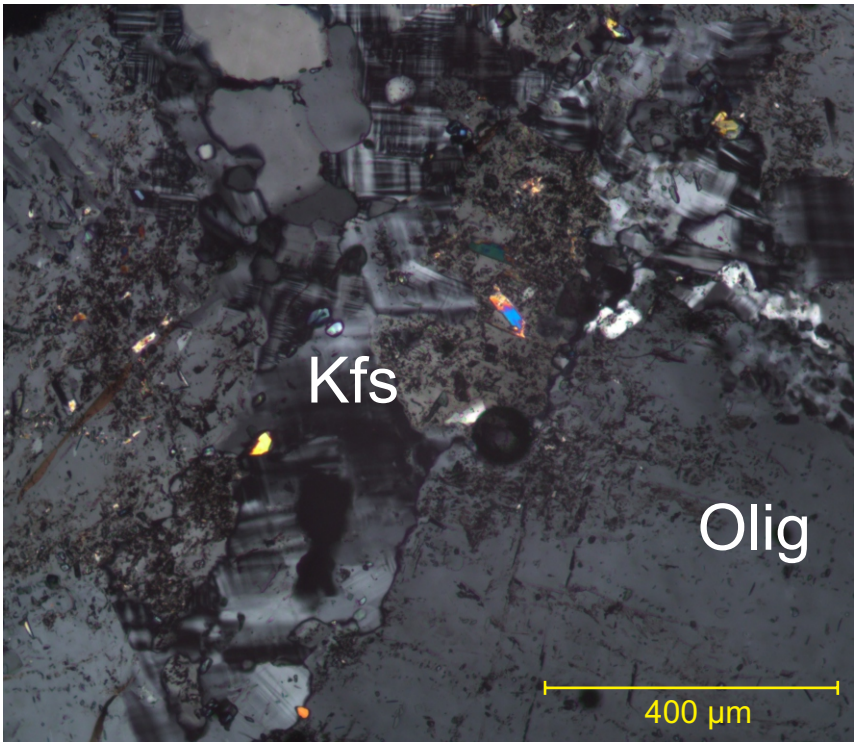


Figure 1-2A.20: Microphotograph. Sample 229.2L. Granule site 3. Transmitted light, xpl, 10x.

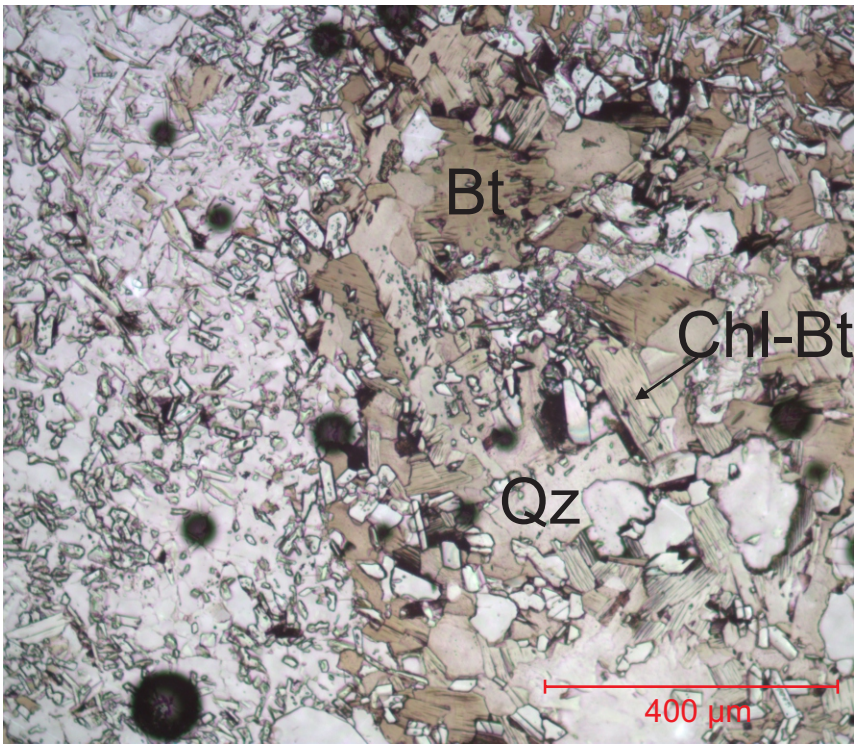


Figure 1-2A.21: Microphotograph. Sample 229.2L. Granule site 3.Transmitted light, ppl, 10x. Holocrystalline igenous rock.

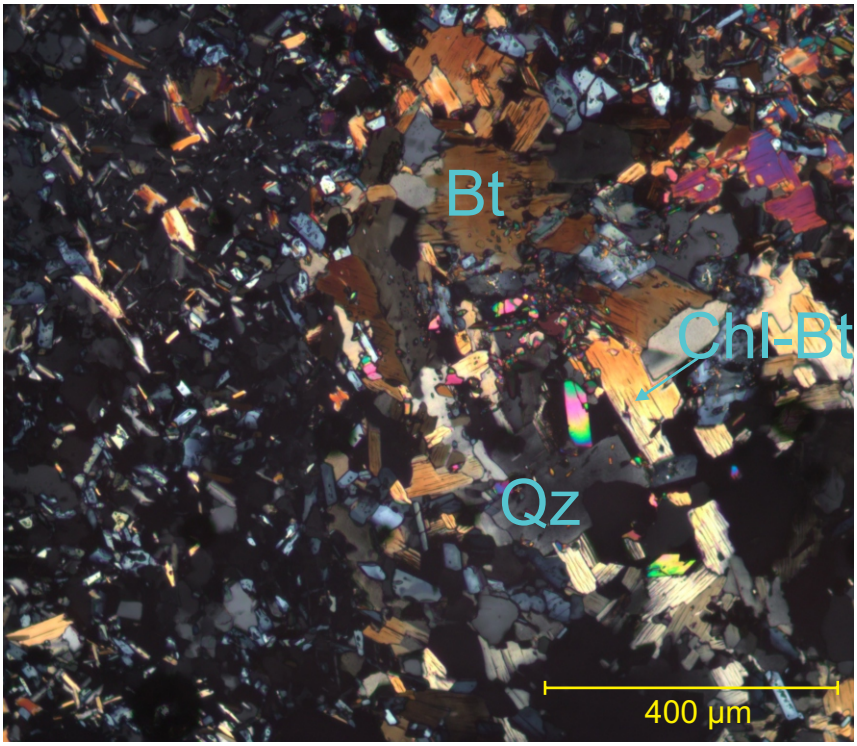


Figure 1-2A.22: Microphotograph. Sample 229.2L. Granule site 3. Transmitted light, xpl, 10x.

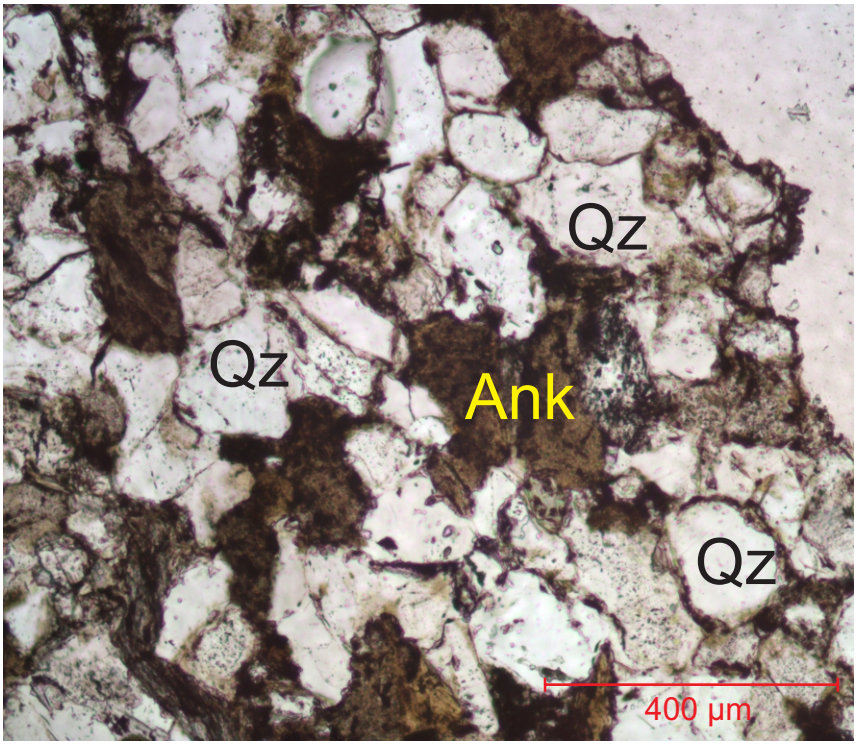


Figure 1-2A.23: Microphotograph. Sample 229.2L. Granule site 4. Transmitted light, ppl, 10x. Sandstone.

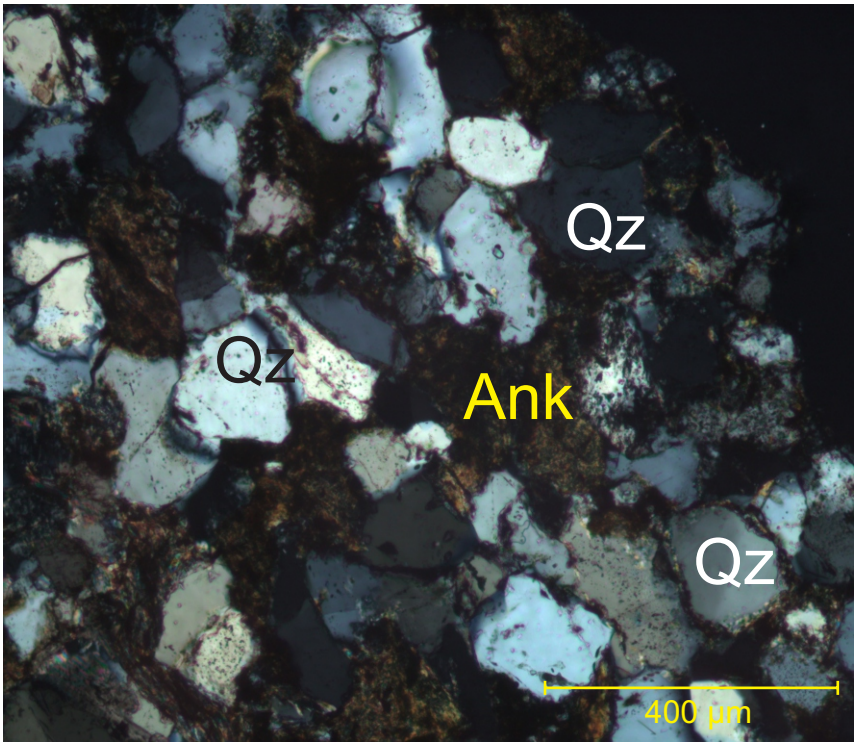


Figure 1-2A.24: Microphotograph. Sample 229.2L. Granule site 4. Transmitted light, xpl, 10x.

Table 1.2A.1: Scanning electron microscope chemical analyses of Granules from Flemish cap. (Sample 229.2L)

Sample	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	Cl	Cr2O3	NiO	ZrO2	BaO	HfO2	Total	Actual Total
18.956.2L	1	1	Qz	100.00																100	103
18.956.2L	1	2	Bt	38.51	4.41	14.53	17.82	0.24	11.00			9.31		0.18						96	113
18.956.2L	1	3	Bt	38.69	4.45	14.64	17.58		11.03			9.42		0.19						96	118
18.956.2L	1	4	Bt	38.76	4.07	14.76	17.64		11.16			9.41		0.20						96	109
18.956.2L	1	5	Pl (And)	62.66		23.29				5.30	8.42	0.32								100	121
18.956.2L	1	6	Qz	100.00																100	113
18.956.2L	1	7	Pl (And)	62.81		23.21				5.25	8.34	0.39								100	118
18.956.2L	1	8	Zr	30.86													67.93		1.21	100	98
18.956.2L	1	9	Bt	38.81	4.26	14.71	17.30		11.25			9.49		0.17						96	108
18.956.2L	1	10	Chl-Bt	36.25	2.71	18.61	22.32		15.04			4.88		0.18						100	117
18.956.2L	1	11	Pl (And)	62.58		23.28	0.18			5.35	8.35	0.26								100	118
18.956.2L	1	12	Qz	100.00																100	96
18.956.2L	1.1	1	Chl	27.68		19.44	19.74	0.33	17.52	0.29										85	109
18.956.2L	1.1	2	Bt	38.72	4.17	14.67	17.58		11.12			9.52		0.23						96	111
18.956.2L	1.1	3	Chl	28.02	0.43	18.46	20.46	0.24	16.40			1.00								85	100
18.956.2L	1.1	4	Bt	38.58	2.99	15.05	17.76	0.23	11.76			9.42		0.22						96	109
18.956.2L	1.1	5	Chl	27.71	0.41	18.62	20.38	0.34	16.82			0.72								85	104
18.956.2L	1.1	6	Bt	36.51	2.72	16.24	18.12	0.22	13.22	0.89		7.89		0.18						96	113
18.956.2L	1.1	7	Cal +	2.03		1.07	1.70	1.49	1.65	92.06										100	62
18.956.2L	1.1	8	Qz +	98.86	0.89		0.25													100	117
18.956.2L	1.1	9	Pl (And)	61.11		24.38	0.19			6.40	7.68	0.25								100	105
18.956.2L	1.1	10	Mag	0.80			99.20													100	118
18.956.2L	1.1	11	Ttn + Chl	37.99	12.11	15.68	9.01		0.41	24.35		0.45								100	115
18.956.2L	1.1	12	Chl	26.76	2.82	17.28	21.85	0.27	15.75	0.27										85	107
18.956.2L	1.1	13	Bt	38.53	4.38	14.52	17.89		10.93			9.51		0.25						96	119
18.956.2L	1.1	14	Ttn	33.88	34.18	2.90	1.90		0.54	26.60										100	116
18.956.2L	2	1	Mix	50.12		9.15	14.24	0.30	9.73	16.09	0.37									100	109
18.956.2L	2.1	1	Cal					0.30		55.70										56	61
18.956.2L	2.1	2	Qz	99.82			0.18													100	103
18.956.2L	2.1	3	Qz	99.76			0.24													100	122
18.956.2L	2.1	4	Ab	69.98		18.73					11.29									100	120
18.956.2L	2.1	5	Ep	39.60		22.00	12.03			22.75			0.62							97	116
18.956.2L	2.1	6	Ep	40.06		22.04	12.51			22.39										97	119
18.956.2L	2.1	7	Qz	100.00																100	117

Table 1.2A.1: Scanning electron microscope chemical analyses of Granules from Flemish cap. (Sample 229.2L)

Sample	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	Cl	Cr2O3	NiO	ZrO2	BaO	HfO2	Total	Actual Total
18.956.2L	2.1	8	Ab	69.31		18.95	0.24			0.51	10.87	0.12								100	119
18.956.2L	2.1	9	Pl (Olig)	66.28	2.01	18.21	0.43			2.64	10.43									100	111
18.956.2L	2.1	10	Chl	28.30		16.01	23.69	0.45	16.32	0.23										85	109
18.956.2L	2.1	11	Act	56.11		2.16	15.74	0.40	13.10	12.10	0.39									100	107
18.956.2L	2.1	12	Ep	40.49		22.30	11.87			22.34										97	108
18.956.2L	2.1	13	Ep	39.96		21.79	12.76			22.49										97	112
18.956.2L	3	1	Qz	100.00																100	60
18.956.2L	3	2	Pl (Olig)	64.63		22.12				3.77	9.48									100	109
18.956.2L	3	3	Kfs	65.60		18.02					0.53	15.12						0.74		100	108
18.956.2L	3	4	Bt	38.62	1.29	16.71	18.36	0.26	11.12			9.66								96	119
18.956.2L	3.1	1	Bt	38.81	1.73	16.27	18.13	0.27	10.81			9.97								96	115
18.956.2L	3.1	2	Bt	37.77	1.55	16.90	19.12	0.26	11.83			8.57								96	119
18.956.2L	3.1	3	Ep	40.40		25.29	8.94			22.37										97	116
18.956.2L	3.1	4	Qz	99.62			0.20			0.18										100	96
18.956.2L	3.1	5	Ep	40.10		24.43	9.94			22.53										97	107
18.956.2L	3.1	6	Qz	100.00																100	61
18.956.2L	3.1	7	Ab	68.61		19.46				0.94	10.99									100	104
18.956.2L	3.1	8	Ms	53.82	0.47	29.25	2.86		2.32		1.02	10.26								100	96
18.956.2L	3.1	9	Bt	38.87	1.70	16.50	17.76	0.24	11.11			9.82								96	111
18.956.2L	3.1	10	Ep	40.17		24.49	9.91			22.43										97	97
18.956.2L	3.1	11	Ep	40.35		23.77	10.70			22.17										97	116
18.956.2L	3.1	12	Bt	38.66	1.67	16.63	18.20	0.31	11.20			9.34								96	117
18.956.2L	3.1	13	Ep	40.16		24.40	10.10			22.35										97	58
18.956.2L	3.2	1	Qz	100.00																100	121
18.956.2L	3.2	2	Kfs	65.54		18.00					0.45	15.30						0.71		100	109
18.956.2L	3.2	3	Kfs	65.18		17.91					0.49	15.45						0.97		100	109
18.956.2L	3.2	4	Kfs	65.45		17.81					0.42	15.53						0.79		100	108
18.956.2L	3.2	5	Ep	41.79		27.11	5.82			21.67		0.61								97	132
18.956.2L	3.2	6	Ep	40.93		29.96	3.38			22.74										97	106
18.956.2L	3.2	7	Ep +	46.00		25.84	5.63			19.31	1.90		1.32							100	99
18.956.2L	3.2	8	Ttn	33.31	37.40	1.56				27.74										100	132
18.956.2L	3.2	9	Ms	51.64	0.27	31.07	3.16		2.02		0.28	11.55								100	114
18.956.2L	3.2	10	Olig	64.26		22.42				4.01	9.32									100	110
18.956.2L	3.3	1	Ep	40.25		24.01	10.69			22.06										97	122

Table 1.2A.1: Scanning electron microscope chemical analyses of Granules from Flemish cap. (Sample 229.2L)

Sample	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	Cl	Cr2O3	NiO	ZrO2	BaO	HfO2	Total	Actual Total
18.956.2L	3.3	2	Ep	40.54		27.64	6.11			22.71										97	126
18.956.2L	3.3	3	Ep	40.50		25.16	8.72			22.62										97	101
18.956.2L	3.3	4	Ep	41.64		29.20	3.68			22.12	0.37									97	103
18.956.2L	3.3	5	Pl (Lab +)	48.06		23.69	8.29			16.99	2.96									100	111
18.956.2L	3.3	6	Pl (Lab +)	46.63		24.43	7.46			18.51	2.97									100	93
18.956.2L	3.3	7	Pl (Lab +)	52.15		25.96	2.85			14.39	4.64									100	116
18.956.2L	3.3	8	Zr	31.25													68.75			100	122
18.956.2L	3.3	9	Ep	40.20		22.95	11.59			22.26										97	57
18.956.2L	3.3	10	Ep	40.75		23.49	10.86			21.89										97	98
18.956.2L	3.3	11	Qz	100.00																100	102
18.956.2L	3.3	12	Kfs	64.85		18.11					0.49	14.84						1.70		100	107
18.956.2L	3.3	13	Ep	40.22		23.02	11.52			22.23										97	107
18.956.2L	4	1	Chl	30.06		19.14	29.58		5.95			0.26								85	92
18.956.2L	4	2	Zr	31.15													67.57		1.28	100	104
18.956.2L	4.1	1	Qz	100.00																100	125
18.956.2L	4.1	2	Ank	0.41			15.25	2.27	9.25	28.82										56	62
18.956.2L	4.1	3	Qz +	94.35		3.76	0.67		0.47			0.75								100	120
18.956.2L	4.1	4	Ms	59.32	0.24	26.95	3.50		2.08	0.37	0.53	7.01								100	115
18.956.2L	4.1	5	Ank	0.36			15.72	2.01	9.73	27.79				0.39						56	123
18.956.2L	4.1	6	TiO2	0.43	99.57															100	102
18.956.2L	4.1	7	Qz	100.00																100	101
18.956.2L	4.1	8	Ank	0.49			16.25	2.42	9.23	27.60										56	106
18.956.2L	4.1	9	Ank +	1.98			28.28	4.11	16.72	48.90										100	96
18.956.2L	4.1	10	Qz	99.52		0.48														100	111
18.956.2L	4.1	11	Chl + Bt	39.82	0.45	26.87	20.44		10.30		0.40	1.72								100	119
18.956.2L	4.2	1	Mix	53.45		14.57	23.06		4.81	0.85	0.37	2.90								100	118
18.956.2L	4.2	2	Ank	0.43			12.92	1.98	9.86	30.81										56	122
18.956.2L	4.2	3	Chl	25.66	0.33	17.86	37.24		3.64						0.27					85	117
18.956.2L	4.2	4	Mix	53.12		16.43	19.65		3.71	1.96	0.37	3.79	0.97							100	110
18.956.2L	4.2	5	Qz +	95.71		1.32	1.92		1.05											100	121
18.956.2L	4.2	6	Chl + Ms	38.27		26.84	27.23		4.31		0.32	3.03								100	84
18.956.2L	4.2	7	Chl	31.56		18.54	27.11		7.00	0.28		0.31			0.20					85	108
18.956.2L	4.2	8	Zr	31.77													66.77		1.47	100	123
18.956.2L	4.2	9	Qz	100.00																100	115

Table 1.2A.1: Scanning electron microscope chemical analyses of Granules from Flemish cap. (Sample 229.2L)

Sample	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	Cl	Cr2O3	NiO	ZrO2	BaO	HfO2	Total	Actual Total
18.956.2L	4.2	10	Bt	36.17	3.14	16.89	23.47	0.35	6.48			9.50								96	117
18.956.2L	4.2	11	Qz	99.83			0.17													100	115
18.956.2L	4.2	12	Qz + Kfs	89.13		7.33	0.89					2.64								100	108
18.956.2L	4.2	13	Ank	0.54			15.43	2.17	10.53	27.33										56	59
18.956.2L	4.3	1	Ank				15.08	2.08	9.33	29.50										56	60
18.956.2L	4.3	2	Qz	100.00																100	113
18.956.2L	4.3	3	Qz	100.00																100	113
18.956.2L	4.3	4	Chl + Ms	41.05		26.16	16.97	0.31	11.78			3.72								100	71
18.956.2L	4.3	5	Ms + Chl	58.51		17.06	15.65		2.67	0.87	0.59	4.65								100	111
18.956.2L	4.3	6	Qz	99.23		0.59	0.18													100	128
18.956.2L	4.3	7	TiO2 +	7.14	85.47	1.91	3.99		0.54	0.48		0.46								100	94
18.956.2L	4.3	8	Mica + Chl	52.31	0.91	22.67	15.18		2.53	0.59	0.31	5.50								100	117
18.956.2L	4.4	1	Qz	100.00																100	126
18.956.2L	4.4	2	Qz	100.00																100	106
18.956.2L	4.4	3	Qz	100.00																100	100
18.956.2L	4.4	4	Qz	100.00																100	65
18.956.2L	4.4	5	Qz	100.00																100	103
18.956.2L	4.4	6	Qz	100.00																100	92
18.956.2L	4.4	7	Ms +	56.57		25.88	7.60		2.54	0.41	0.26	6.73								100	109
18.956.2L	4.4	8	Chl	27.34		21.94	29.86		5.58							0.27				85	109
18.956.2L	4.4	9	Ank	0.39			12.37	2.56	9.78	30.91										56	109
18.956.2L	4.4	10	Ms +	55.51	0.36	23.67	10.38		2.32	0.82	0.48	6.27		0.18						100	104
18.956.2L	4.4	11	Chl	31.19		16.12	23.73		13.73			0.23								85	110
			Notes																		
			"+" indicates more than one mineral present																		

Appendix 1-2B: SEM-BSE images for Flemish Cap Granules with EDS Mineral Analyses and Microphotographs.
Sample 2008061-229.3L

Flemish Cap Sample 229.3L Lithology Summary Notes

Granule 1 (Sites 1, 1.1, 1.2, 1.3, 1.4, 1.5, 1.6) Microphotographs: Figures 1-2B.21, 1-2B.22, 1-2B.23, 1-2B.24, 1-2B.25, 1-2B.26.
Largely made up of albite, oligoclase, quartz, and K-feldspar. This Granule may have come from an altered rock as some of the minerals show alteration. Large monazite grain appears to be associated with zircon and Ti-magnetite (Fig. 1-2B.5).

Granule 2 (Sites 2, 2.1, 2.2, 2.3) Microphotographs: Figures 1-2B.35, 1-2B.36.This is a Granule similae to that seen in 195.2M (Granule 6). Holocrystalline igneous texture with andesine, quartz, and orthopyroxene, the three main minerals of the Granule. There is also some apatite, monazite, ilmenite, labradorite, and pyrite present. Some orthopyroxene crystals contain clinopyroxene inclusions (e.g. Fig. 1-2B.11).

Granule 3 (Sites 3, 3.1, 3.3, 3.3) Microphotographs: Figures 1-2B.31, 1-2B.32, 1-2B.33, 1-2B.34.
Quartz and andesine make up a large portion of this rock. There is some hornblende that seems to have been chloritized. There is muscovite, calcite, and oligoclase in lesser abundance. The large andesine crystals show some alteration. Voids are present in the rock and the crystal texture indicates igneous origin.

Granule 4 (Sites 4, 4.1, 4.2, 4.3, 4.4) Microphotographs: Figures 1-2B.27, 1-2B.28, 1-2B.29, 1-2B.30.
This Granule is a carbonate vein composed of calcite cutting a fine-grained igneous rock.The vein is porous and contains magnetite (Fig. 1-2B.19) filling pores. The host rock consists mostly of albite with TiO_2 filling voids (Figs. 1-2B.17,18).

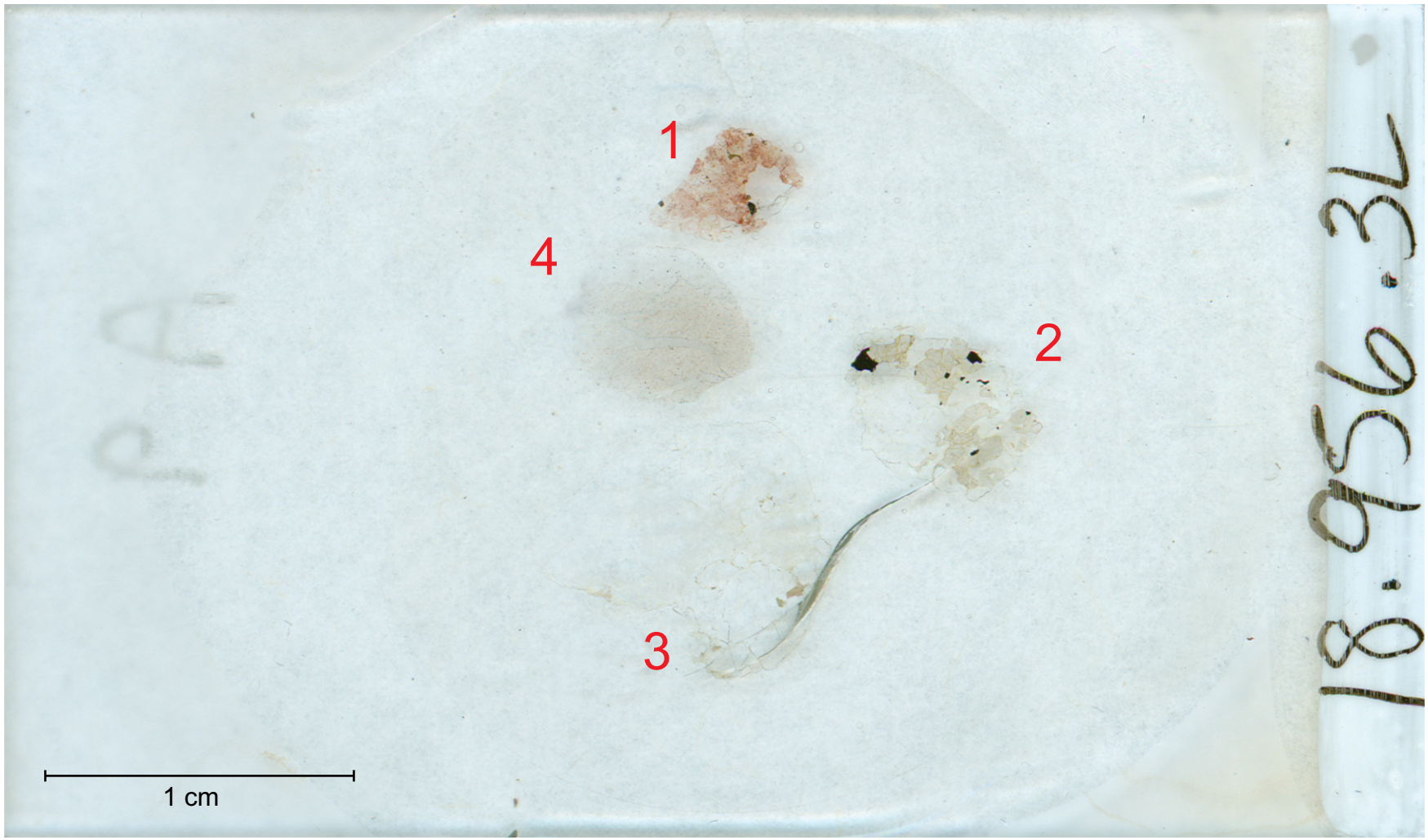
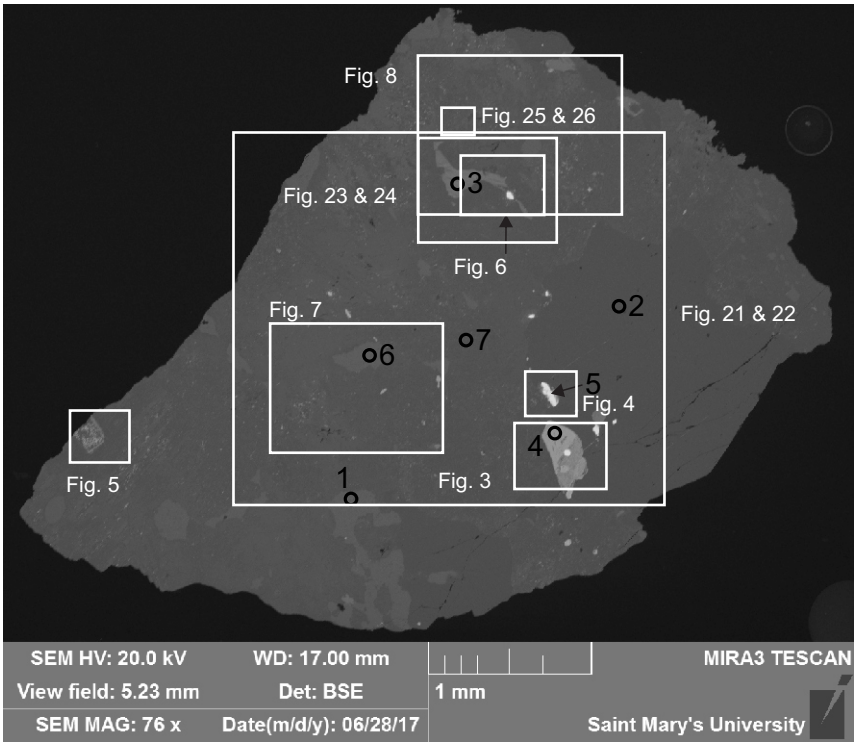
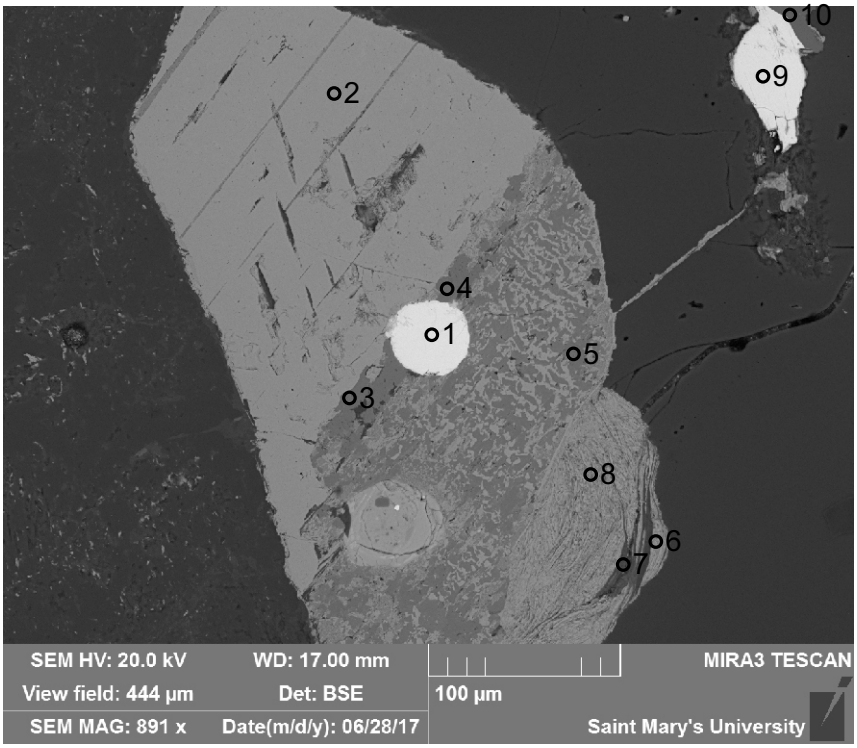


Figure 1-2B.1: Scanned thin section of Flemish Cap sample 229.3L. Granules are numbered in red corresponding to analysed sites.



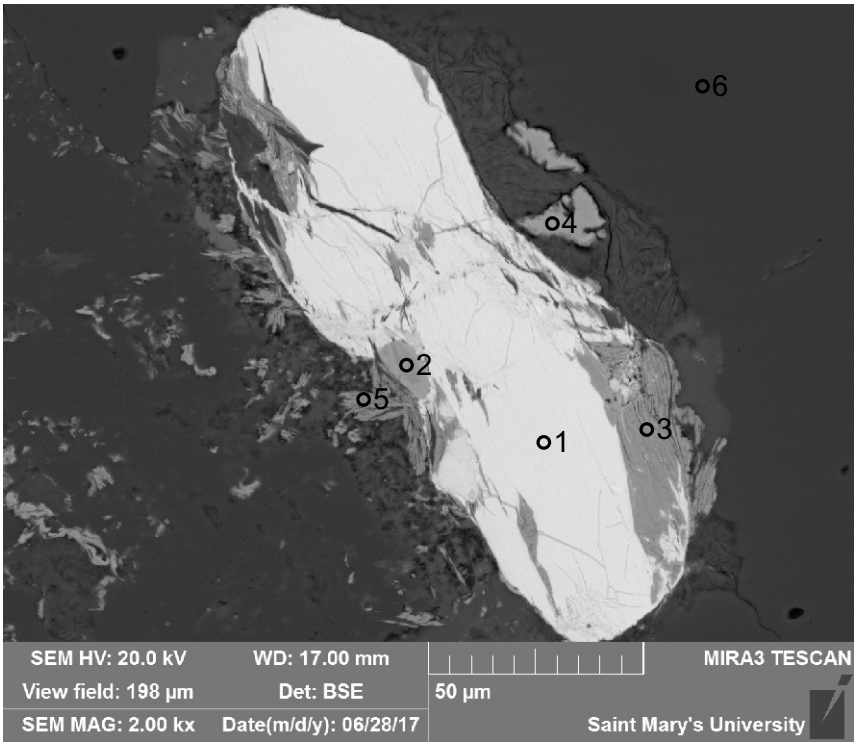
1:K-Feldspar
2:Quartz
3:Biotite
4:Magnetite +
5:Monazite
6:K-Feldspar
7:Albite

Figure 1-2B.2: Sample 229.3L site 1. This site is largely made up of albite (7), quartz (2), K-feldspar (1 & 6), and accessory monazite (5) and magnetite (4).



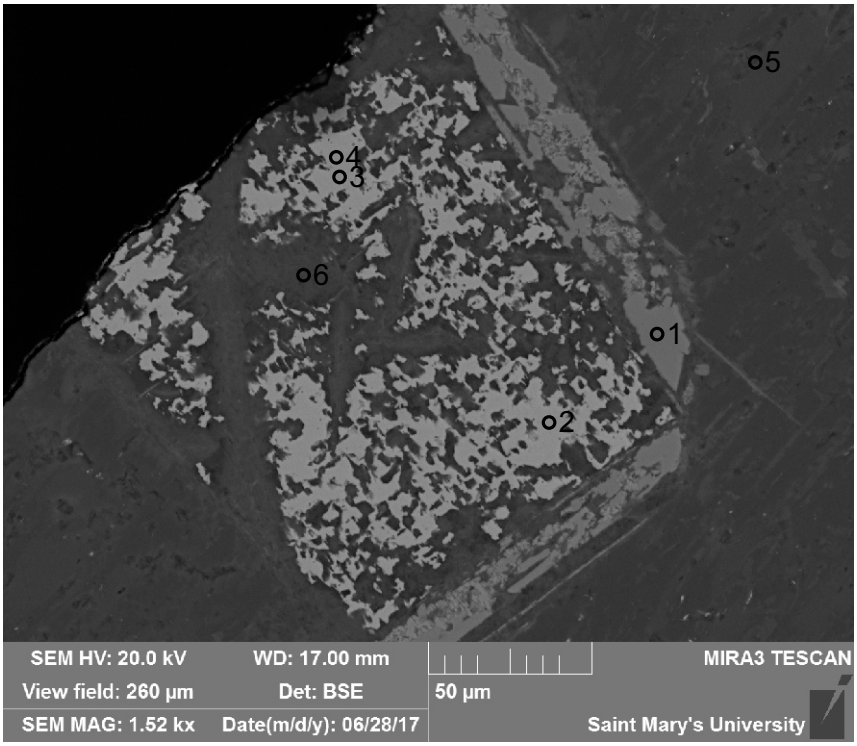
1:Monazite
2:Magnetite
3:TiO_2 +
4:TiO_2
5:TiO_2 +
6:Magnetite +
7:Biotite
8:Magnetite +
9:Monazite
10:Apatite +

Figure 1-2B.3: Sample 229.3L site 1.1. This site contains a large crystal of magnetite (2) with some alteration to TiO_2 (5) that may even be an altered ilmenite exsolution lamellae. This magnetite crystal also contains inclusions of monazite (1), and biotite (7). Accessory minerals seen in the rest of the rock include monazite (9) and apatite (10).



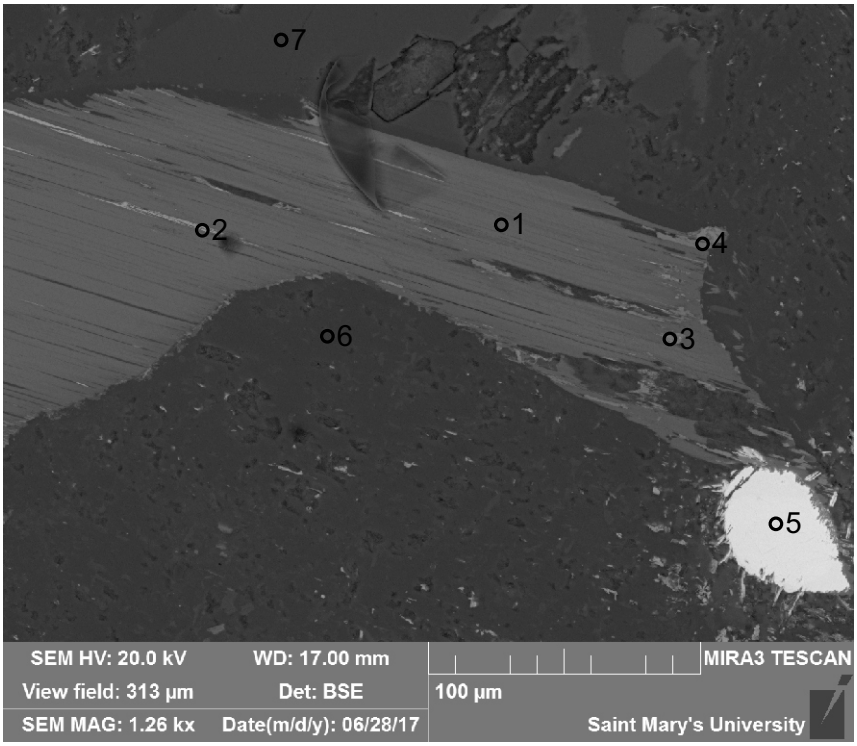
1:Monazite +
2:Zircon
3:Ti-Magnetite +
4:Pyrite
5:Magnetite +
6:Quartz

Figure 1-2B.4: Sample 229.3L site 1.2. This site contains monazite (1), with zircon (2) and Ti-Magnetite (3) inclusions. Quartz (6) and accessory pyrite (4) and magnetite (5) are also present in this site.



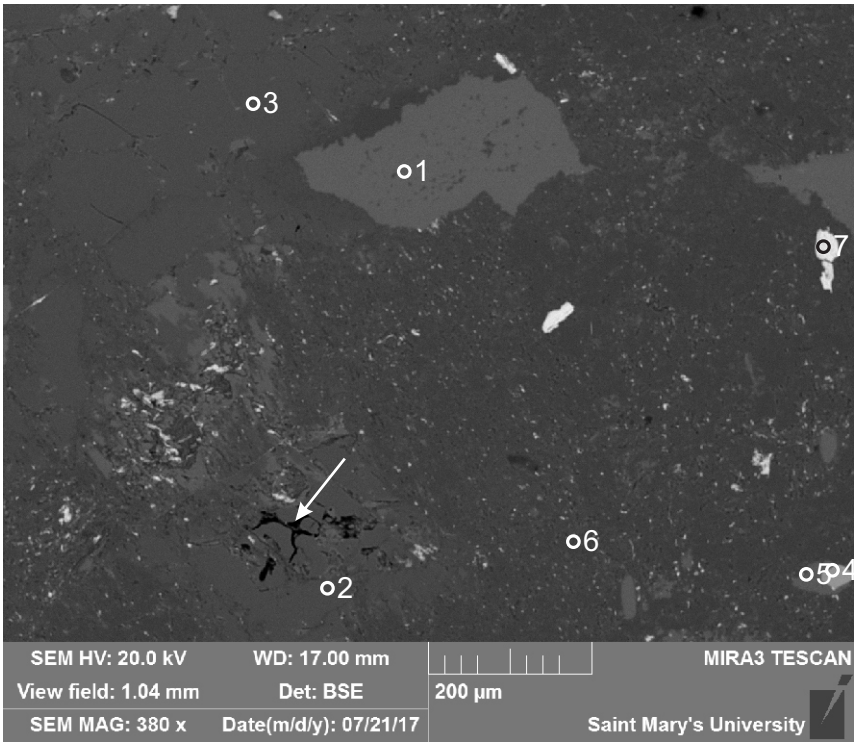
1:TiO_2
2:Magnetite
3:Magnetite
4:Magnetite
5:Oligoclase
6:Chlorite

Figure 1-2B.5: Sample 229.3L site 1.3. Minerals analyzed in this site include: oligoclase (5) and a large crystal of ?magnetite (2-4) with an overgrowth of probably altered ilmenite (now TiO_2, 1) and silicate mineral inclusions (now chlorite (6).



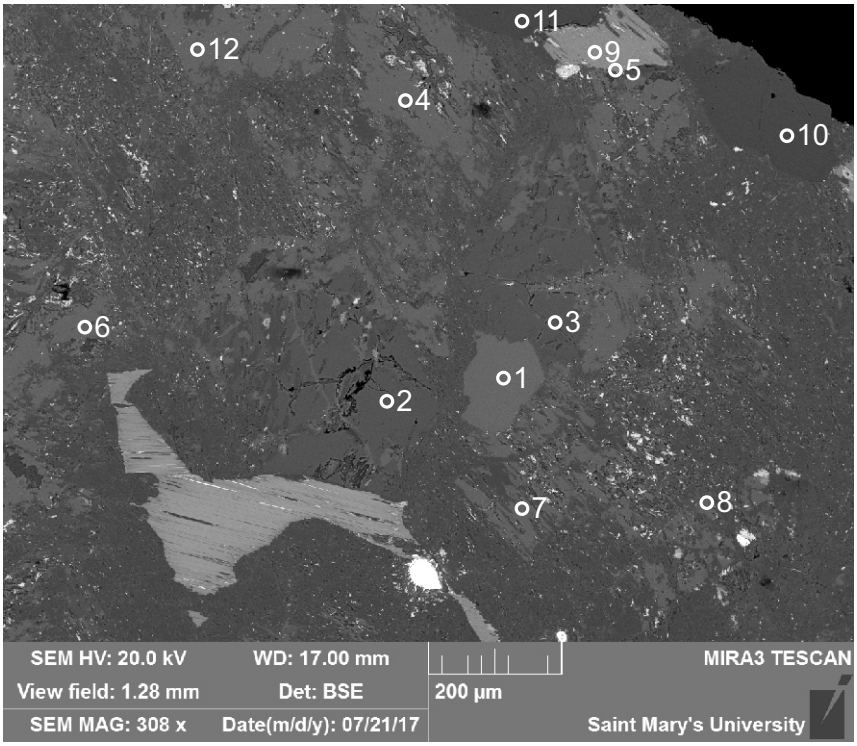
1:Biotite
2:Mix
3:Ilmenite +
4:Ilmenite +
5:Monazite +
6:Feldspar
7:Oligoclase

Figure 1-2B.6: Sample 229.3L site 1.4. Minerals analyzed in this site include: feldspar (mainly oligoclase, 7), biotite (1) with exsolution lamellae rich in TiO_2 (2) probably rutile and accessory monazite (5).



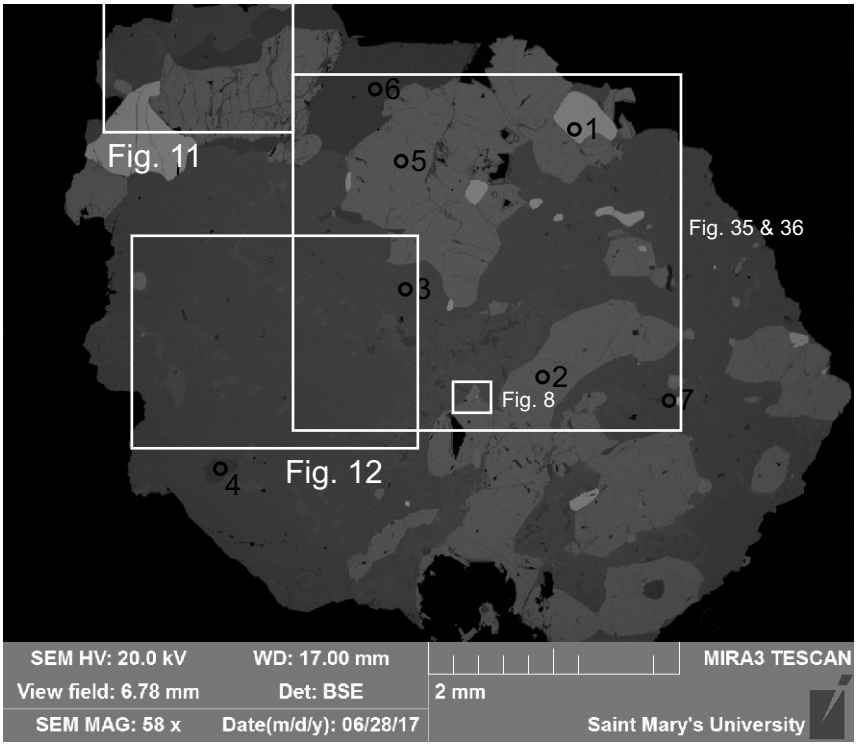
1:K-Feldspar
2:Oligoclase
3:Oligoclase
4:Apatite
5:K-Feldspar
6:Albite
7:Feohy

Figure 1-2B.7: Sample 229.3L site 1.5. This site consists of K-feldspar (1) in an oligoclase-albite (2, 3, & 6) matrix. Feohy (7) is disseminated throughout the analysed site. Some cavities are left without mineral precipitation (shown by arrow). Accessory apatite (4) is also seen.



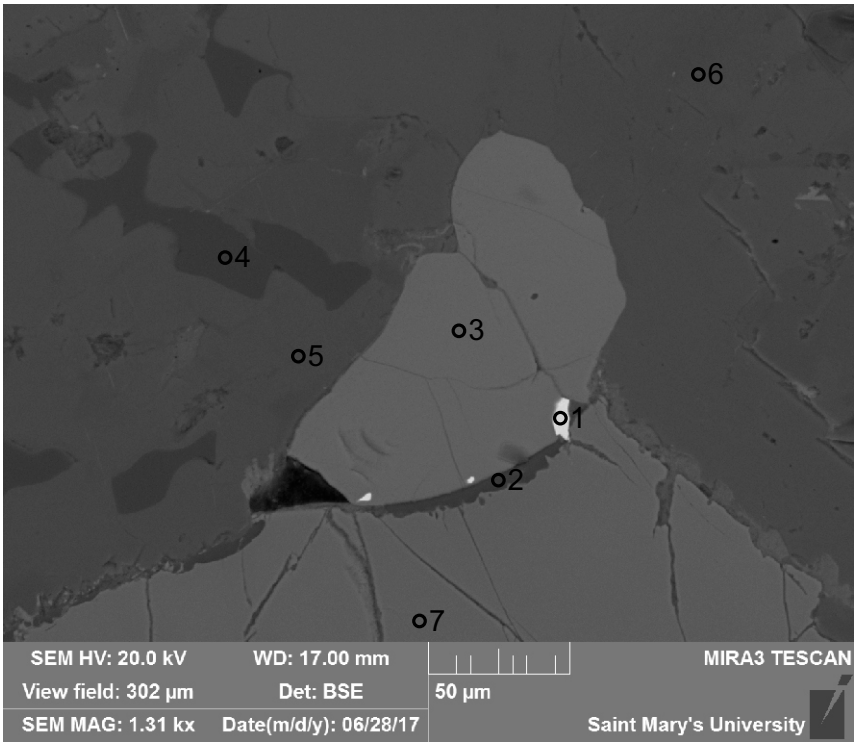
1:K-Feldspar
2:Andesine
3:Andesine
4:K-Feldspar
5:Chlorite
6:K-Feldspar
7:K-Feldspar
8:K-Feldspar
9:Chlorite
10:Quartz
11:Quartz
12:K-Feldspar

Figure 1-2B.8: Sample 229.3L site 1.6. Site made up of primally K-Feldspar (1, 4, & 12), andesine (2 & 3), quartz, and probably ferromagnesian minerals now altered to chloirte (5, 9). More disseminated Feohy seen by all the white contrasting specks. Larger white minerals are probably monazite.



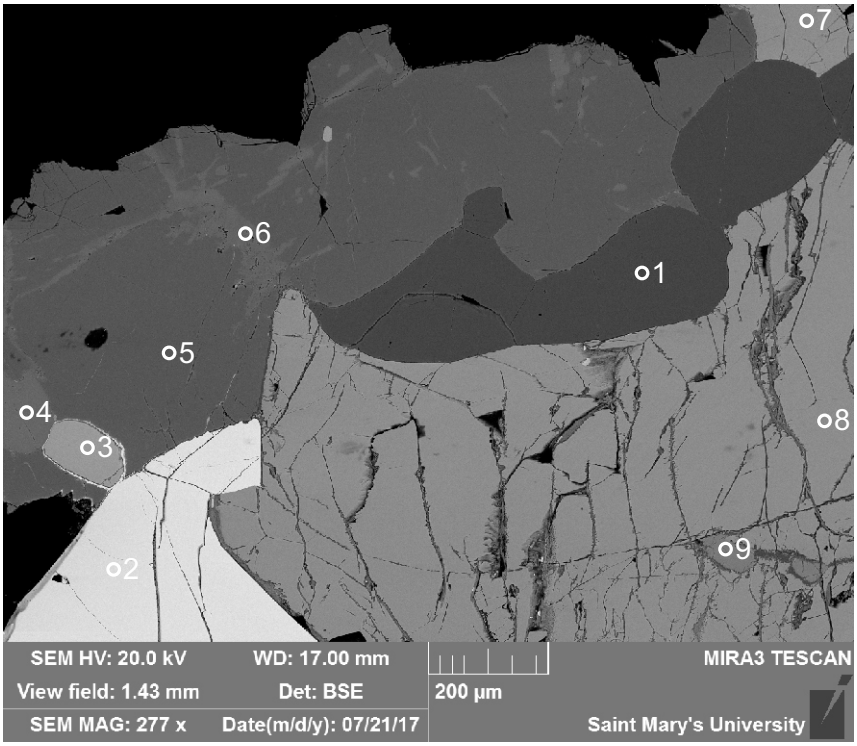
1:Ilmenite
2:Orthopyroxene
3:Andesine
4:Quartz
5:Orthopyroxene
6:Quartz
7:Pyrite +

Figure 1-2B.9: Sample 229.3L site 2. Igneous holocrystalline orthopyroxene (2 & 5) bearing rock. This site also contains well formed crystals of ilmenite (1), andesine (3), and quartz (4) with an interlocking texture. Diorite.



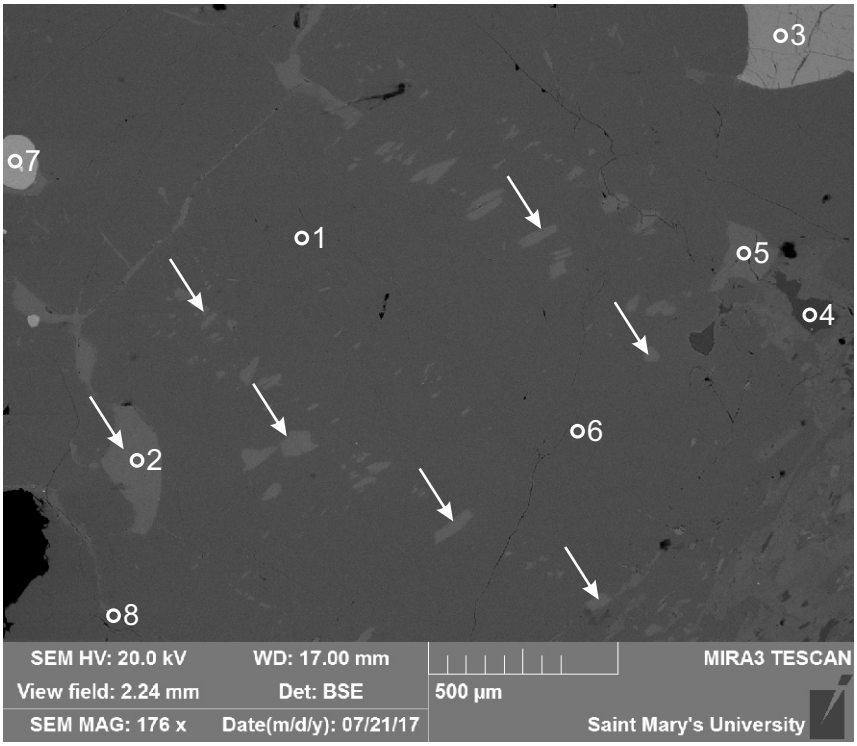
1:Monazite
2:Quartz
3:Apatite
4:Quartz
5:Labradorite
6:Labradorite
7:Orthopyroxene

Figure 1-2B.10: Sample 229.3L site 2.1. This site contains quartz (2, 4), labradorite (5 & 6), orthopyroxene (7), and an apatite crystal (3) with monazite (1) inclusions.



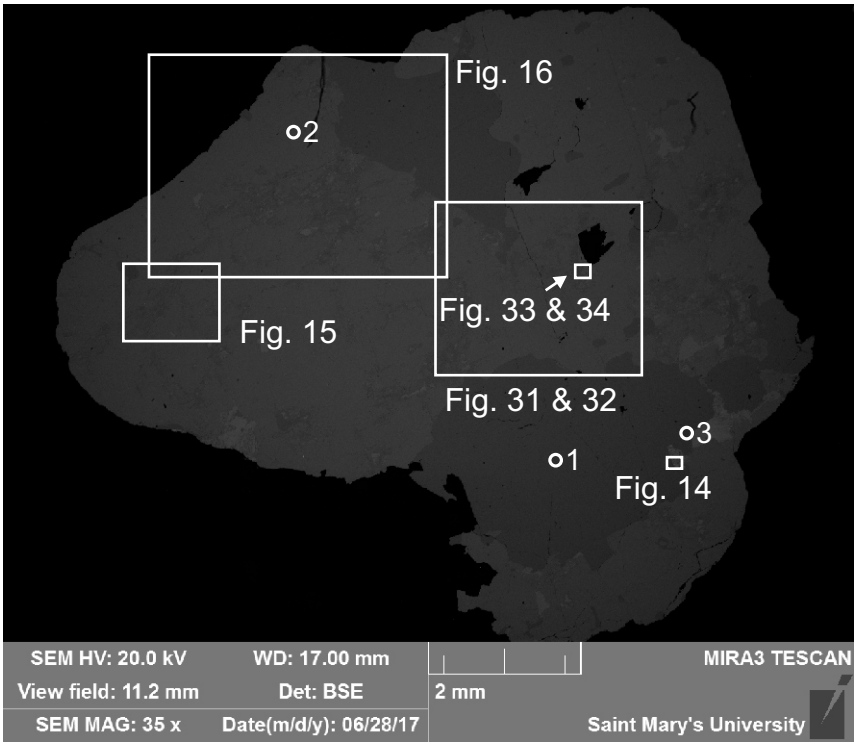
1:Quartz
2:Ilmenite
3:Apatite
4:K-Feldspar
5:Andesine
6:Andesine
7:Orthopyroxene
8:Orthopyroxene
9:Clinopyroxene

Figure 1-2B.11: Sample 229.3L site 2.2. This site shows plutonic textures: interlocking textures between quartz (1), andesine (5), K-feldspar (4), orthopyroxene (8) with clinopyroxene (9) inclusions, and ilmenite (2). Apatite (3) seems to have monazite precipitating in its intergranular boundary. Orthopyroxene (7, 8) is fractured.



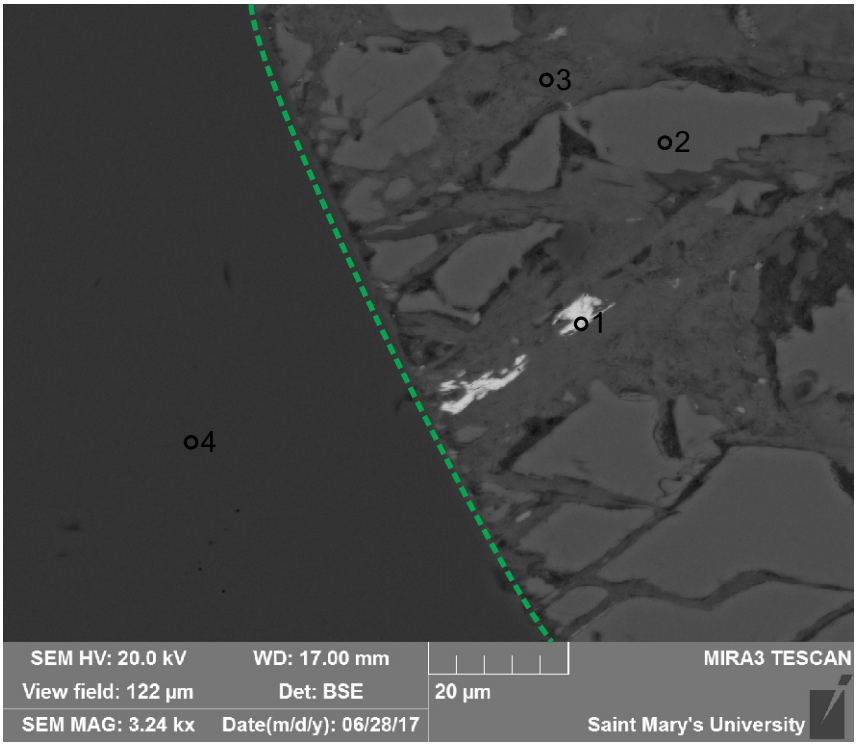
1:Andesine
2:K-Feldspar
3:Orthopyroxene
4:Quartz
5:K-Feldspar
6:Andesine
7:Apatite
8:Andesine

Figure 1-2B.12: Sample 229.3L site 2.3. In this site K-Feldspar (2, 5, and arrows) occurs in small crystals in interlocking texture with andesine (1, 6, 8).



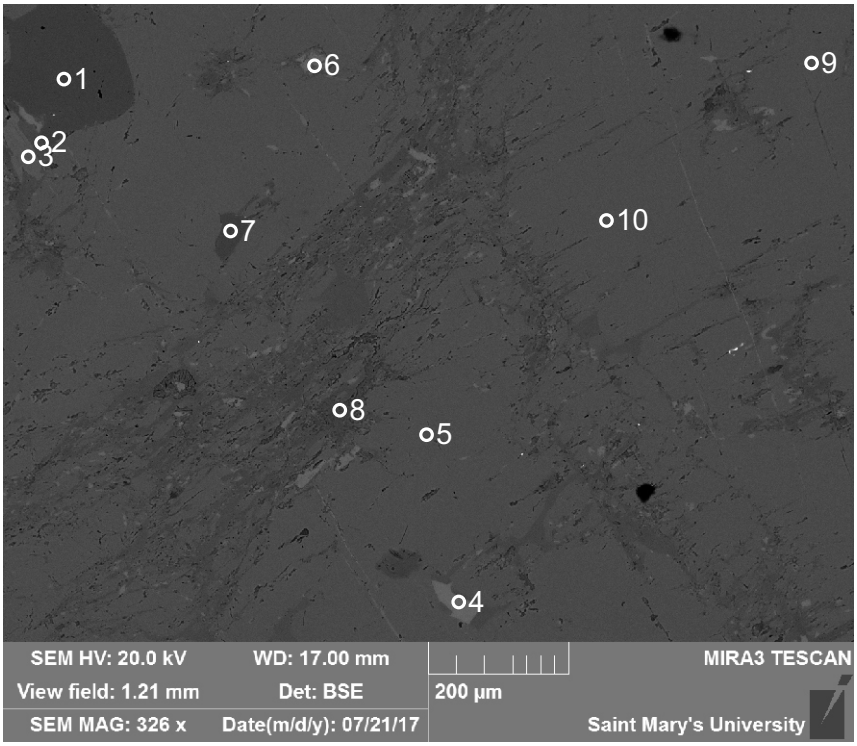
1:Quartz
2:Andesine
3:Chlorite +

Figure 1-2B.13: Sample 229.3L site 3. Holocrystaline igneous rock. Main mineral assemblage includes quartz (1), andesine (2), and chlorite (3).



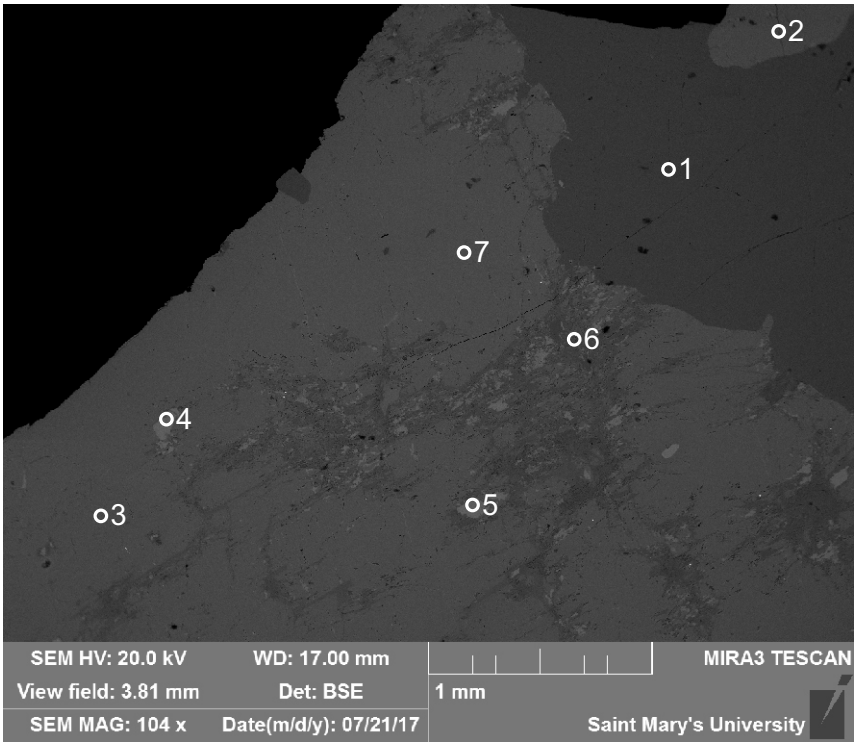
1:Monazite +
2:Hornblende
3:Chlorite
4:Quartz

Figure 1-2B.14: Sample 229.3L site 3.1. To the right of the green dashed line: chlorite (3), and a grain of hornblende (2) that contains monazite (1) inclusions.



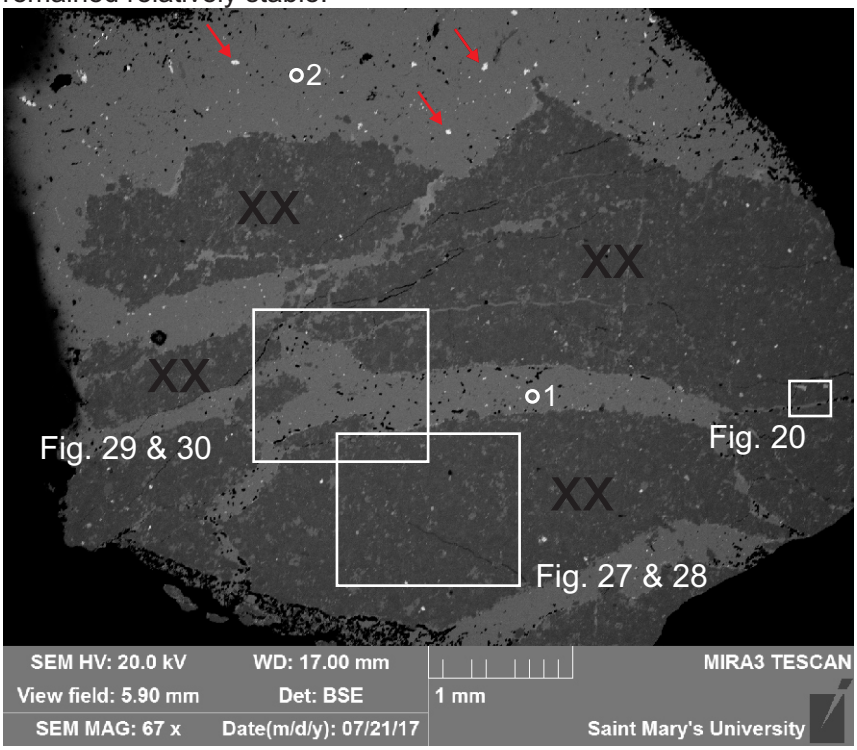
1:Quartz
2:Oligoclase
3:Muscovite
4:Calcite
5:Andesine
6:Calcite
7:Quartz
8:Muscovite +
9:Andesine
10:Andesine

Figure 1-2B.15: Sample 229.3L site 3.2. This site contains a large andesine crystal (10) containing some calcite (4), muscovite (8), and quartz (7), possibly originating from alteration.



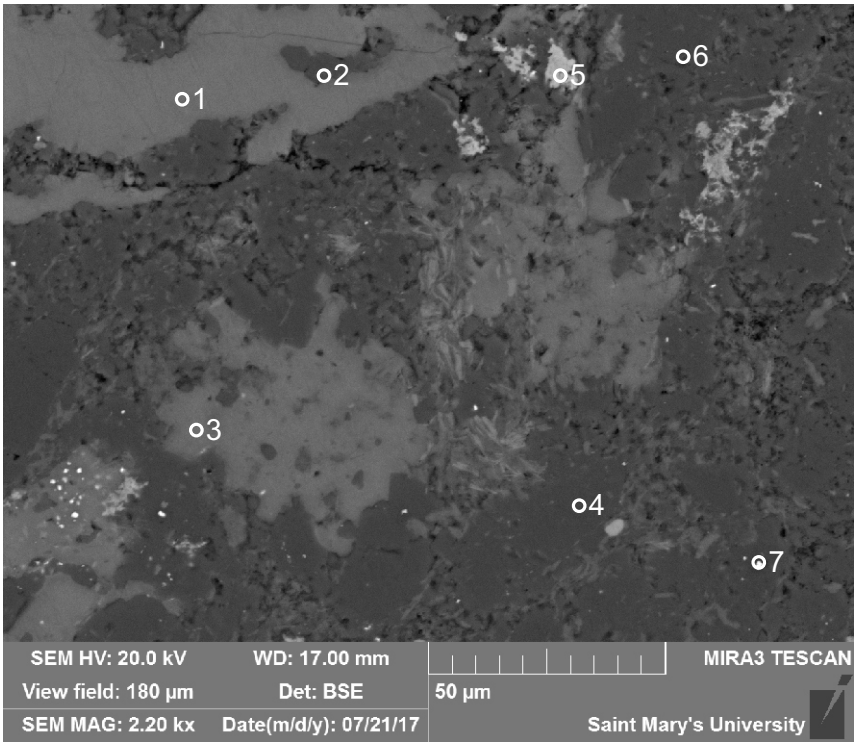
1:Quartz
2:Andesine
3:Andesine
4:Calcite
5:Calcite
6:Muscovite +
7:Andesine

Figure 1-2B.16: Sample 229.3L site 3.3. This site contains fine-grained micas: muscovite (6) is product of alteration of the andesine. Some calcite (4, 5) is forming in the andesine (7). Quartz (1) remained relatively stable.



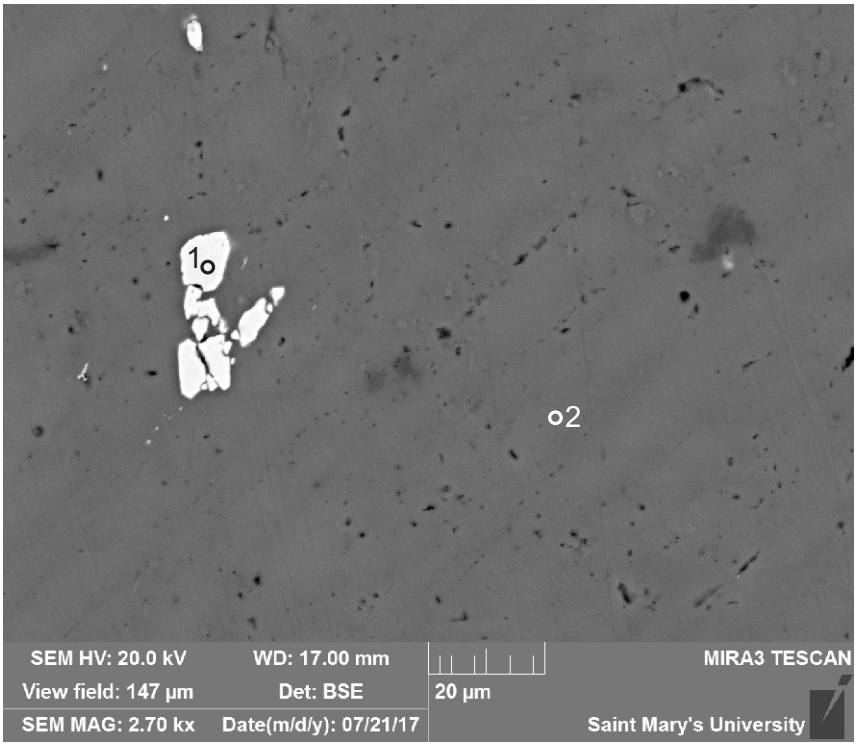
1:Fe-Calcite
2:Calcite +

Figure 1-2B.17: Sample 229.3L site 4. This site is made up dominantly of calcite (1, 2). White coloured specks indicated by arrows are likely same as magnetite (Fig. 19). The darker contrast is in the albite and quartz rich (XX) patches. Rock made up of albite and quartz (XX) is cut and altered by calcite veins (1,2).



1:Calcite
2:Albite
3:Calcite
4:Albite
5:TiO_2 +
6:Albite
7:Albite +

Figure 1-2B.18: Sample 229.3L site 4.1. This site contains albite (2, 4, 6, 7) altered by calcite (1, 3).



1:Magnetite
2:Calcite

Figure 1-2B.19: Sample 229.3L site 4.2. This site contains scattered magnetite (1) grains that seem to have precipitated in voids that formed in the calcite (2).

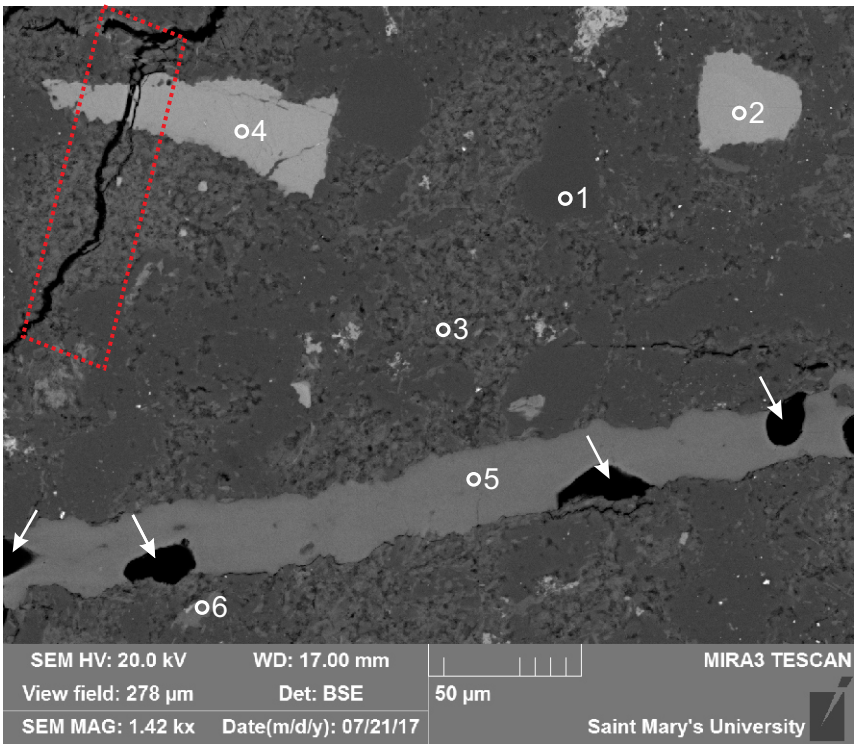


Figure 1-2B.20: Sample 229.3L site 4.3. Calcite vein (5) crosscutting a rock made up of quartz (1) and muscovite (3). Larger apatite crystals may be later (2, 4). Voids are indicated in calcite vein by arrows. The red box is indicating a possibly microscopic size dissolution channel (fracture).

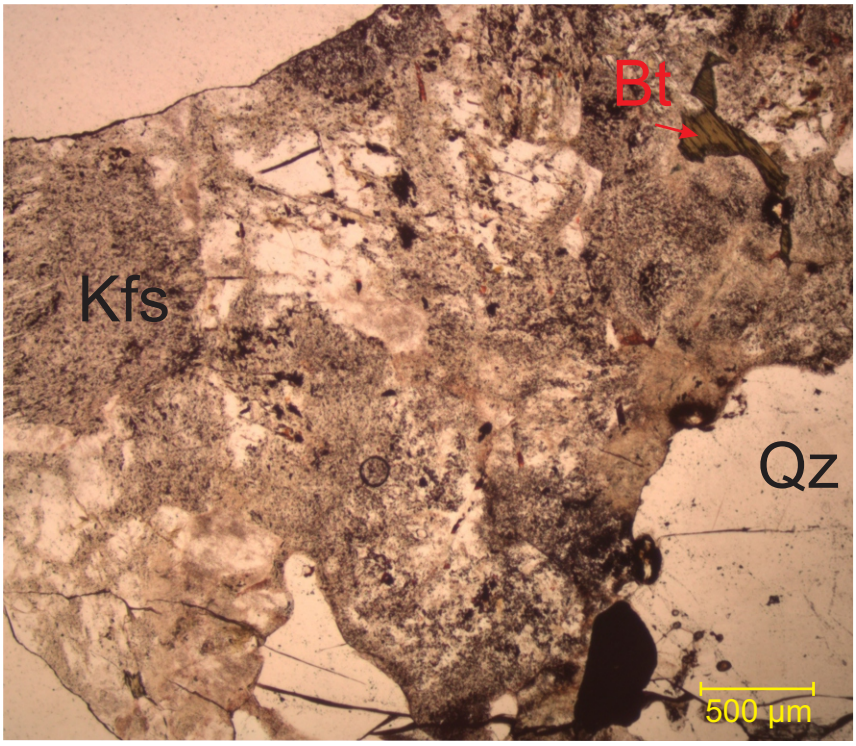


Figure 1-2B.21: Microphotograph. Sample 229.3L Granule 1.Transmitted light, ppl, 4x. Holocrystalline rock. Altered plutonic rock (granite).

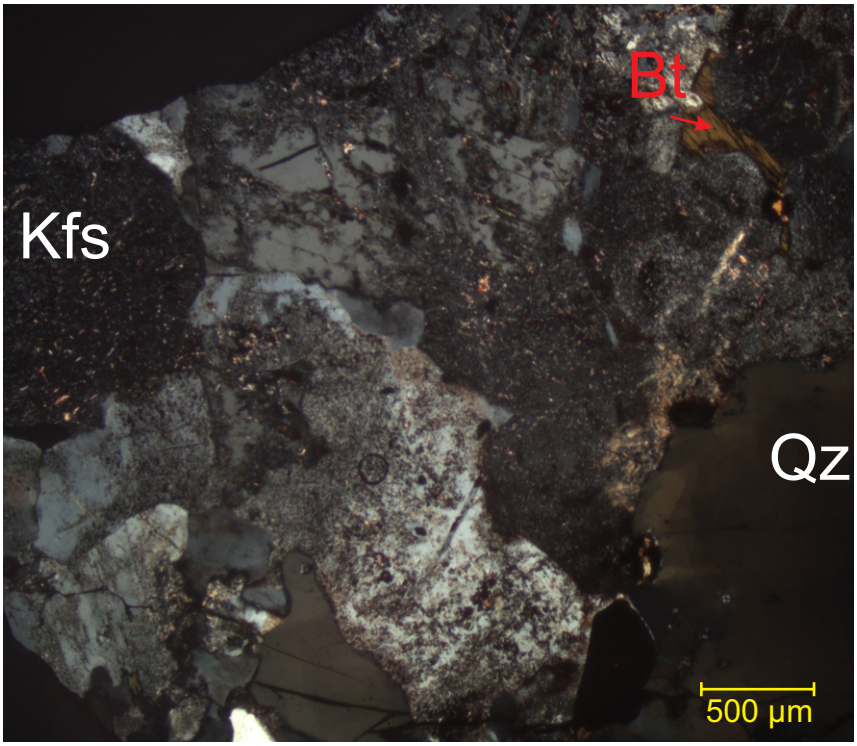


Figure 1-2B.22: Microphotograph. Sample 229.3L, Granule 1. Transmitted light, xpl, 4x. Holocrystalline rock.

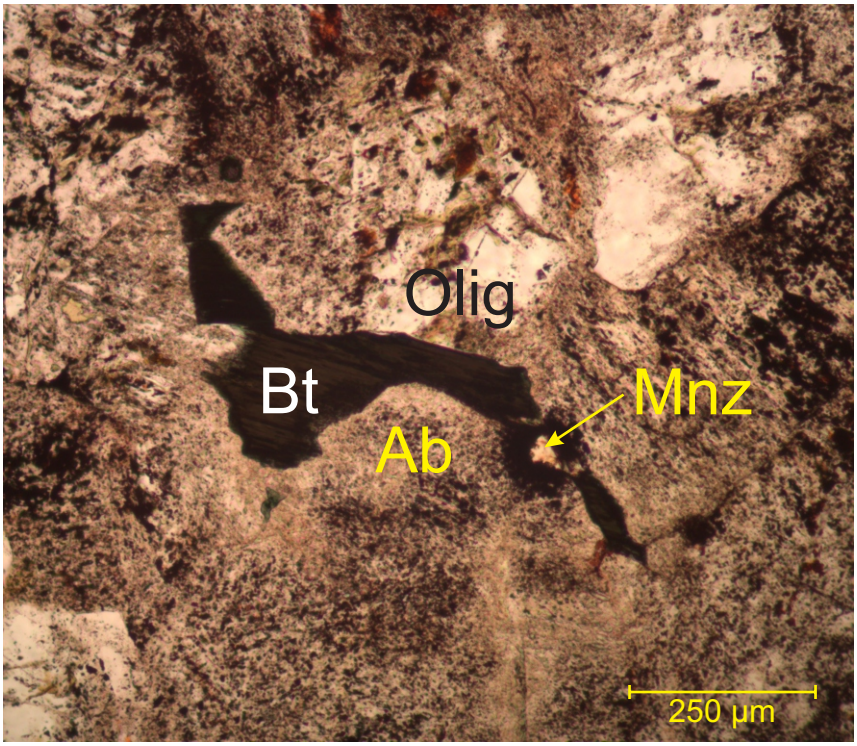


Figure1-2B.23:Microphotograph.Sample229.3L, Granule 1. Transmitted light, ppl, 10x. Holocrystalline rock. Altered plutonic rock.

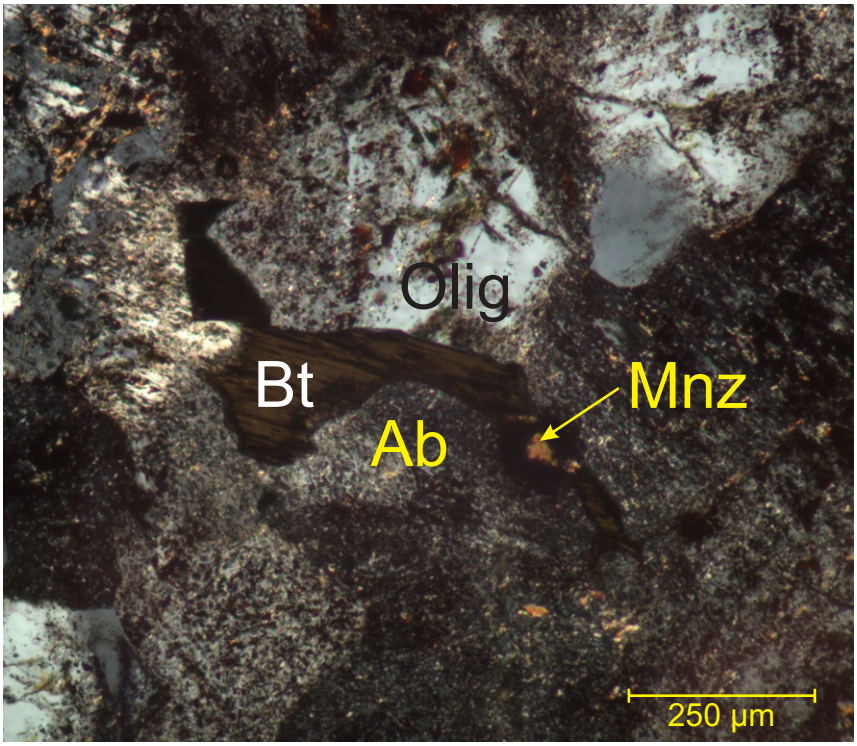


Figure 1-2B.24: Microphotograph. Sample 229.3L, Granule 1. Transmitted light, xpl, 10x. Holocrystalline rock.

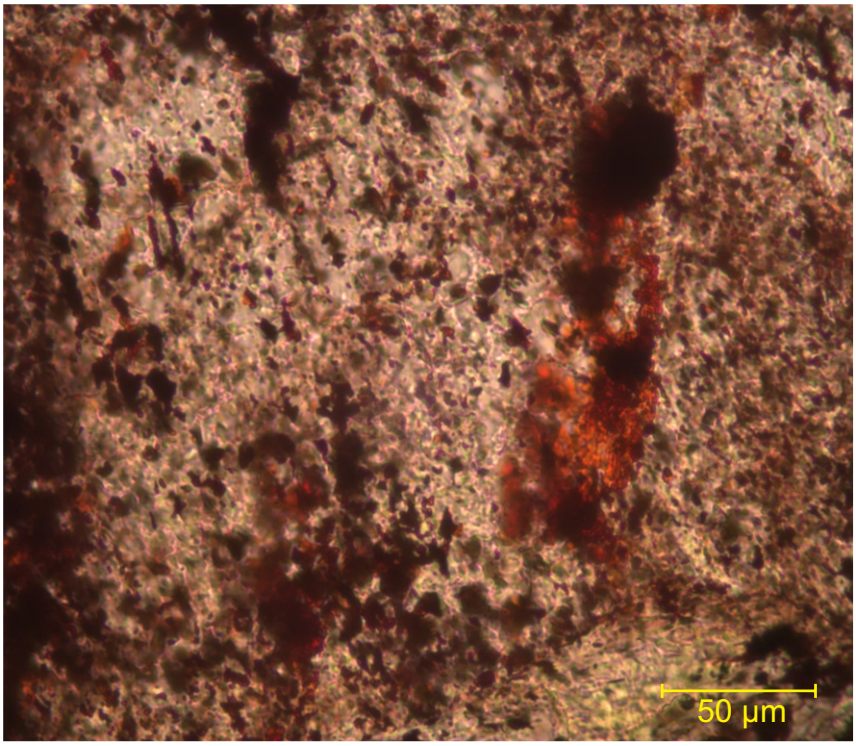


Figure 1-2B.25: Microphotograph. Sample 229.3L, Granule 1.Transmitted light, ppl, 40x. Holocrystalline rock. Orange mineralization unknown, too small to analyze with SEM.

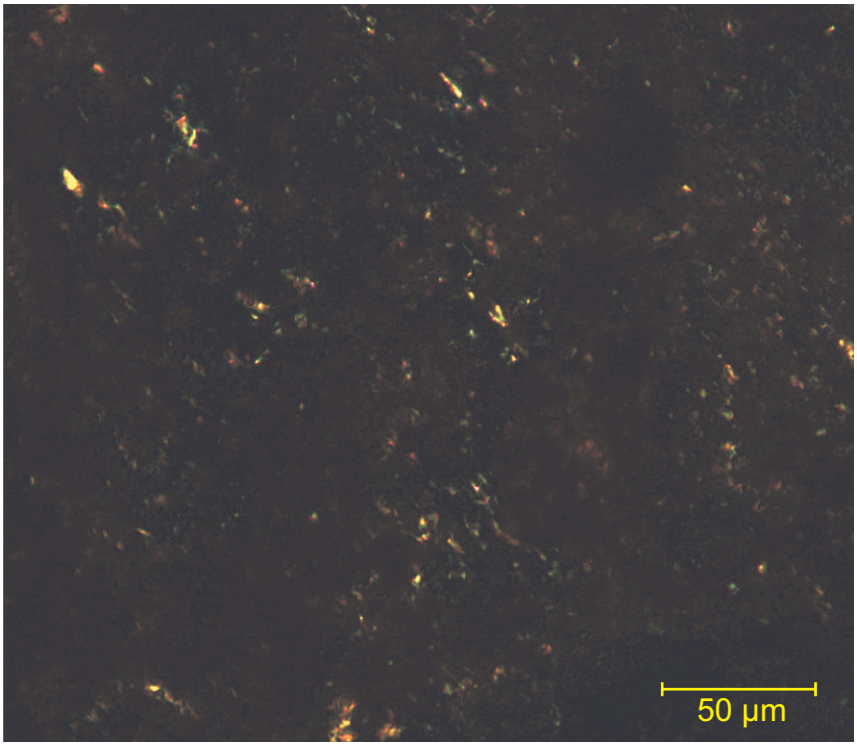


Figure 1-2B.26: Microphotograph. Sample 229.3L, Granule 1. Transmitted light, xpl, 40x. Holocrystalline rock.

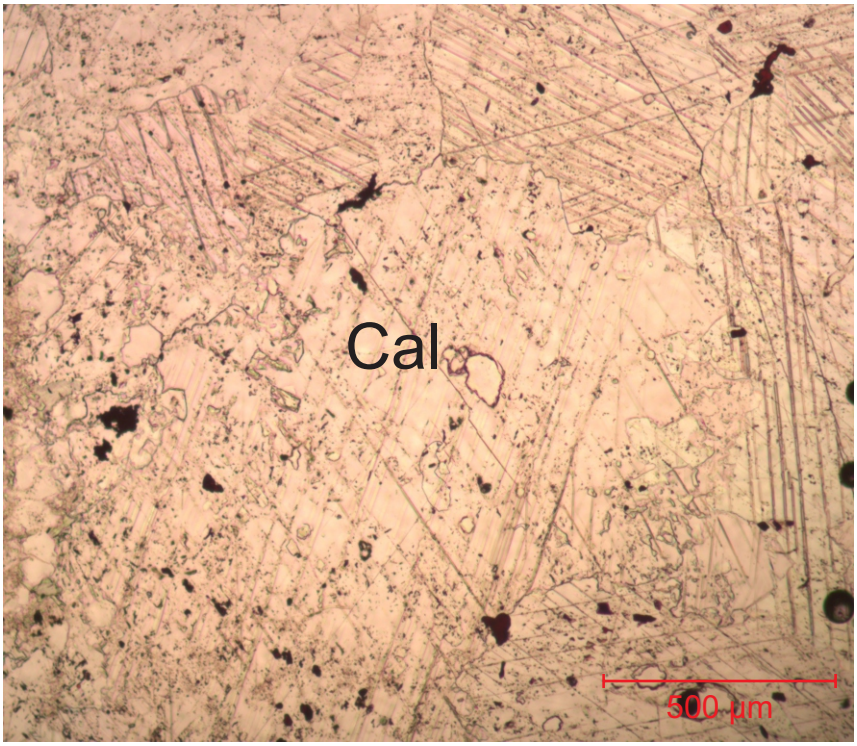


Figure 1-2B.27: Microphotograph. Sample 229.3L, Granule 4. Transmitted light, ppl, 10x. Carbonate vein.

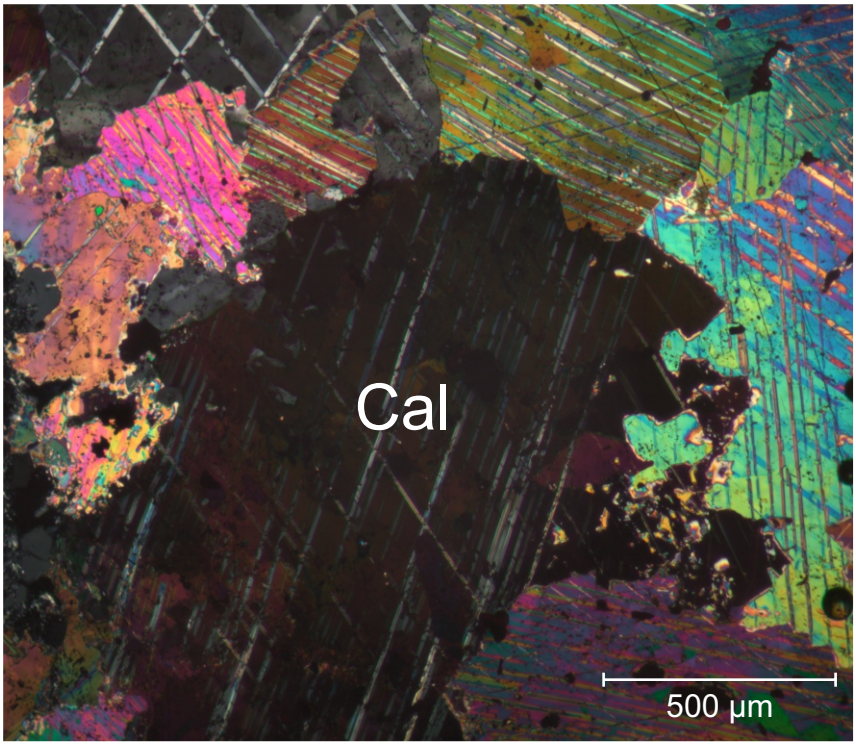


Figure 1-2B.28: Microphotograph. Sample 229.3L, Granule 4. Transmitted light, xpl, 10x. Carbonate vein. Field of view is entirely calcite crystals.

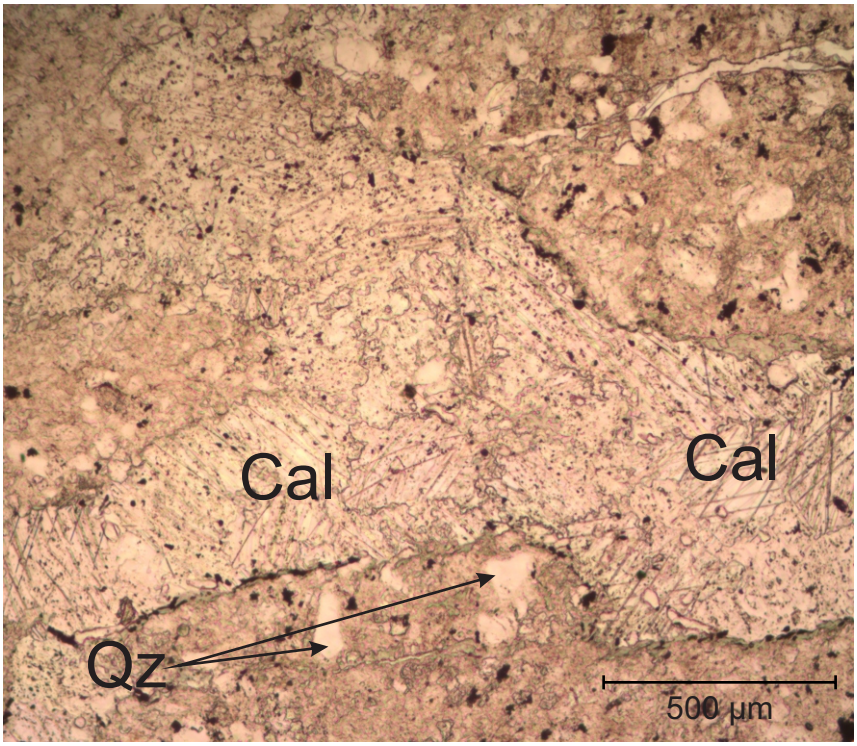


Figure 1-2B.29: Microphotograph. Sample 229.3L, Granule 4. Transmitted light, ppl, 10x. Carbonate vein.

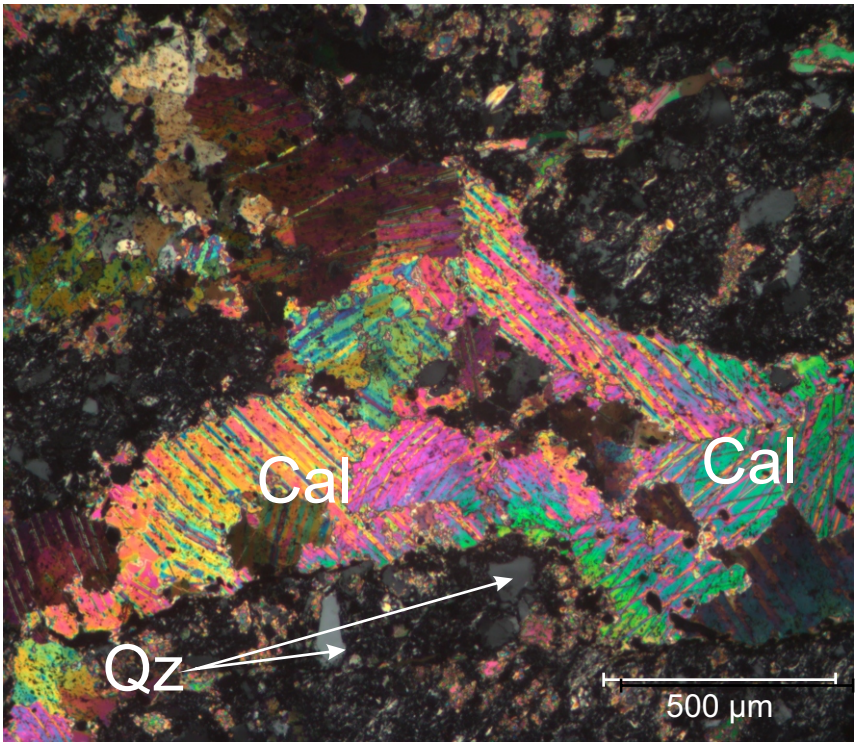


Figure 1-2B.30: Microphotograph. Sample 229.3L, Granule 4. Transmitted light, xpl, 10x. Carbonate vein.

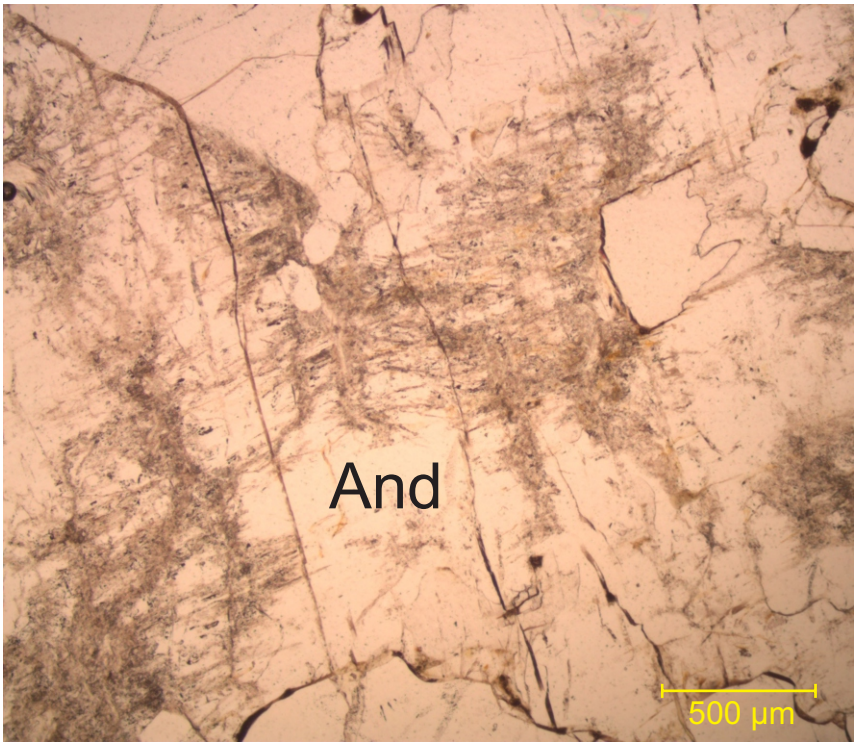


Figure 1-2B.31: Microphotograph. Sample 229.3L, Granule3. Transmitted light, ppl, 4x. Holocrystalline rock. Fine micas in andesine (Fig. 15).

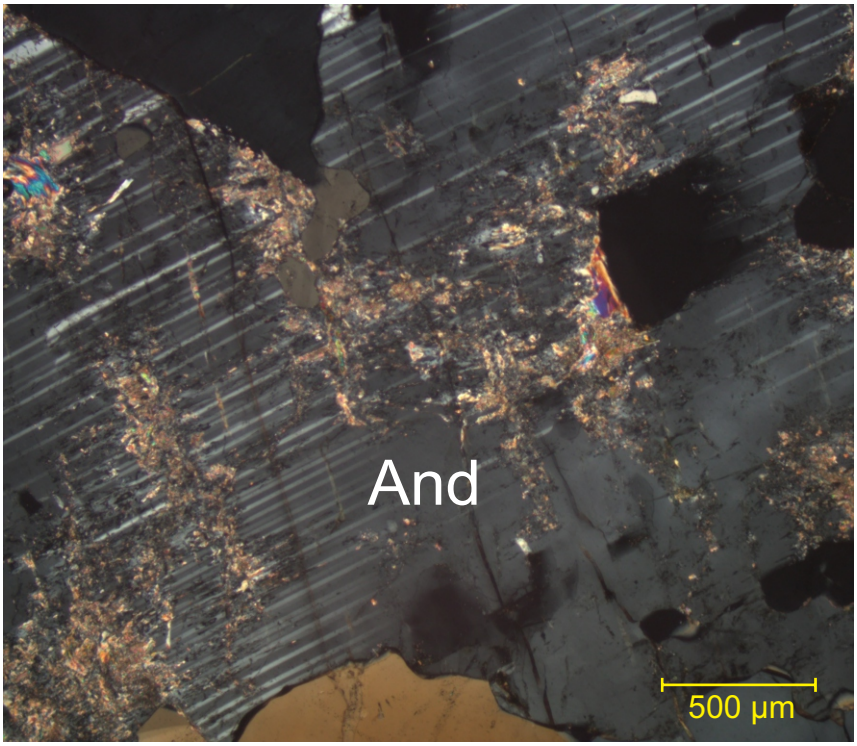


Figure 1-2B.32: Microphotograph. Sample 229.3L, Granule 3. Transmitted light, xpl, 4x. Holocrystalline rock.

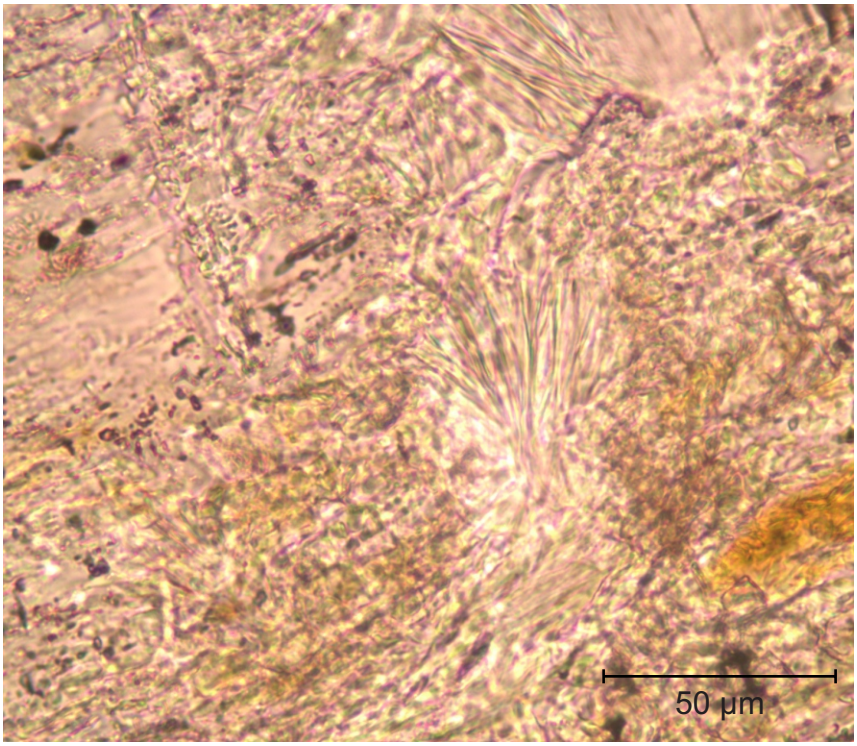


Figure 1-2B.33: Microphotograph. Sample 229.3L, Granule 3.Transmitted light, ppl, 10x. Holocrystalline rock, with radiating mineral crystal growth.

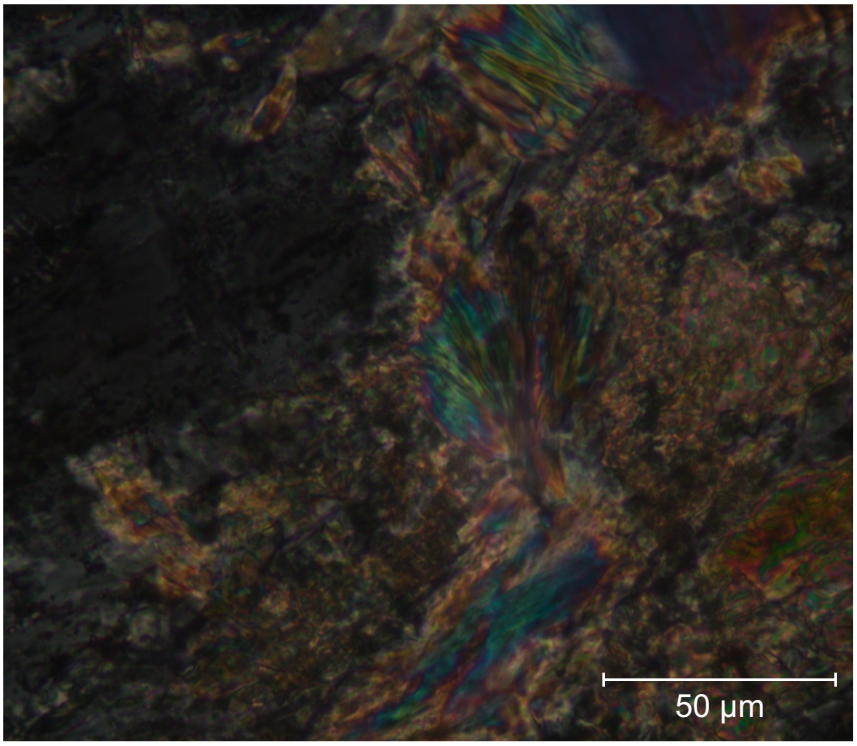


Figure 1-2B.34: Microphotograph. Sample 229.3L, Granule 3. Transmitted light, xpl, 10x. Holocrystalline rock.

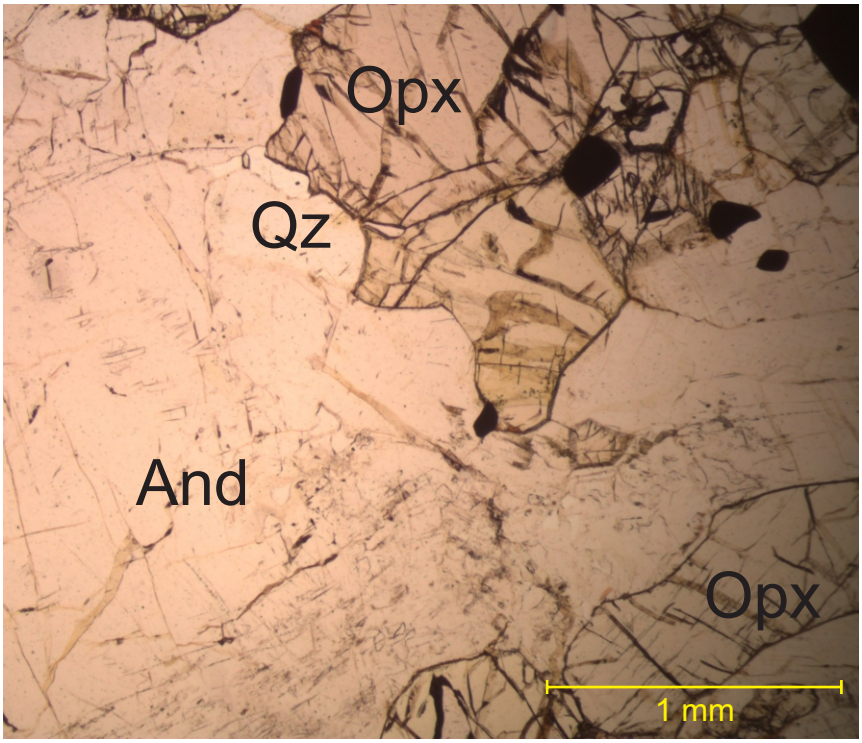


Figure 1-2B.35: Microphotograph. Sample 229.3L, Granule 2. Transmitted light, ppl, 4x. Diorite.

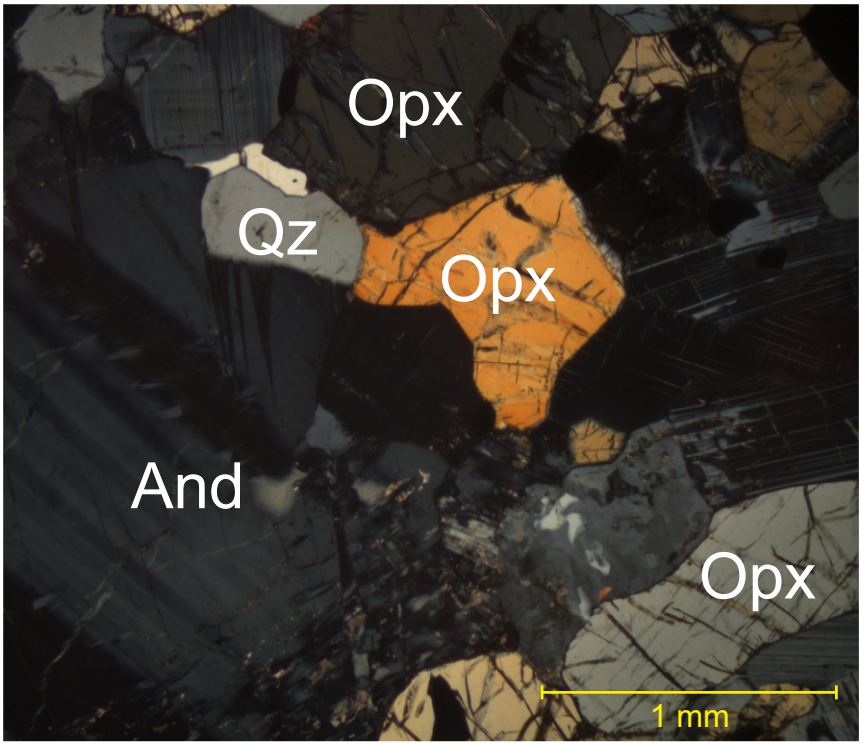


Figure 1-2B.36: Microphotograph. Sample 229.3L, Granule 2. Transmitted light, xpl, 4x. Diorite.

Table 1-2B.1: Scanning electron microscope chemical analyses of Granules from Flemish Cap. (Sample 229.3L)

Sample	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	NiO	ZrO2	La2O3	Ce2O3	Nd2O3	HfO2	WO3	ThO2	Total	Actual Total
18.956.3L	1	1	Kfs	66.18		17.96					1.60	14.25													100	114
18.956.3L	1	2	Qz	100.00																					100	113
18.956.3L	1	3	Bt	36.84	4.50	14.47	24.99		5.53			9.13				0.54									96	98
18.956.3L	1	4	Mag +	4.80	0.65	2.97	90.09		1.00			0.49													100	101
18.956.3L	1	5	Mnz	2.11			0.97			0.93			32.16		0.58				15.35	29.06	8.68			10.15	100	111
18.956.3L	1	6	Kfs	65.94		18.05					0.34	15.67													100	114
18.956.3L	1	7	Ab	69.38		18.83					11.61	0.19													100	118
18.956.3L	1.1	1	Mnz	1.96						0.94			32.42		0.25				14.71	29.80	8.87			11.05	100	104
18.956.3L	1.1	2	Mag				100.00																		100	89
18.956.3L	1.1	3	TiO2 +	1.69	95.21	0.57	1.94		0.38	0.21															100	105
18.956.3L	1.1	4	TiO2	0.98	96.73		2.06			0.24															100	105
18.956.3L	1.1	5	TiO2 +	1.78	86.40	1.63	9.27		0.92																100	104
18.956.3L	1.1	6	Mag +	4.15	1.05	2.06	91.40		1.34																100	94
18.956.3L	1.1	7	Bt	43.38	0.58	20.68	17.37		7.55		0.38	5.43		0.62											96	95
18.956.3L	1.1	8	Mag +	5.14	0.75	2.68	91.09					0.34													100	91
18.956.3L	1.1	9	Mnz	2.30						0.98			32.28		0.73		0.09		15.02	29.47	8.73			10.41	100	103
18.956.3L	1.1	10	Ap +				0.65			47.39			43.36		7.00								1.60		100	120
18.956.3L	1.2	1	Mnz +	2.56						0.58			33.95		-0.92				15.31	30.39	8.76			9.37	100	102
18.956.3L	1.2	2	Zr	28.54		1.24	3.43			2.29	0.57							62.36				1.57			100	96
18.956.3L	1.2	3	Ti-Mag +	2.46	2.05		95.49																		100	90
18.956.3L	1.2	4	Py	0.23			27.90							71.87											100	229
18.956.3L	1.2	5	Mag +	12.33	1.11	5.78	78.44		1.16			1.19													100	93
18.956.3L	1.2	6	Qz	100.00																					100	118
18.956.3L	1.3	1	TiO2	0.53	98.65		0.82																		100	105
18.956.3L	1.3	2	Mag			0.52	99.48																		100	90
18.956.3L	1.3	3	Mag			0.86	99.14																		100	89
18.956.3L	1.3	4	Mag			0.54	99.46																		100	90
18.956.3L	1.3	5	Olig	61.87		24.08	1.03		1.60		5.95	5.48													100	117
18.956.3L	1.3	6	Chl	31.55		23.30	11.64		18.51																85	97
18.956.3L	1.4	1	Bt	36.69	4.07	14.69	25.94		5.76			8.34				0.51									96	104
18.956.3L	1.4	2	Mix	13.91	3.22	6.38	71.77		2.45			2.27													100	100
18.956.3L	1.4	3	Ilm	5.49	77.41	2.97	12.42		1.19	0.52															100	96
18.956.3L	1.4	4	Ilm +	12.48	60.32	6.91	15.56		4.33	0.40															100	95
18.956.3L	1.4	5	Mnz +	2.57						0.65			32.16		1.17		0.06		14.96	29.48	8.53			10.42	100	104
18.956.3L	1.4	6	Feld	64.98		21.95	0.73		0.58		9.08	2.68													100	114
18.956.3L	1.4	7	Olig	62.72		23.42				5.31	8.31	0.23													100	114
18.956.3L	1.5	1	Kfs	65.95		17.94					0.41	15.20										0.50			100	107
18.956.3L	1.5	2	Olig	62.40		23.55				5.32	8.42	0.31													100	113
18.956.3L	1.5	3	Olig	62.60		23.42				5.17	8.58	0.23													100	107
18.956.3L	1.5	4	Ap	0.57			0.34			47.34	0.41		43.89		6.15								1.29		100	115
18.956.3L	1.5	5	Kfs	66.27		17.96					0.69	15.08													100	113
18.956.3L	1.5	6	Ab	68.24		19.74				0.37	10.98	0.67													100	114

Table 1-2B.1: Scanning electron microscope chemical analyses of Granules from Flemish Cap. (Sample 229.3L)

Sample	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	NiO	ZrO2	La2O3	Ce2O3	Nd2O3	HfO2	WO3	ThO2	Total	Actual Total
18.956.3L	1.5	7	Feohy	0.85		0.63	98.52																		100	84
18.956.3L	1.6	1	Kfs	66.45		18.09					0.71	14.74													100	113
18.956.3L	1.6	2	And	62.51		23.44				5.10	8.64	0.31													100	115
18.956.3L	1.6	3	And	62.45		23.50				5.03	8.70	0.31													100	115
18.956.3L	1.6	4	Kfs	66.49		17.83						15.68													100	109
18.956.3L	1.6	5	Chl	28.47	0.56	17.33	29.04		8.97			0.63													85	90
18.956.3L	1.6	6	Kfs	66.36		17.80						15.83													100	110
18.956.3L	1.6	7	Kfs	65.63		17.68	0.98					15.72													100	117
18.956.3L	1.6	8	Kfs	66.52		17.71						15.77													100	117
18.956.3L	1.6	9	Chl	28.48	1.63	16.78	28.08		8.82			1.20													85	91
18.956.3L	1.6	10	Qz	100.00																					100	110
18.956.3L	1.6	11	Qz	100.00																					100	108
18.956.3L	1.6	12	Kfs	66.42		17.70	0.26					15.62													100	106
18.956.3L	2	1	Ilm		52.44		45.90	0.55	1.11																100	71
18.956.3L	2	2	Opx	53.87		1.44	25.50	0.39	18.02	0.77															100	114
18.956.3L	2	3	And	58.36		26.50				8.57	6.26	0.31													100	111
18.956.3L	2	4	Qz	100.00																					100	97
18.956.3L	2	5	Opx	53.28		1.57	25.54	0.41	18.37	0.83															100	96
18.956.3L	2	6	Qz	100.00																					100	90
18.956.3L	2	7	Py +	3.45			38.93							57.62											100	191
18.956.3L	2.1	1	Mnz							0.71			36.66		-0.58				13.69	35.78	13.74				100	103
18.956.3L	2.1	2	Qz	98.99			0.68			0.32															100	120
18.956.3L	2.1	3	Ap							48.02			43.93		6.00	0.34							1.71		100	122
18.956.3L	2.1	4	Qz	100.00																					100	119
18.956.3L	2.1	5	Lab	50.59		32.29				14.24	2.55	0.33													100	112
18.956.3L	2.1	6	Lab	52.54		30.77				13.11	3.58														100	114
18.956.3L	2.1	7	Opx	53.57		1.31	26.08	0.38	18.23	0.44															100	114
18.956.3L	2.2	1	Qz	100.00																					100	117
18.956.3L	2.2	2	Ilm		52.76		45.60	0.38	1.27																100	103
18.956.3L	2.2	3	Ap							48.10			44.04		5.88	0.35							1.63		100	119
18.956.3L	2.2	4	Kfs	65.34		17.99					0.38	15.14										1.14			100	112
18.956.3L	2.2	5	And	58.15		26.53				8.88	6.10	0.34													100	113
18.956.3L	2.2	6	And	59.30		23.45	0.37			7.03	1.09	8.76													100	107
18.956.3L	2.2	7	Opx	54.46		1.35	24.17	0.46	18.95	0.61															100	104
18.956.3L	2.2	8	Opx	54.06		1.57	24.49	0.44	18.91	0.53															100	112
18.956.3L	2.2	9	Cpx	54.97		1.81	8.16	0.22	13.59	20.83	0.43														100	115
18.956.3L	2.3	1	And	58.44		26.13	0.21			8.41	6.49	0.33													100	107
18.956.3L	2.3	2	Kfs	64.61		18.08	0.68		0.38		0.77	14.49										0.99			100	106
18.956.3L	2.3	3	Opx	53.78		1.31	25.34	0.47	18.45	0.64															100	94
18.956.3L	2.3	4	Qz	100.00																					100	111
18.956.3L	2.3	5	Kfs	65.62		18.21					0.69	14.74										0.74			100	106
18.956.3L	2.3	6	And	58.33		26.38				8.39	6.63	0.27													100	114

Table 1-2B.1: Scanning electron microscope chemical analyses of Granules from Flemish Cap. (Sample 229.3L)

Sample	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	NiO	ZrO2	La2O3	Ce2O3	Nd2O3	HfO2	WO3	ThO2	Total	Actual Total
18.956.3L	2.3	7	Ap							47.99			44.03		6.04	0.35							1.60		100	105
18.956.3L	2.3	8	And	57.65		26.97				9.06	6.16	0.17													100	106
18.956.3L	3	1	Qz	100.00																					100	136
18.956.3L	3	2	And	58.93		26.05				7.92	6.80	0.30													100	83
18.956.3L	3	3	Chl +	39.79	1.38	18.38	18.16	0.32	15.60	0.34	0.81	5.23													100	86
18.956.3L	3.1	1	Mnz +	5.50		2.29	2.43		1.16	2.80					6.67	0.41	-0.06		23.33	43.56	11.92				100	78
18.956.3L	3.1	2	Hbl	46.57	0.74	10.82	13.81	0.30	11.63	10.97	1.19	0.96													97	112
18.956.3L	3.1	3	Chl	29.06		20.45	17.97	0.40	16.88	0.25															85	97
18.956.3L	3.1	4	Qz	100.00																					100	121
18.956.3L	3.2	1	Qz	100																					100	114
18.956.3L	3.2	2	Olig	65.18		21.71				3.53	9.58														100	112
18.956.3L	3.2	3	Ms	50.53	0.48	35.27	1.47		0.91		0.52	10.82													100	104
18.956.3L	3.2	4	Cal							56															56	58.6
18.956.3L	3.2	5	And	59.08		26.08				8.12	6.72														100	117
18.956.3L	3.2	6	Cal	0.5824						55.15		0.263													56	55.7
18.956.3L	3.2	7	Qz	100																					100	117
18.956.3L	3.2	8	Ms +	57.03		36.43					3.68	2.86													100	109
18.956.3L	3.2	9	And	58.41		26.46				8.78	6.35														100	111
18.956.3L	3.2	10	And	58.88		25.93				8.3	6.7	0.19													100	115
18.956.3L	3.3	1	Qz	100																					100	104
18.956.3L	3.3	2	And	59.25		25.45				7.89	6.48	0.93													100	81.9
18.956.3L	3.3	3	And	59.3		25.76				7.74	6.97	0.23													100	99.5
18.956.3L	3.3	4	Cal							56															56	50.8
18.956.3L	3.3	5	Cal							56															56	58.7
18.956.3L	3.3	6	Ms +	54.64		35.72	0.68		0.91		3.36	4.7													100	98.8
18.956.3L	3.3	7	And	58.98		26				8.17	6.6	0.25													100	111
18.956.3L	4	1	Fe-Cal	1.15			23.35	1.31	1.58	72.61															100	67.1
18.956.3L	4	2	Cal				0.5487	1.3	0.437	53.71															56	45
18.956.3L	4.1	1	Cal	0.588				1.23		54.19															56	57.2
18.956.3L	4.1	2	Ab	72.39		16.55				0.68	10.1	0.28													100	118
18.956.3L	4.1	3	Cal	0.9408		0.269	0.4592	0.81	0.308	53.08		0.134													56	58.5
18.956.3L	4.1	4	Ab	69.75		18.79					11.46														100	121
18.956.3L	4.1	5	TiO2 +	15.67	79.53	2.6	0.63			0.67	0.51	0.39													100	107
18.956.3L	4.1	6	Ab	65.96		20.93	0.56			0.23	10.32	2.01													100	120
18.956.3L	4.1	7	Ab +	77.89		8.16	9.15				4.8														100	126
18.956.3L	4.2	1	Mag				98.82			1.18															100	91.8
18.956.3L	4.2	2	Cal				0.9184	1.74	0.543	52.8															56	57.5
18.956.3L	4.3	1	Qz	100																					100	121
18.956.3L	4.3	2	Ap	0.76						48.97			43.62		5.06								1.59		100	121
18.956.3L	4.3	3	Ms +	58.9		25.43	3.93		2.35			9.39													100	112
18.956.3L	4.3	4	Ap	0.44			0.26		0.38	48.04			44.32		3.05	1.8							1.7		100	120
18.956.3L	4.3	5	Cal	0.5992		0.252		1.25		53.73		0.162													56	57.7

Table 1-2B.1: Scanning electron microscope chemical analyses of Granules from Flemish Cap. (Sample 229.3L)

Sample	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	NiO	ZrO2	La2O3	Ce2O3	Nd2O3	HfO2	WO3	ThO2	Total	Actual Total
18.956.3L	4.3	6	Cal +	14.95	6.46	3.95	1.12	1.66	0.62	70.04		1.21													100	68.8
			Notes																							
			"+" indicates more than one mineral present																							

Appendix 1-2C: SEM-BSE images for Flemish Cap with EDS Mineral Analyses
Sample 2008061-229.4L

Flemish Cap Sample 229.4L Lithology Summary Notes

Granule 1 (Sites 1, 1.1, 1.2) Microphotographs: None.
The Granule appears to be composed of mostly calcite and dolomite. There are rare detrital minerals such as K-feldspar, apatite, and muscovite, however, it is unclear if the Granule represents a vein cutting through the host rock or if it is a carbonate rock with some detrital minerals.

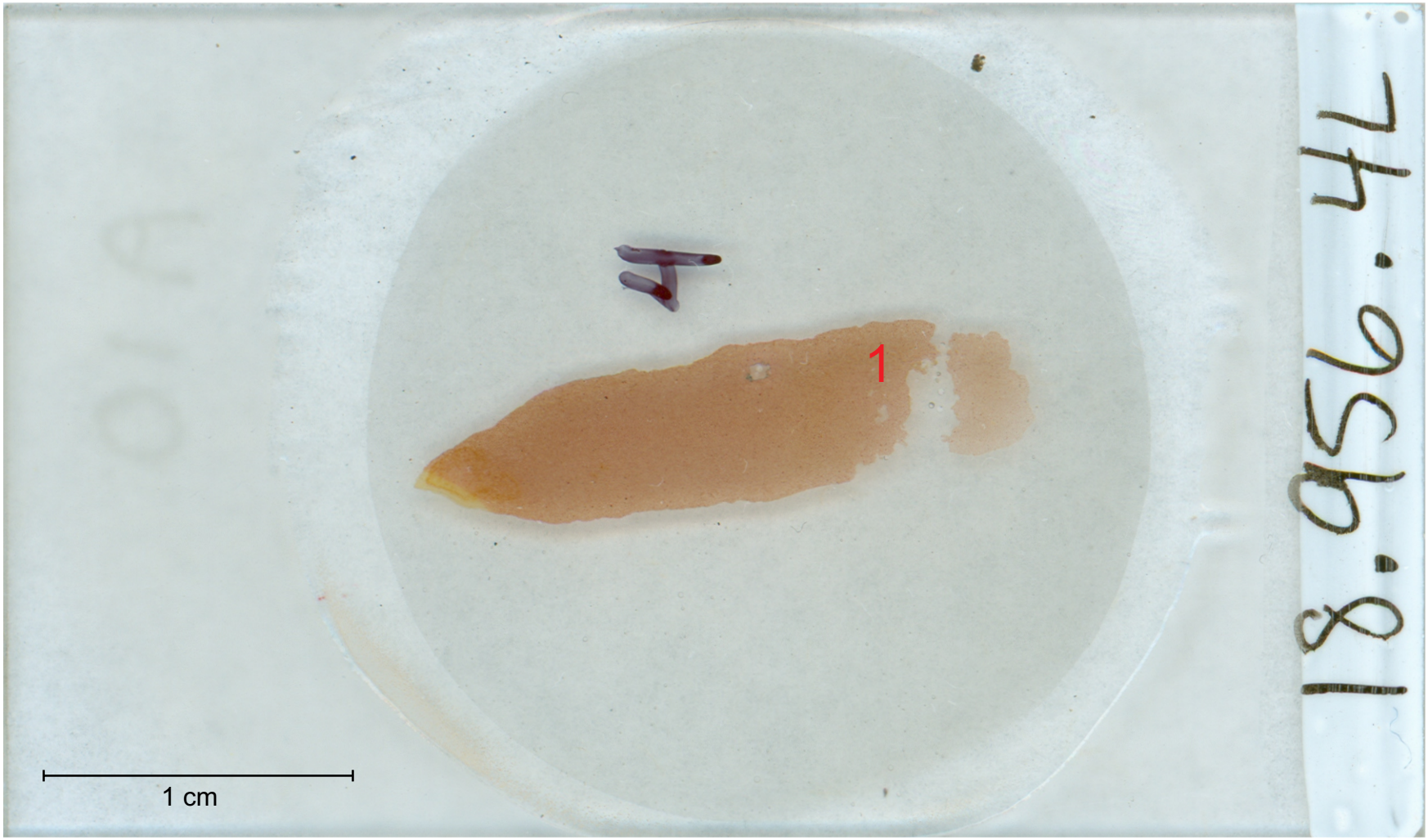
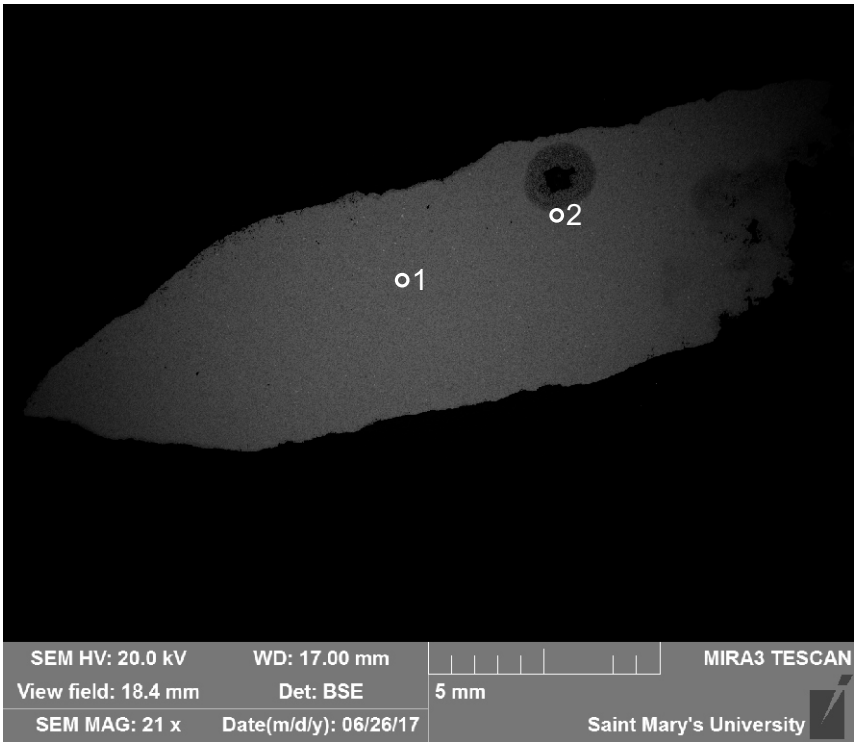
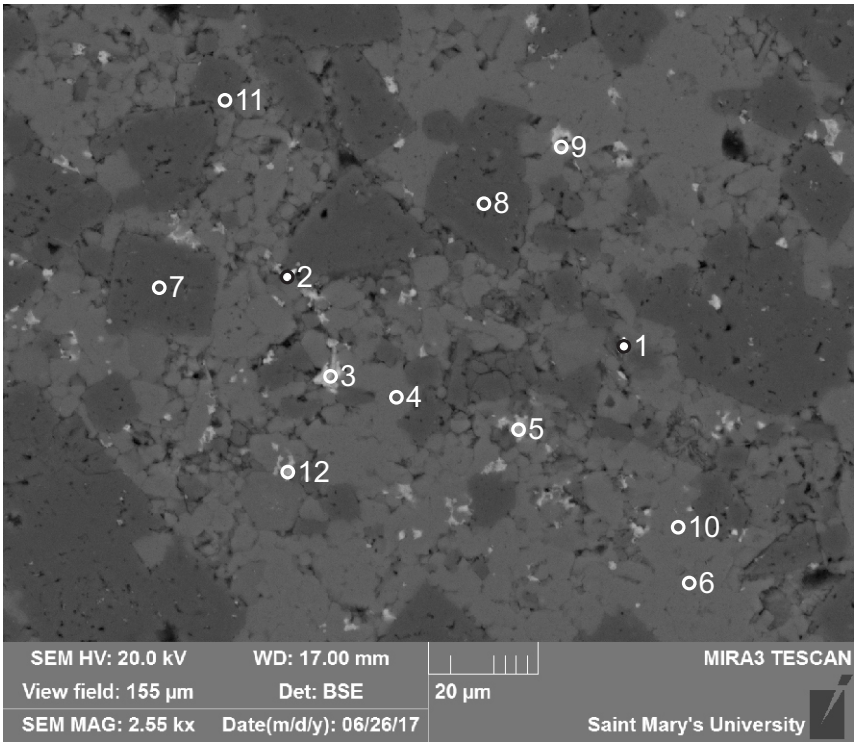


Figure 1-2C.1: Scanned thin section of Flemish Cap sample 229.4L showing the location of analysed sites. The black number 4 corresponds to Granule 4 and its respective sites analysed.



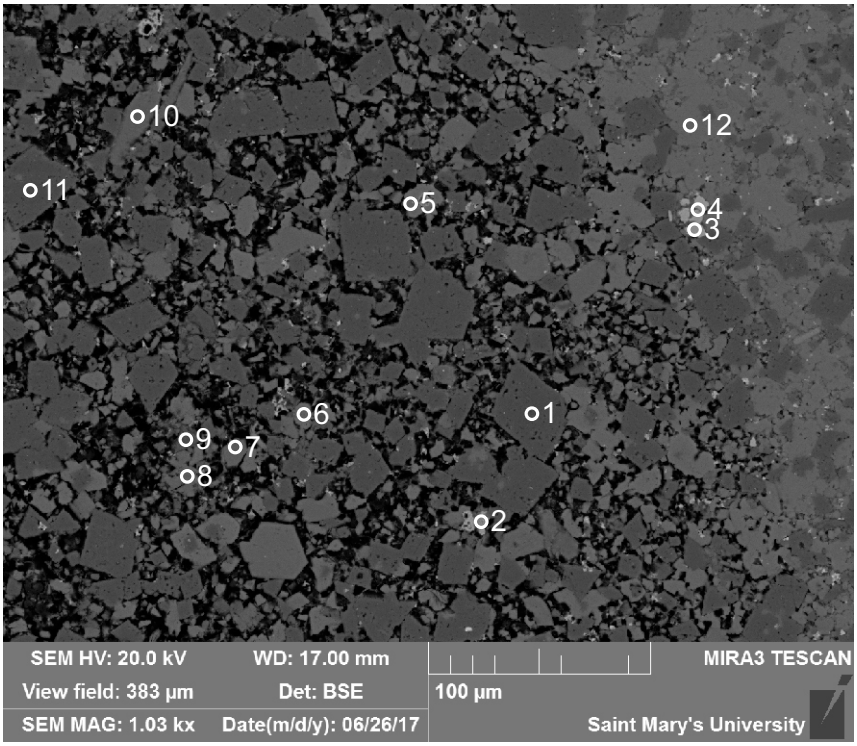
1:Cacite + K-feldspar
2:Dolomite + K-feldspar

Figure 1-2C.2: Sample 229.4L (SEM) site 1. Granule composed of dolomite, calcite and feldspars. Most likely a carbonate (limestone or dolostone) clast.



1:Monazite (Ce) +
2:Monazite (Ce) +
3:Fe-Oxide +
4:Calcite +
5:Fe-oxide +
6:Calcite +
7:Dolomite +
8:Dolomite
9:Fe-oxide +
10:Calcite
11:Dolomite
12:Mixture

Figure 1-2C.3: Sample 229.4L (SEM) site 1.1. This site consists of the carbonate minerals calcite (4, 6, 10) and dolomite (7, 8, 11). Minor amounts of monazite (1, 2), and Fe-oxide (3, 5, 9) partially fill voids.



1:Dolomite + Apatite
2: Fe-oxide +
3:TiO_2
4:TiO_2 +
5:Calcite +
6:Calcite
7:K-feldspar
8:K-feldspar
9:Dolomite
10:Muscovite
11:Dolomite
12:Calcite +

Figure 1-2C.4: Sample 229.4L (SEM) site 1.2. This site mainly consists of calcite (5, 6, 12) and dolomite (1, 9, 11) that appear to have been ?brecciated. Minor amounts of other minerals, are also seen in the brecciated portion, K-feldspar (7, 8) and muscovite (10). Late minerals include Fe-oxide (2), apatite (1), and TiO_2 (3, 4).

Table 1-2C.1: EDS geochemical analyses of sample 229.4L.

Sample	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MgO	CaO	K2O	P2O5	SO3	F	Cl	La2O3	Ce2O3	Nd2O3	Total	Actual Total
18.956.4L	1	1	Cal + Kfs	20.33		6.28	1.66	4.04	64.13	3.56								100	64
18.956.4L	1	2	Dol + Kfs	19.77		5.93	3.48	26.39	41.73	2.71								100	23
18.956.4L	1.1	1	Monazite (Ce) +	5.51		1.60		1.00	16.77	0.57	26.96		-0.09		13.33	25.62	8.72	100	96
18.956.4L	1.1	2	Monazite (Ce) +	2.42		0.72	0.67	5.42	25.51		24.37		-0.49		12.22	21.34	7.82	100	86
18.956.4L	1.1	3	Fe-oxide +	16.08	0.88	5.76	65.44	2.72	7.31	1.80								100	88
18.956.4L	1.1	4	Cal +	7.94		1.38	0.80	0.70	88.34	0.85								100	62
18.956.4L	1.1	5	Fe-oxide +	11.85	0.85	3.98	60.10	2.48	19.98	1.04	0.71							100	84
18.956.4L	1.1	6	Cal +	9.07		2.75	1.38	1.54	83.86	1.39								100	62
18.956.4L	1.1	7	Dol +	2.88		1.34	2.02	36.29	56.98	0.49								100	57
18.956.4L	1.1	8	Dol					20.73	33.27									54	56
18.956.4L	1.1	9	Fe-oxide +	8.77	1.12	2.79	80.90	0.68	5.18	0.56								100	85
18.956.4L	1.1	10	Cal +	1.63		0.58	1.51	0.52	51.48	0.29								56	60
18.956.4L	1.1	11	Dol	1.00		0.44	2.05	20.17	30.16	0.17								54	58
18.956.4L	1.1	12	Mix	17.47	0.56	5.20	43.47	1.52	28.99	2.79								100	84
18.956.4L	1.2	1	Dol + Ap	0.75			0.51	25.34	54.88		12.16	0.84	5.51					100	68
18.956.4L	1.2	2	Fe-oxide +	10.65	1.11	3.66	80.82	1.00	1.96	0.80								100	75
18.956.4L	1.2	3	TiO2	0.83	97.03		0.46		1.68									100	108
18.956.4L	1.2	4	TiO2 +	4.88	89.97	1.93	0.47		1.69	1.05								100	107
18.956.4L	1.2	5	Cal +	10.58		3.82	16.09	1.40	66.95	1.17								100	68
18.956.4L	1.2	6	Cal	1.14		0.39		1.31	52.71	0.23				0.23				56	58
18.956.4L	1.2	7	Kfs	65.87		18.09	0.36			15.68								100	116
18.956.4L	1.2	8	Kfs	66.35		17.58				16.07								100	118
18.956.4L	1.2	9	Dol	0.76		0.42	0.80	20.90	30.88	0.23								54	58
18.956.4L	1.2	10	Ms	49.45	0.25	27.74	2.47	2.86	1.95	10.28								95	107
18.956.4L	1.2	11	Dol	0.37			0.36	21.59	31.68									54	56
18.956.4L	1.2	12	Cal +	3.96		1.11	0.99	1.09	92.26	0.59								100	59
			Notes																
			"+" indicates other minerals present																

Appendix 1-2D: SEM-BSE images for Flemish Cap Granules with EDS Mineral Analyses and Microphotographs
Sample 2008061-229.6M

Flemish Cap Sample 229.6M Lithology Summary Notes

Granule 1 (Sites 1, 1.1, 1.2, 1.3) Microphotographs: Figures 1-2D.28, 29
Probably a plutonic rock. Quartz, and biotite are present and voids are scattered throughout the Granule. Epidote is late, zincite precipitates in voids and biotite becomes chloritized. The mineral assemblage suggests that this may be a hornblende gabbro as it is dominated largely by plagioclase feldspar (bytownite) and has approximately less than 10% mafic minerals (biotite, hornblende, and magnetite). The minerals epidote, zincite, quartz, chlorite,and rare garnet and magnetite appear to be secondary.

Granule 2 (Sites 2, 2.1, 2.2 , 2.3) Microphotographs: Figures 1-2D.30, 31, 32, 33
Sandstone. Quartz grains dominate and are cemented by calcite. Lithic clasts may contain epidote grains, some with quartz veining, albite, magnetite, biotite, and chlorite. Zircon is a rare detrital mineral and zincite and Feohy also may be late diagenetic minerals.

Granule 3 (Sites 3, 3.1, 3.2, 3.3) Microphotographs: Figures 1-2D.34, 35
Fine-grained mineralized igneous rock. Quartz-rich vein cross-cuts the Granule.Observation in thin section suggests it has been altered and possibly oxidized to yield the reddish colouration, (iron is present as Fe^{3+}). This is a late phase as it cross-cuts other minerals. Mineral assemblage: quartz, albite, monazite, magnetite, muscovite, altered biotite, and calcite. Hydrothermally altered felsic igneous rock.

Granule 4 (Sites 4, 4.1, 4.2, 4.3) Microphotographs: Figures 1-2D.36, 37
Probably a piece of an epidote vein. Very epidote rich with quartz present. Other minerals occur in minimal amounts and grains smaller than ~15µm. Mineral Assemblage: epidote, quartz, monazite, albite, zincite.

Granule 5 (Sites 5, 5.1, 5.2, 5.3) Microphotographs: Figures 1-2D.38, 39
Probably a granodiorite. Composed entirely of feldspars and quartz. Holocrystalline igneous rock. Some perthitic texture observed in thin section. Mineral Assemblage: andesine, quartz, monazite, some K-feldspar.

Granule 6 (Sites 6, 6.1, 6.2, 6.3) Microphotographs: Figures 1-2D.40, 41
Holocrystalline igneous rock (?granodiorite) with large andesine crystals that make up more than 90% of rock. The with rest of the rock is made up of quartz, altered K-feldspar crystals (Fig. 1-2D.25), and rare muscovite (Fig. 24). Ilmenite, chlorite, and epidote occur later (Fig. 1-2D.23) and may be the result of hydothermal alteration.

Flemish Cap Sample 229.6M Lithology Summary Notes

Granule 7 (Sites 7, 7.1) Microphotographs: Figures 1-2D.42, 43
Holocrystalline igneous rock (microgranite?) with xenolith made up of calcite surrounded by apatite. Mineral assemblage: K-feldspar, and subhedral quartz with a xenolith made up of calcite and apatite.

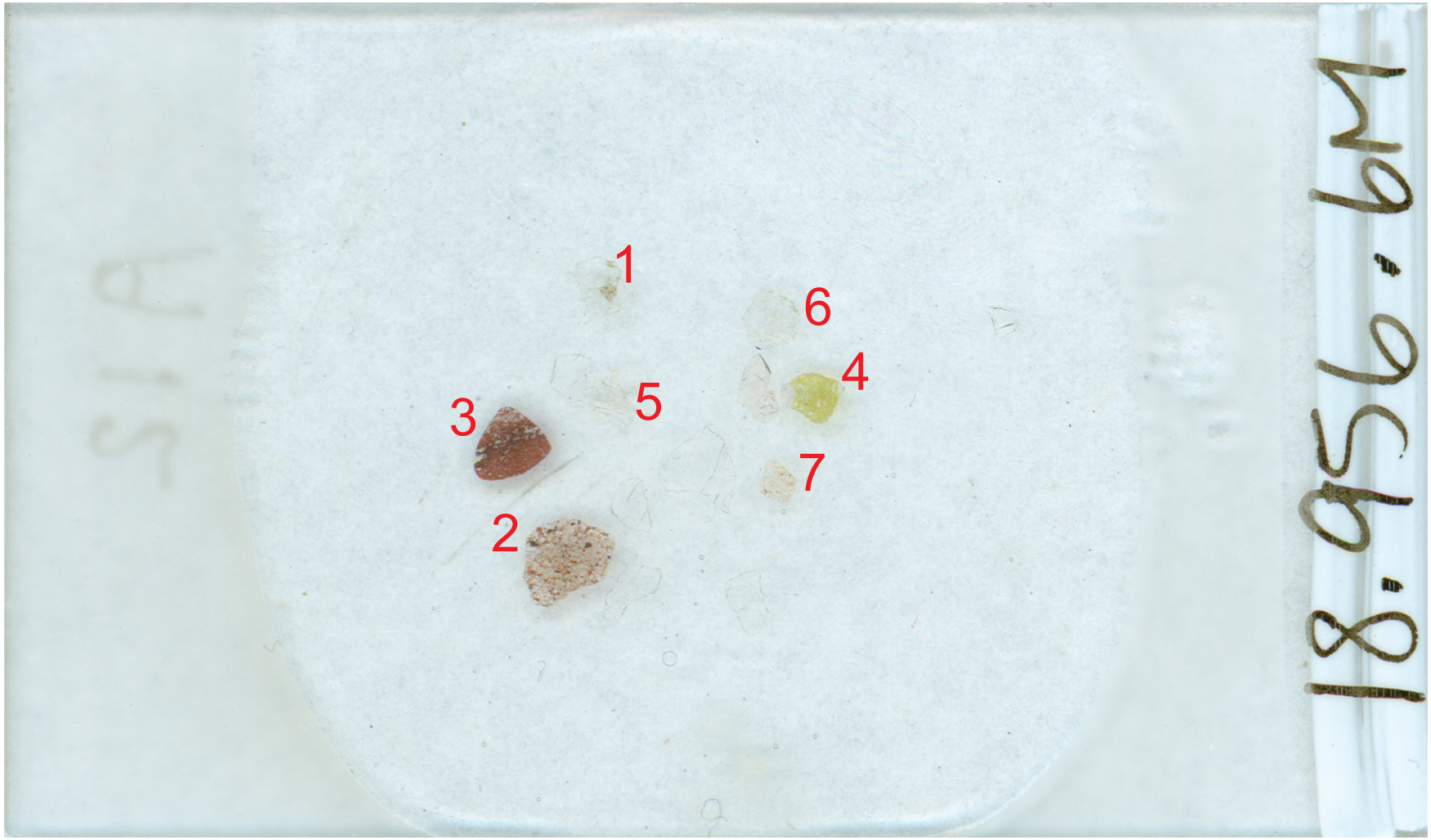
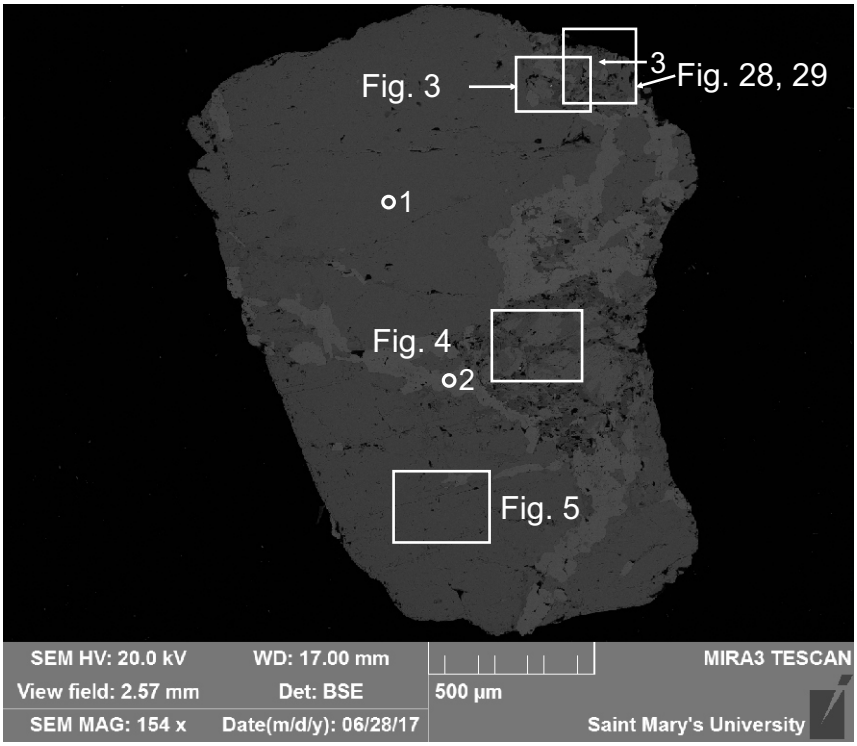
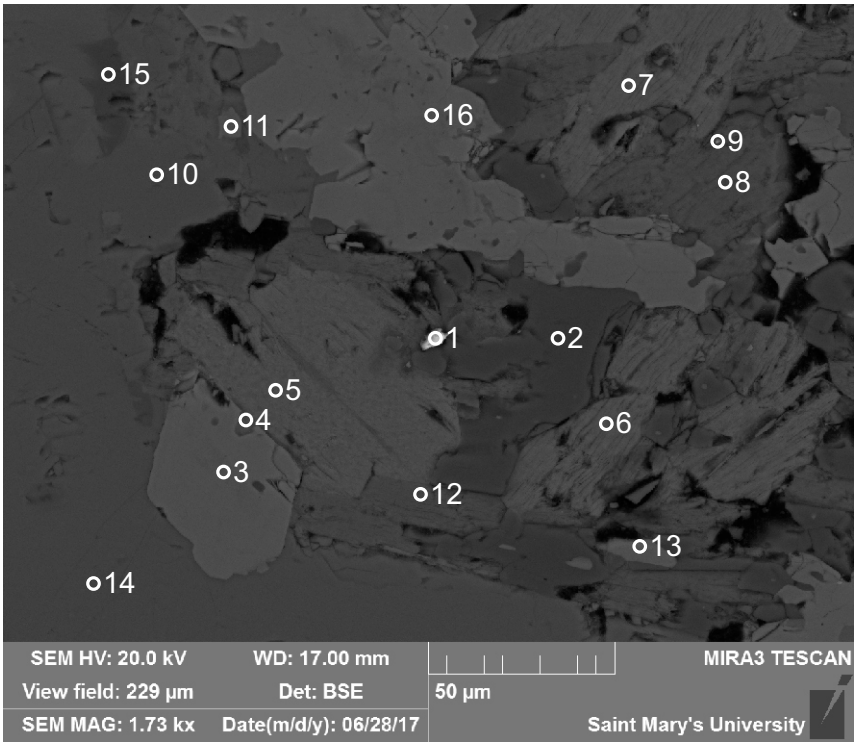


Figure 1-2D.1: Scanned thin section of Flemish Cap sample 229.6M. Granules are numbered in red corresponding to analysed sites.



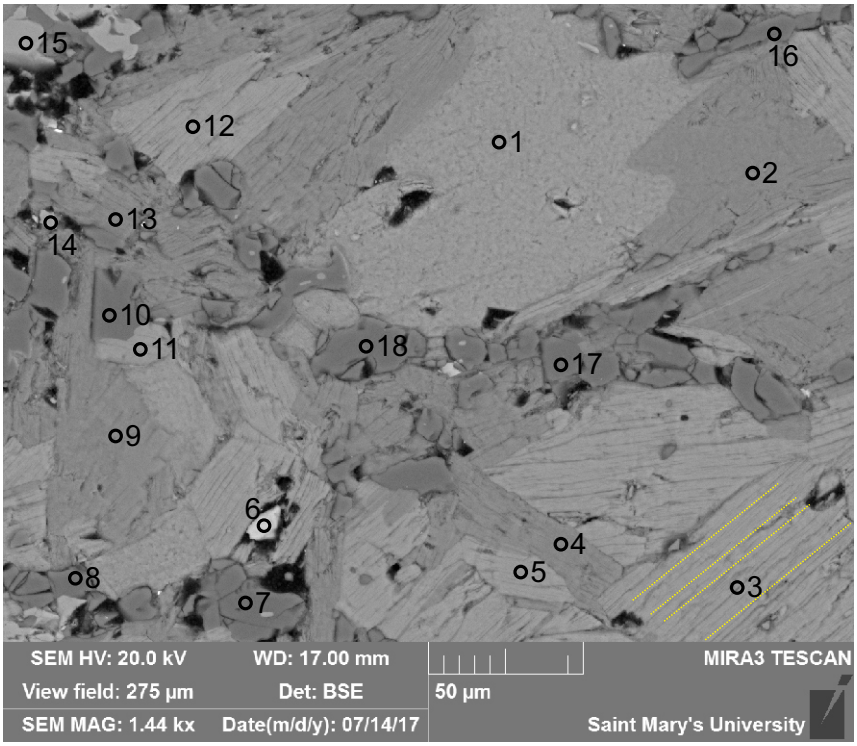
1:Bytownite
2:Epidote
3:Bytownite

Figure 1-2D.2: Sample 229.6M site 1. Igneous texture rock with voids present and intergrowths of epidote (2), quartz, and biotite (Fig 1.2).



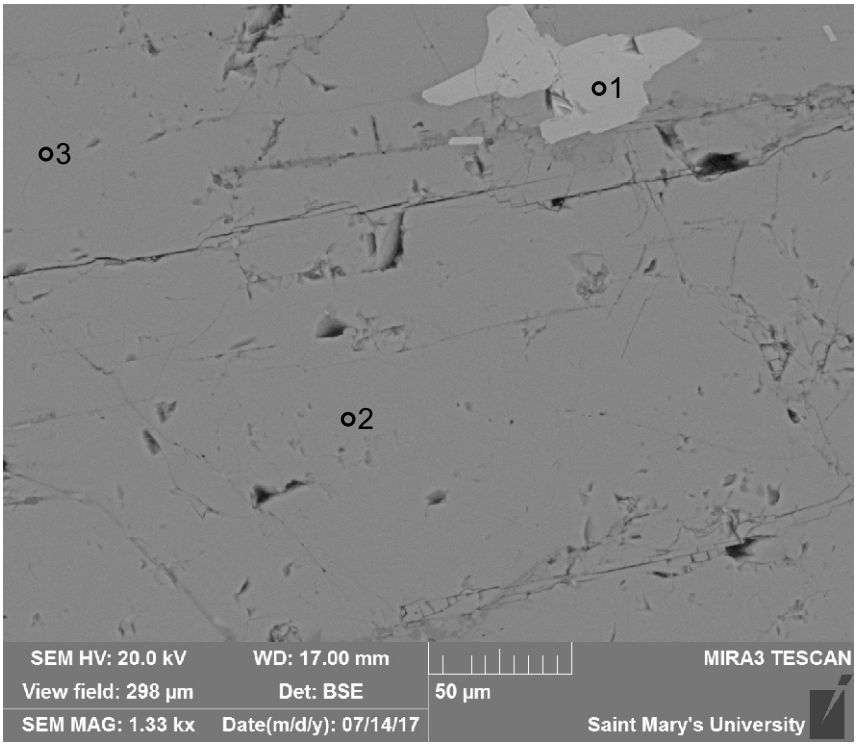
1:Zincite +
2:Quartz
3:Epidote
4:Biotite
5:Biotite
6:Biotite
7:Biotite
8:Chlorite
9:Chlorite
10:Bytownite
11:Epidote
12:Chlorite
13:Hornblende
14:Bytownite
15:Albite or Na-rich K-feldspar (crypto perthite)
16:Epidote

Figure 1-2D.3: Sample 229.6M site 1.1. Biotite is chloritized, and thus cleavage planes are obscured (8 & 9). Zincite precipitated in void (1).



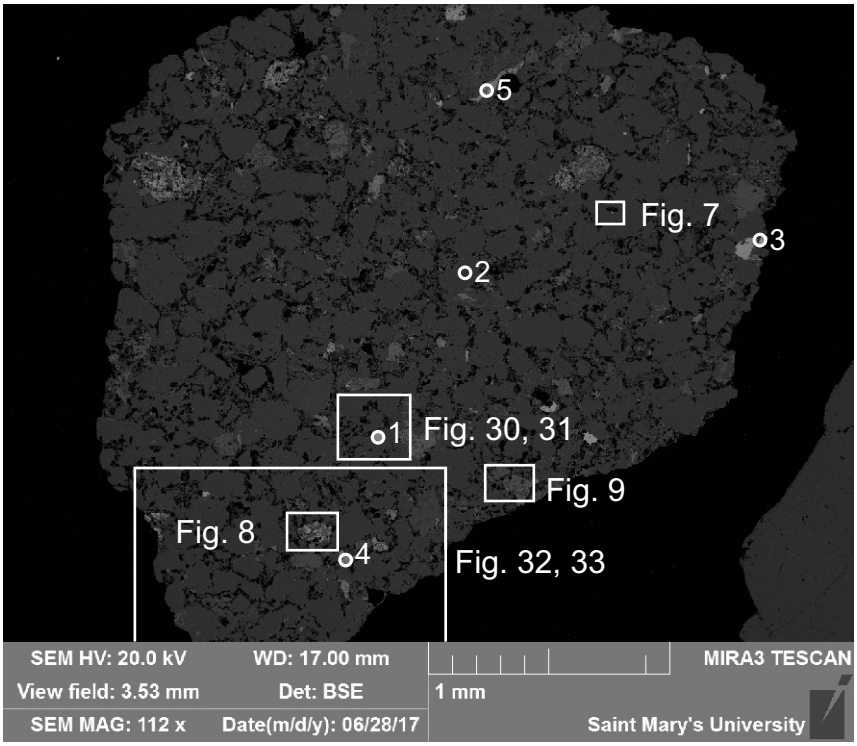
1:Biotite
2:Chlorite
3:Biotite
4:Chlorite
5:Biotite
6:Andradite (garnet)
7:Quartz
8:Quartz
9:Chlorite
10:Quartz
11:Biotite
12:Biotite
13:Chlorite
14:Epidote
15:Epidote
16:Quartz
17:Quartz
18:Quartz

Figure 1-2D.4: Sample 229.6M site 1.2. Plutonic rock. Cumulate igneous texture with voids present (black areas). Cleavage planes of biotite (3) are outlined (yellow lines).



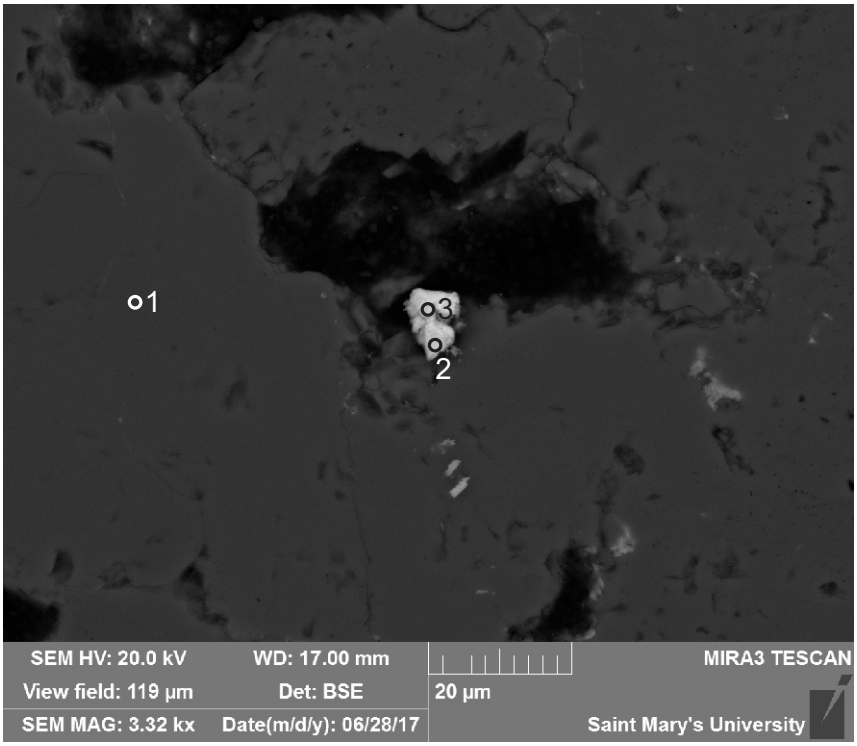
1:Epidote
2:Bytownite
3:Bytownite

Figure 1-2D.5: Sample 229.6M site 1.3. Massive bytownite (2, 3) crystal with late epidote (1).



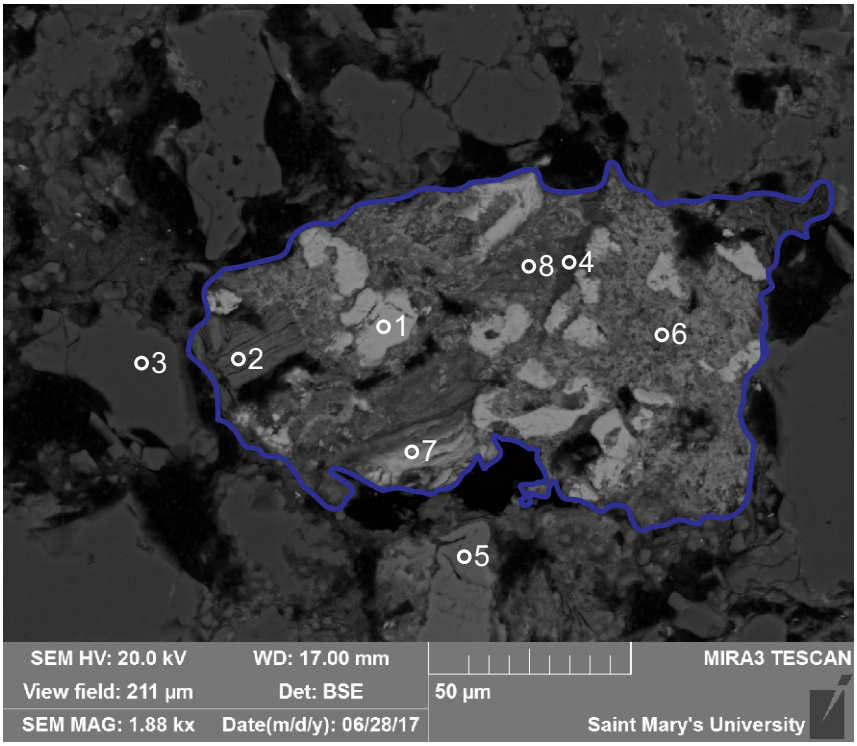
1:Magnetite
2:Quartz
3:Zircon
4:Feohy +
5:Feohy +

Figure 1-2D.6: Sample 229.6M site 2. Sandstone. Dominantly composed of quartz (2).



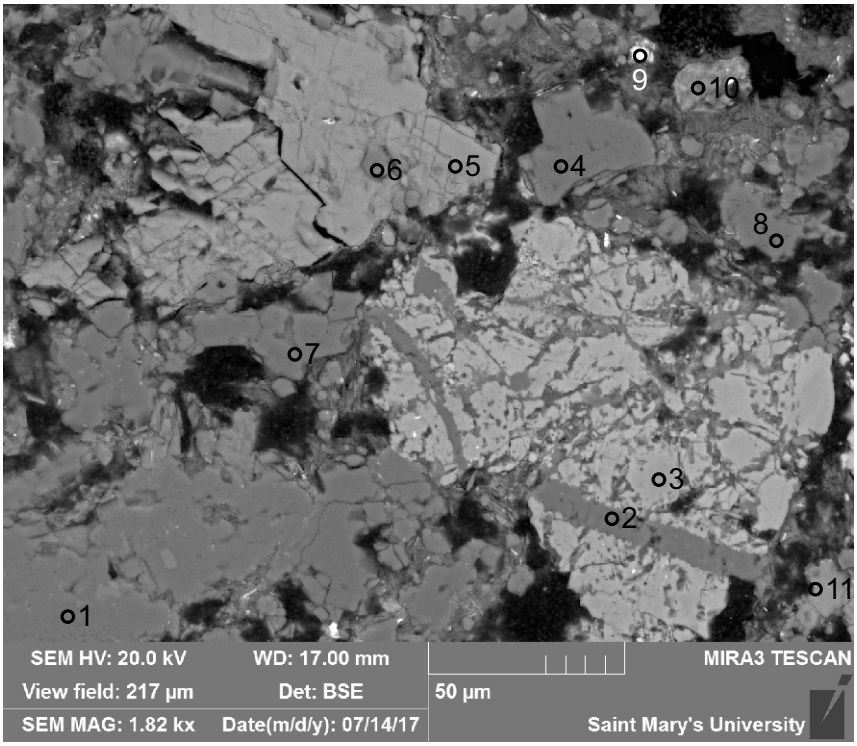
1:Quartz
2:Zincite +
3:Zincite

Figure 1-2D.7: Sample 229.6M site 2.1. Zincite (2 & 3) partially filling a void.



1:Ti-Magnetite
2:Biotite +
3:Quartz
4:Mix
5:Epidote
6:Mix
7:Pyrite +
8:Chlorite +

Figure 1-2D.8: Sample 229.6M site 2.2. Lithic clast in the sandstone (3).



1:Albite
2:Quartz
3:Epidote
4:Albite
5:Calcite
6:Albite
7:Albite
8:Albite
9:Feohy +
10:Mix
11:Calcite +

Figure 1-2D.9: Sample 229.6M site 2.3. A lithic clast in the sandstone is made up of epidote grains with quartz veining (2 & 3). Calcite (5,11) is replacing albite (6) in the clast.

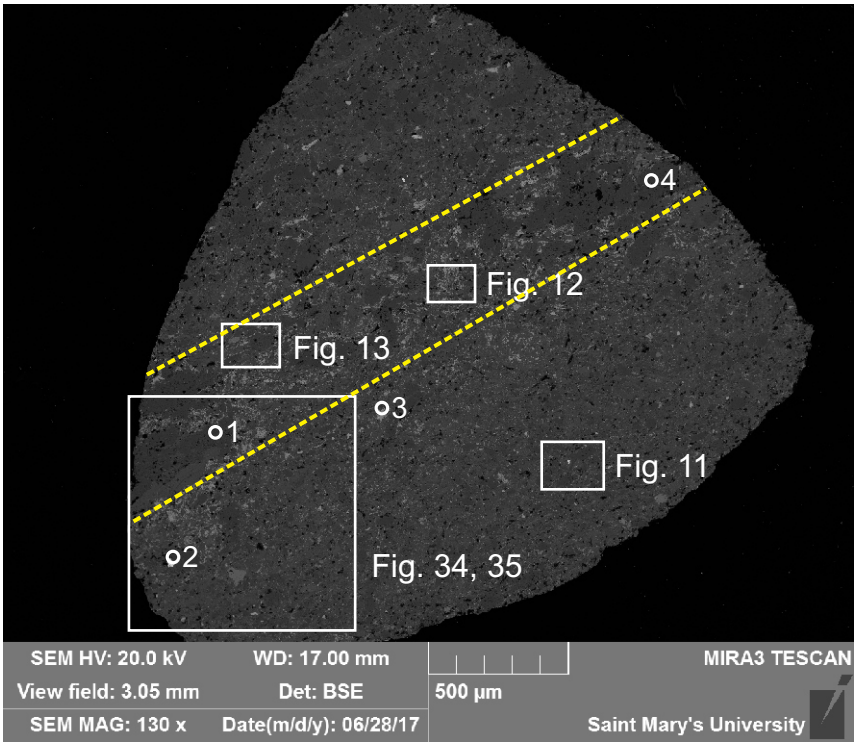


Figure 1-2D.10: Sample 229.6M site 3. Albite rich fine grained mineralized igneous rock with quartz rich vein (1, 4) cross-cutting the sample outlined above.

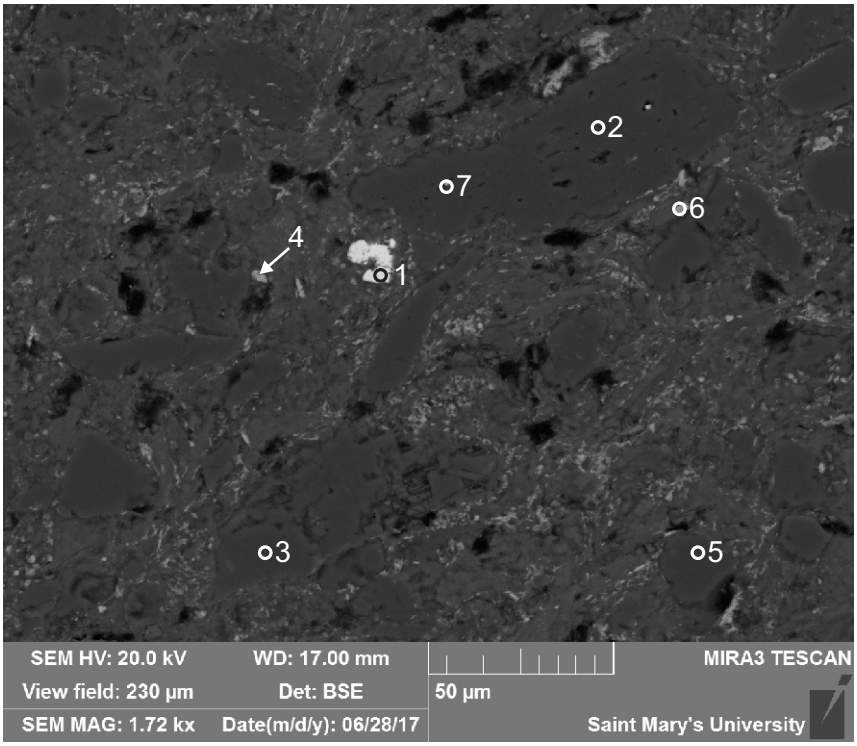
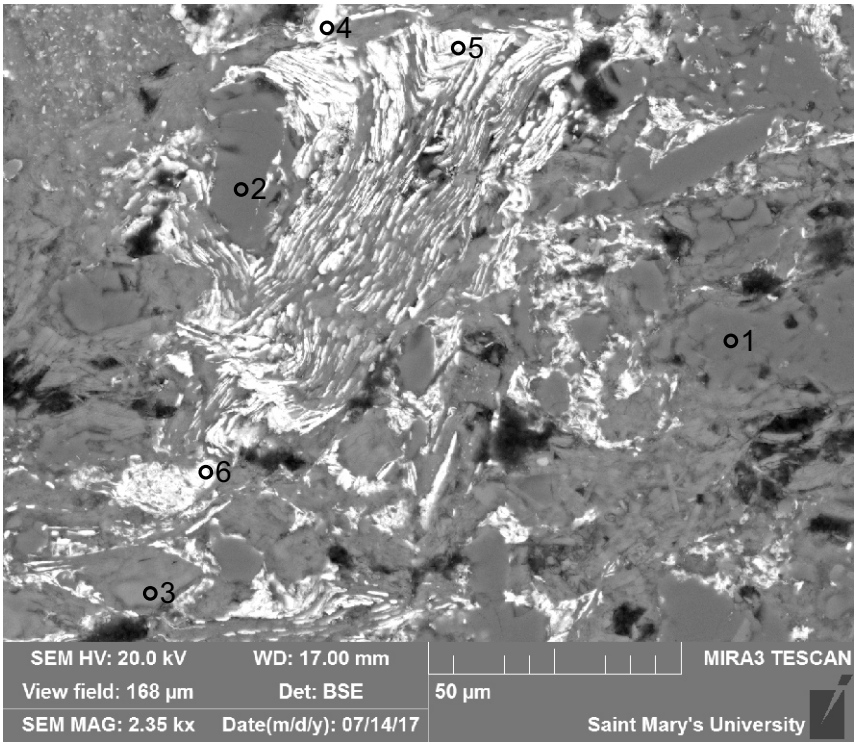
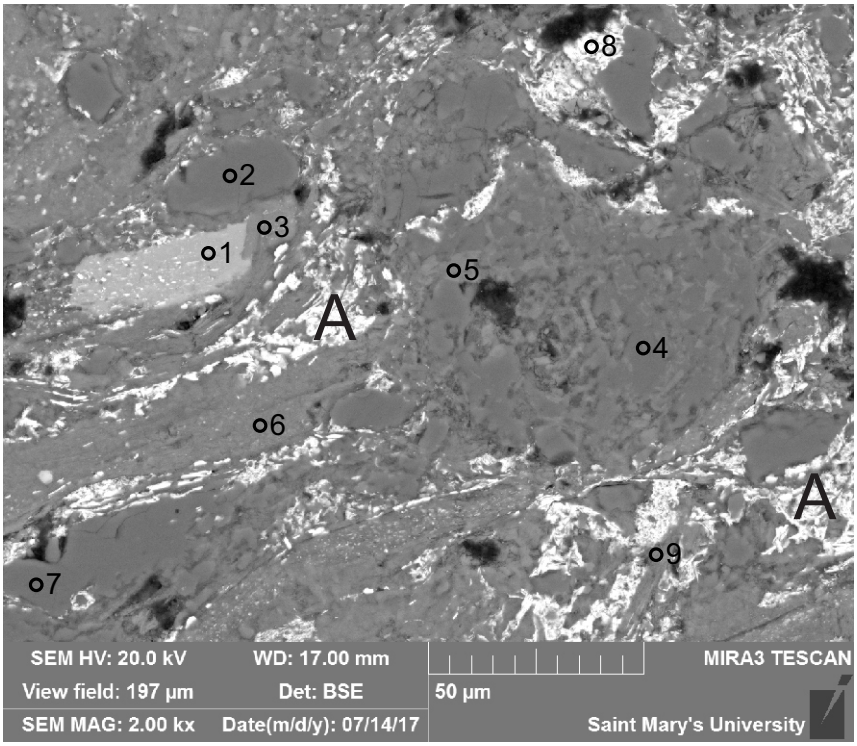


Figure 1-2D.11: Sample 229.6M site 3.1. This site consists of monazite (1), quartz (5). albite (2, 3, 7) and Fe-oxide (4).



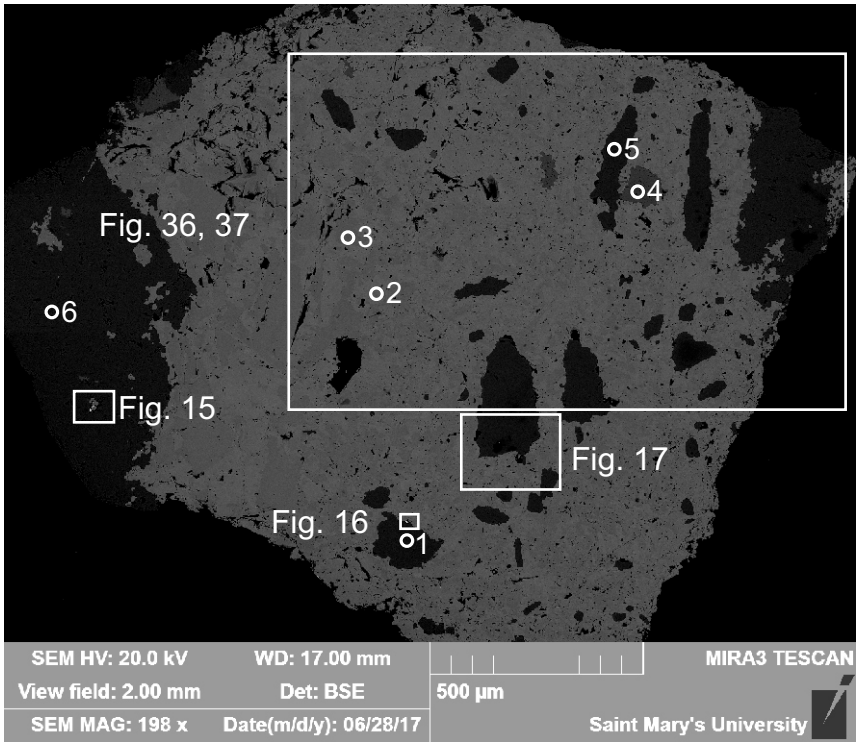
1:Quartz +
2:Quartz
3:K-Feldspar
4:Magnetite
5:Feohy +
6:Feohy +

Figure 1-2D.12: Sample 229.6M site 3.2. This site consists of quartz (1, 2), K-Feldspar (3) and abundant late Fe-oxides (4-6) cross-cutting the other minerals.



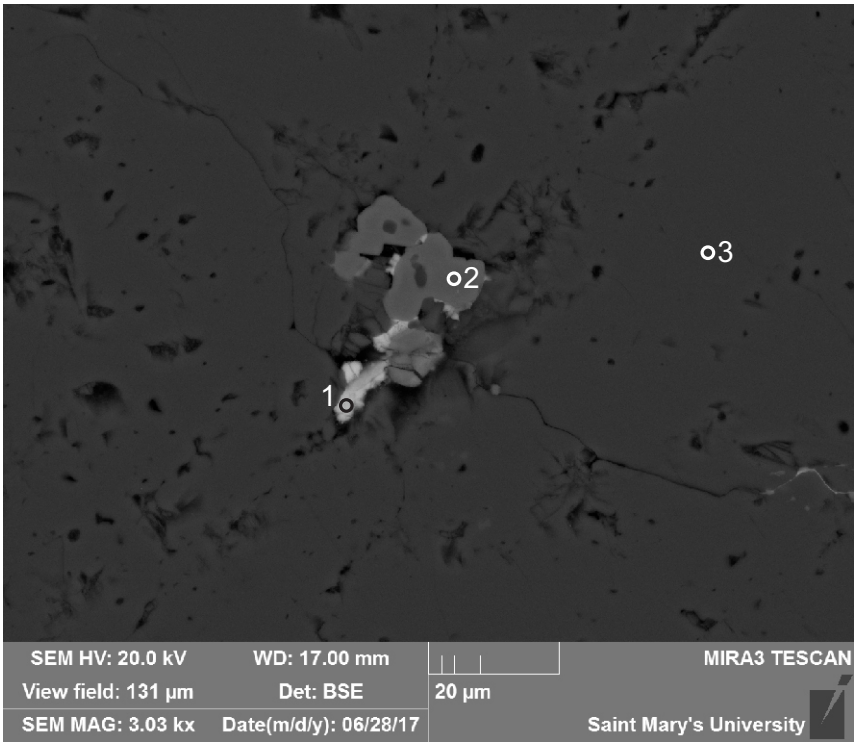
1:Apatite +
2:Albite
3:Muscovite +
4:Albite
5:Muscovite
6:Muscovite
7:Quartz
8:Mix
9:Biotite

Figure 1-2D.13: Sample 229.6M site 3.3. This site consists of quartz (7), albite (2), apatite (11), and muscovite (6). Fe-oxides appear to have precipitated later along intergranular boundaries (A).



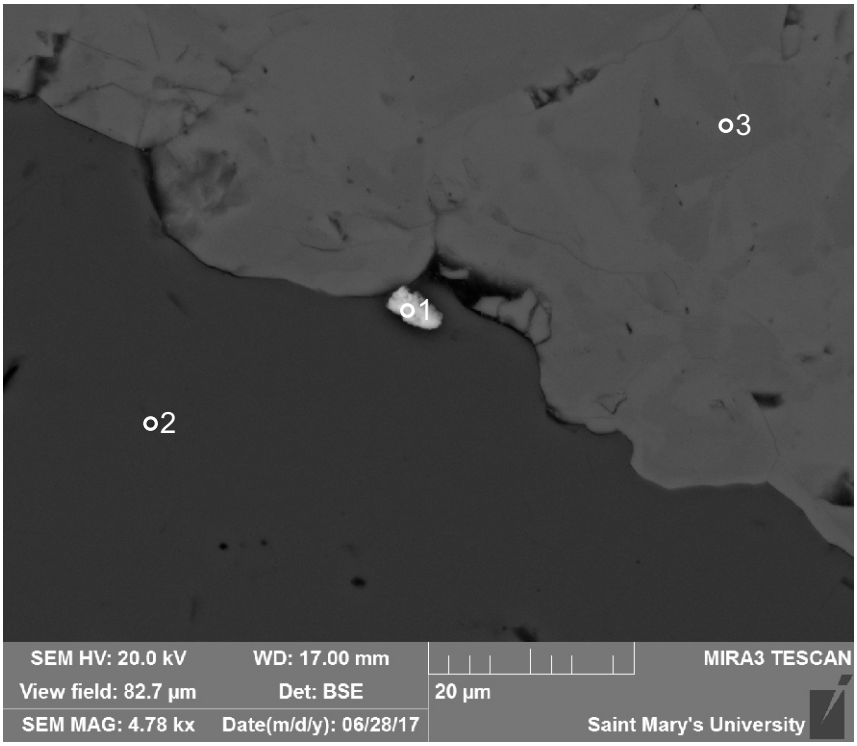
1:Quartz
2:Epidote
3:Epidote
4:K-Feldspar +
5:Quartz
6:Albite

Figure 1-2D.14: Sample 229.6M site 4. Piece of holocrystalline rock likely to be from an epidote-quartz vein.



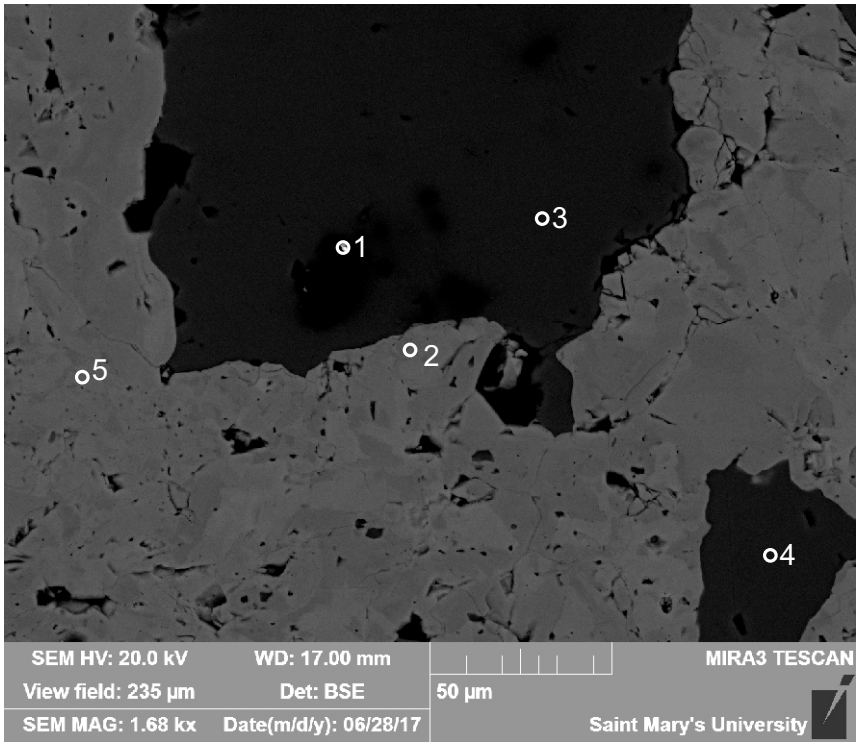
1:Monazite
2:Epidote
3:Albite

Figure 1-2D.15: Sample 229.6M site 4.1. Monazite (1) and epidote (2) appear to fill voids. There are also albite (3) crystals.



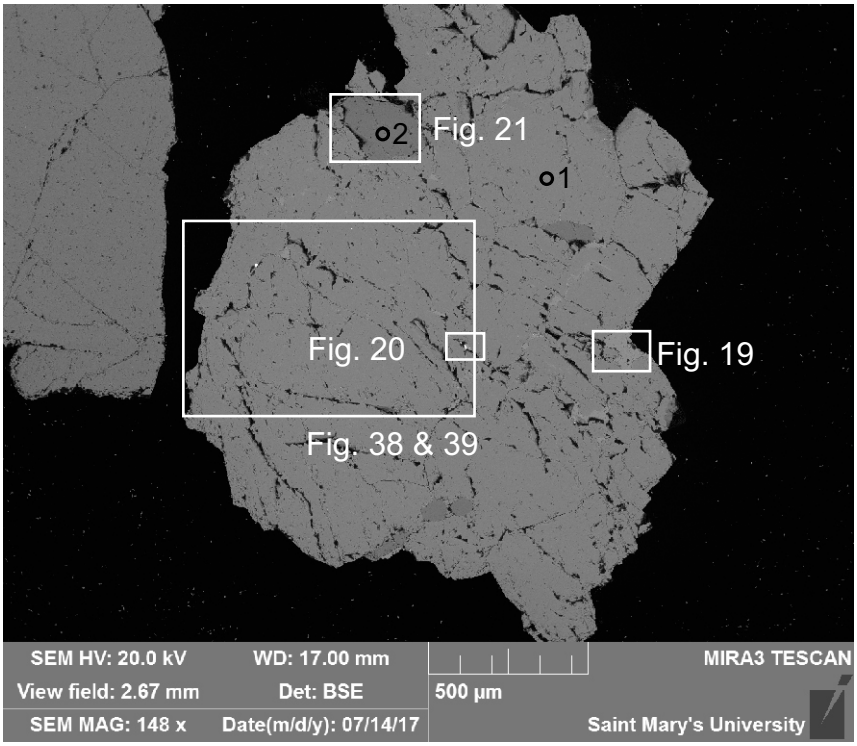
1:Zincite + Quartz
2:Quartz
3:Epidote

Figure 1-2D.16: Sample 229.6M site 4.2. Quartz and epidote vein. This site consists of quartz (2), epidote (3), and zincite (1) filling void or it may be an inclusion in the quartz vein.



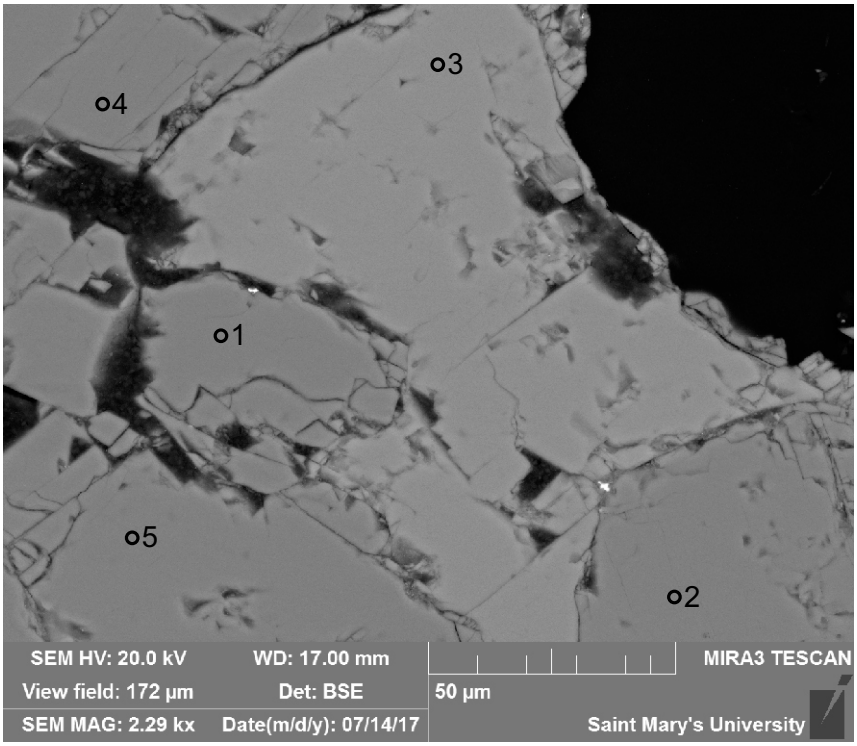
1:Zincite + Quartz
2:Epidote
3:Quartz
4:Quartz
5:Epidote

Figure 1-2D.17: Sample 229.6M site 4.3. The epidote (5) is heterogeneous with varying iron content (lighter more iron rich (5) and darker less iron rich (2)). Quartz grains (3, 4) are common, zincite (1) inclusions in the quartz, are also common.



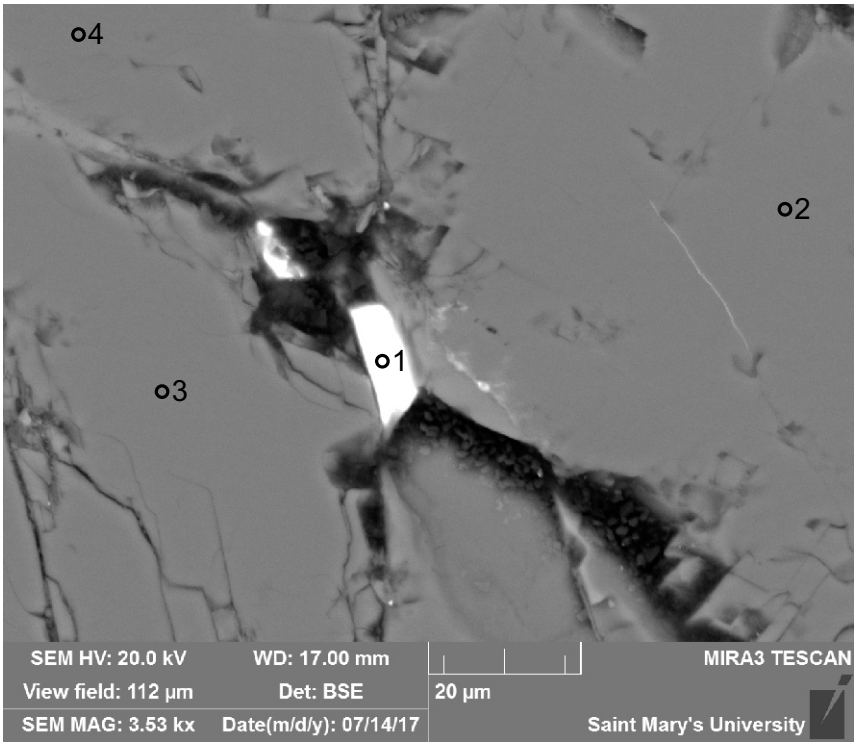
1:Andesine
2:Quartz

Figure 1-2D.18: Sample 229.6M site 5. Composed entirely of feldspars and quartz, holocrystalline igneous rock.



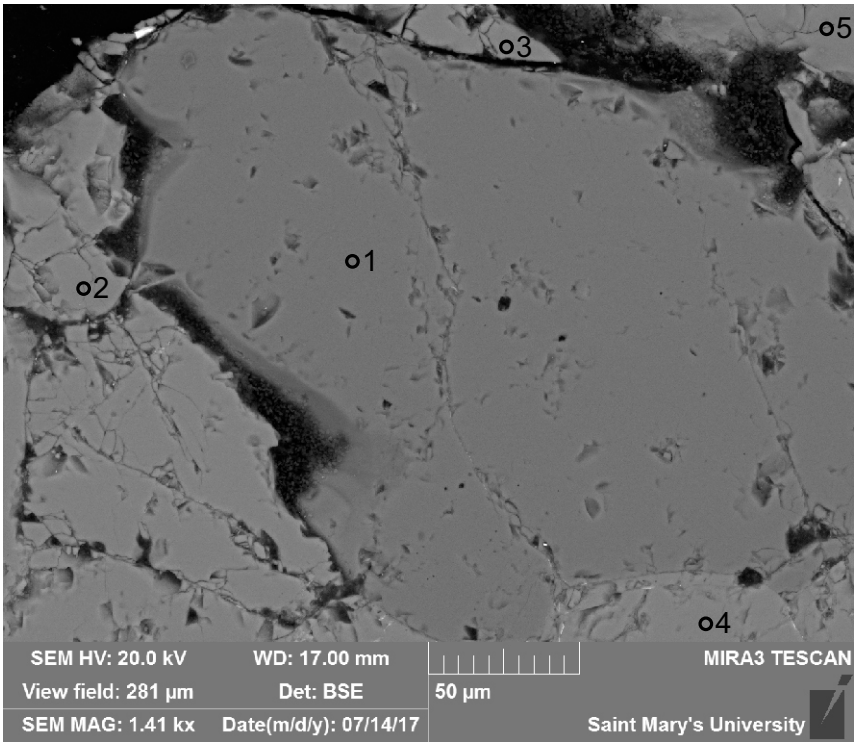
1:Andesine
2:Andesine
3:K-Feldspar
4:Andesine
5:Andesine

Figure 1-2D.19: Sample 229.6M site 5.1. This site consists of abundant large andesine crystals (2, 4, 5) and a large K-Feldspar crystal (3).



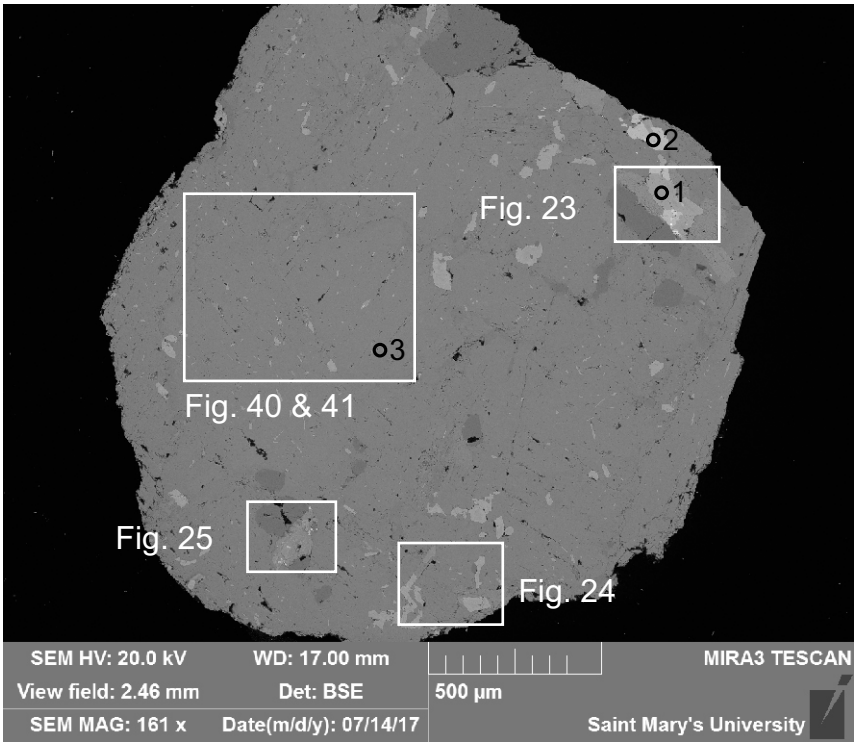
1:Monazite
2:Andesine
3:Andesine
4:Andesine

Figure 1-2D.20: Sample 229.6M site 5.2. Monazite (1) filling void in andesine crystal.



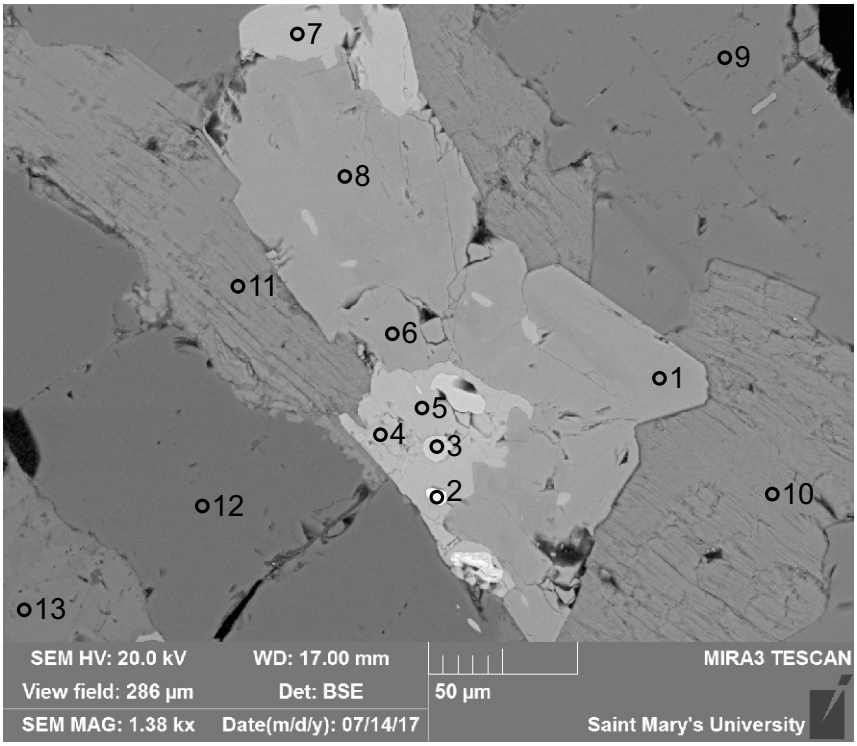
1:Quartz
2:Andesine
3:Andesine
4:Andesine
5:Andesine

Figure 1-2D.21: Sample 229.6M site 5.3. This site consists of a large quartz grain (1) surrounded by andesine (2-5).



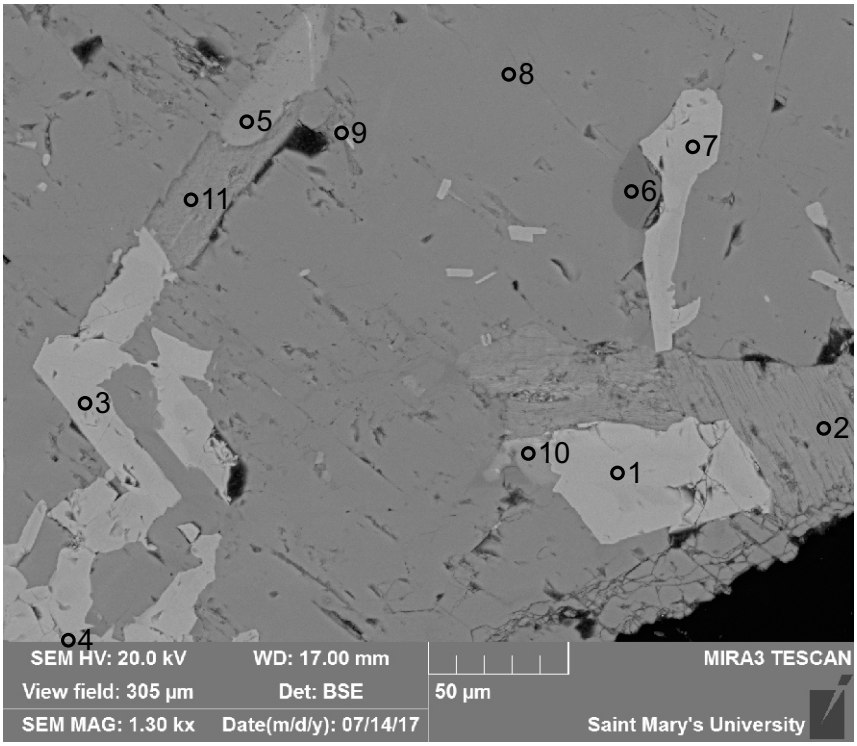
1:Epidote
2:Titanite
3:Andesine

Figure 1-2D.22: Sample 229.6M site 6. Large andesine crystals making up more than 90% of the rock.



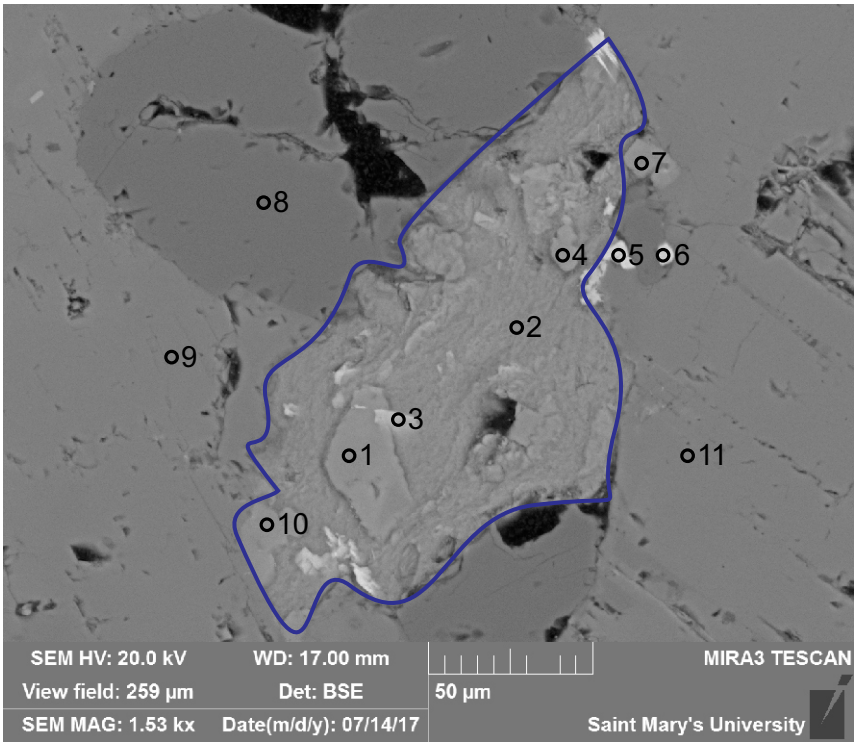
1:Epidote
2:Ilmenite
3:TiO_2 +
4:Titanite
5:Titanite
6:Epidote
7:Titanite
8:Epidote
9:Andesine
10:Chlorite
11:Chlorite
12:Quartz
13:Andesine

Figure 1-2D.23: Sample 229.6M site 6.1. This site consists of quartz (12), plagioclase (andesine) (9, 13), and epidote (8), titanite (7), chlorite (10) and ilmenite (2) that may be late, possibly hydrothermal.



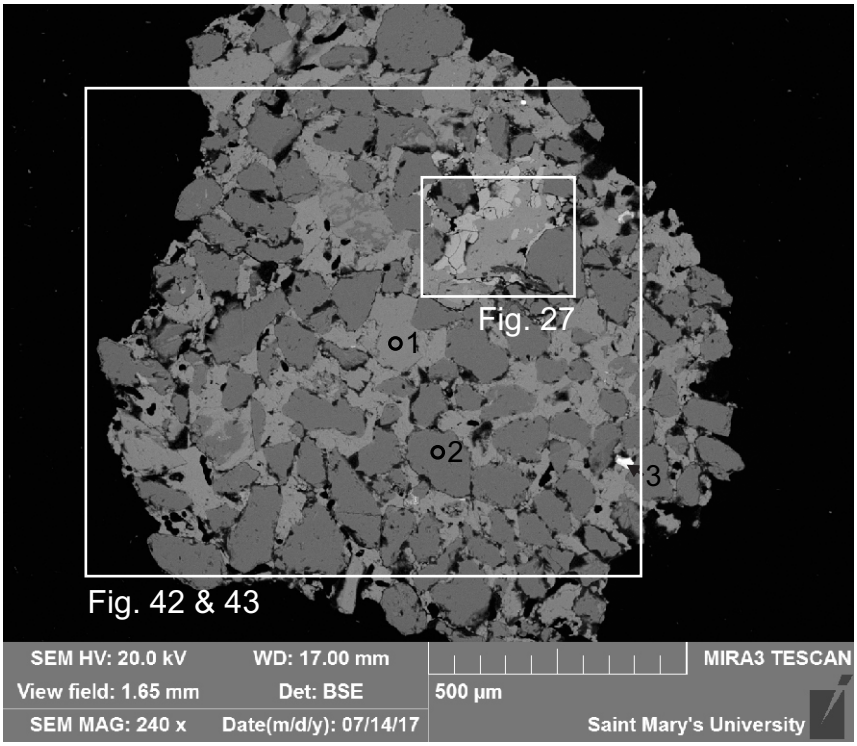
1:Epidote
2:Muscovite +
3:Epidote
4:Epidote
5:K-Feldspar
6:Quartz
7:Epidote
8:Andesine
9:Epidote
10:K-Feldspar
11:Chlorite

Figure 1-2D.24: Sample 229.6M site 6.2. Similar to the previous site but with more muscovite (2).



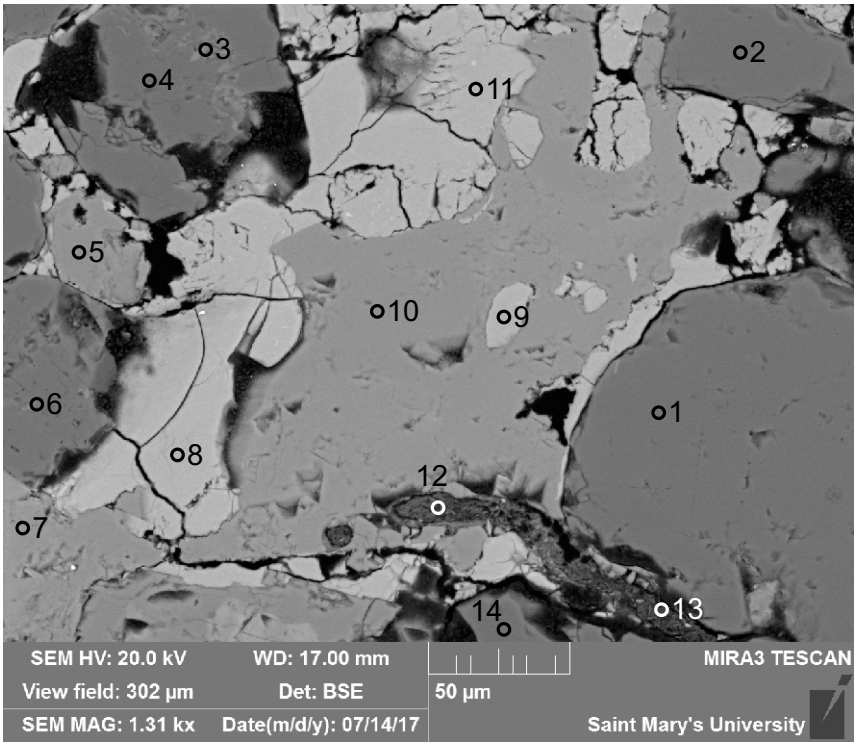
1:K-Feldspar
2:Chlorite
3:Titanite
4:K-Feldspar
5:TiO_2 +
6:TiO_2 +
7:K-Feldspar
8:Quartz
9:Andesine
10:K-Feldspar
11:Andesine

Figure 1-2D.25: Sample 229.6M site 6.3. The outlined grain, probably K-Feldspar, has largely been chloritized. Otherwise this site consists of feldspars andesine (9, 11) and K-feldspar (1, 4, 7, 10)) and quartz (8).



1:K-Feldspar
2:Quartz
3:Ti-Magnetite

Figure 1-2D.26: Sample 229.6M site 7. This site consists of quartz and K-Feldspar with interlocking texture and rare Ti-magnetite. It is probably a holocrystalline igneous rock with a xenolith (Fig. 27). Microgranite?



1:Quartz
2:Quartz
3:Mix
4:Quartz
5:Calcite
6:K-Feldspar +
7:Calcite
8:Apatite
9:Apatite
10:Calcite
11:Apatite
12:Bad Analysis
13:Bad Analysis
14:Quartz

Figure 1-2D.27: Sample 229.6M site 7.1. A xenolith with irregular and partially dissolved edges in the Granule of Fig. 26 that consists of calcite (10) surrounded by apatite grains (8, 11).

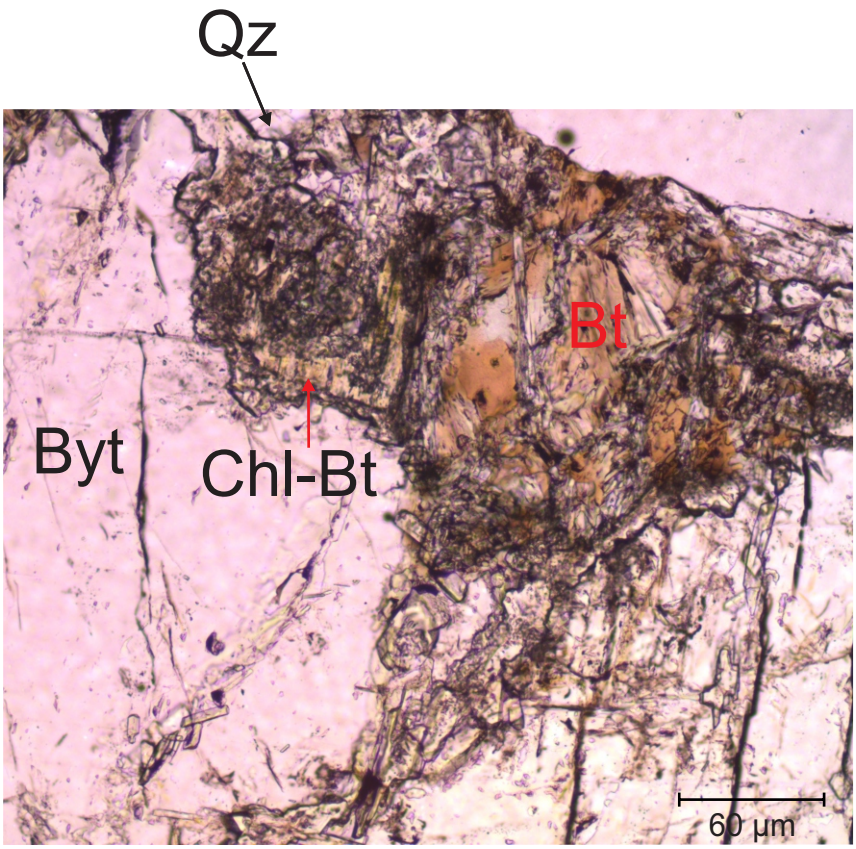


Figure 1-2D.28: Microphotograph. Sample 229.6M, Granule 1.Transmitted light, ppl, 10x. Holocrystalline rock. Hornblende gabbro.

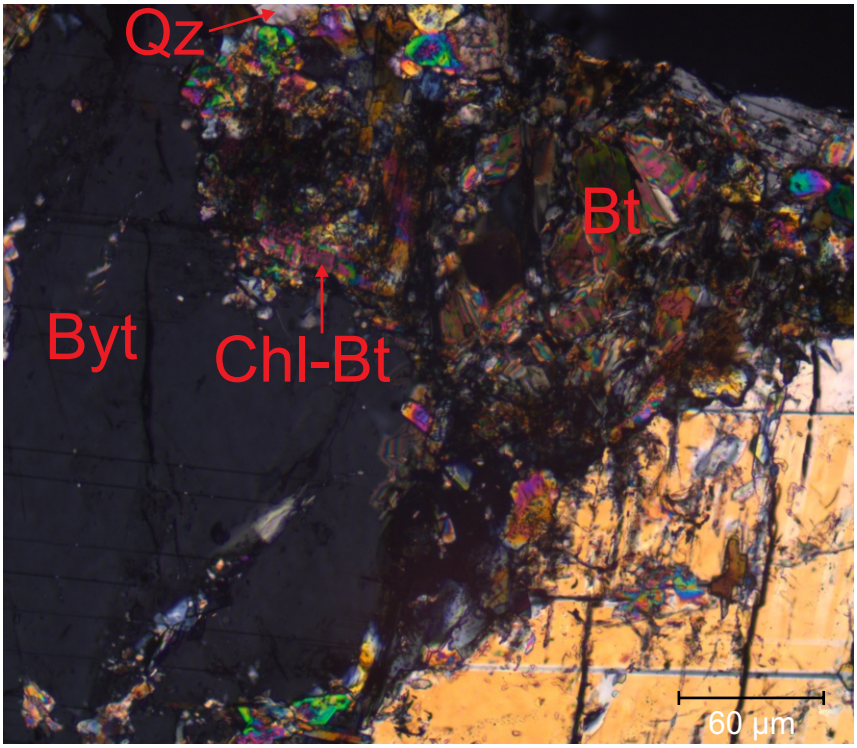


Figure 1-2D.29: Microphotograph. Sample 229.6M, Granule 1. Transmitted light, xpl, 10x.

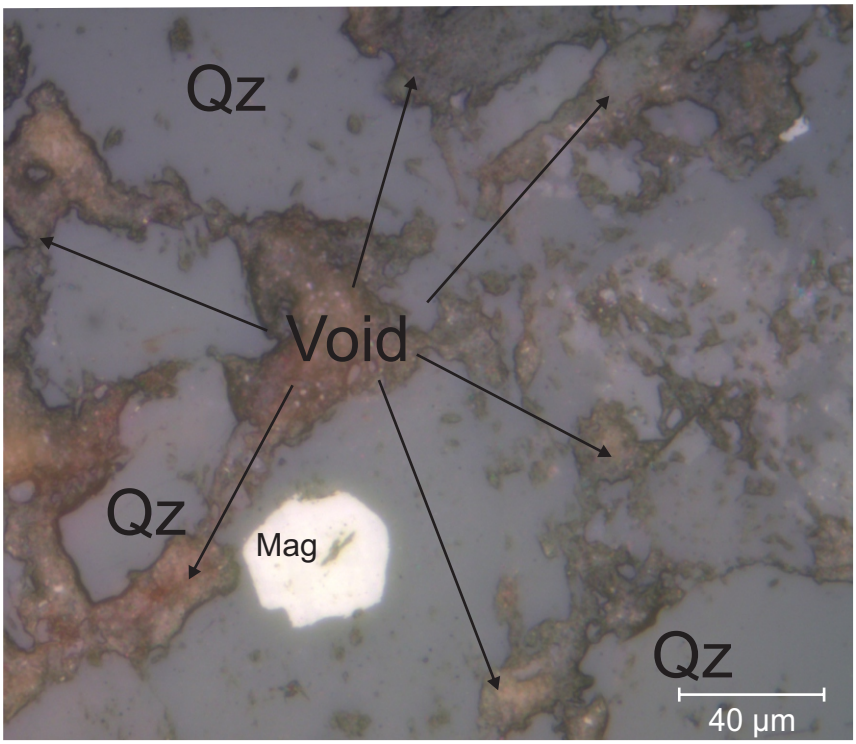


Figure 1-2D.30: Microphotograph. Sample 229.6M, Granule 2. Reflected light, ppl, 40x.

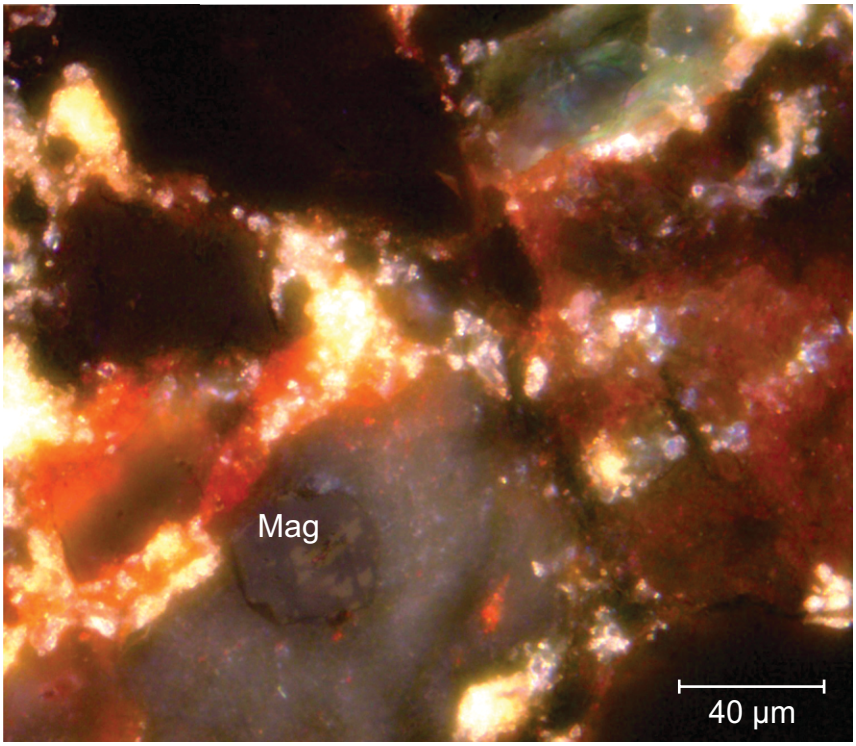


Figure 1-2D.31: Microphotograph. Sample 229.6M, Granule 2. Reflected light, xpl, 40x.

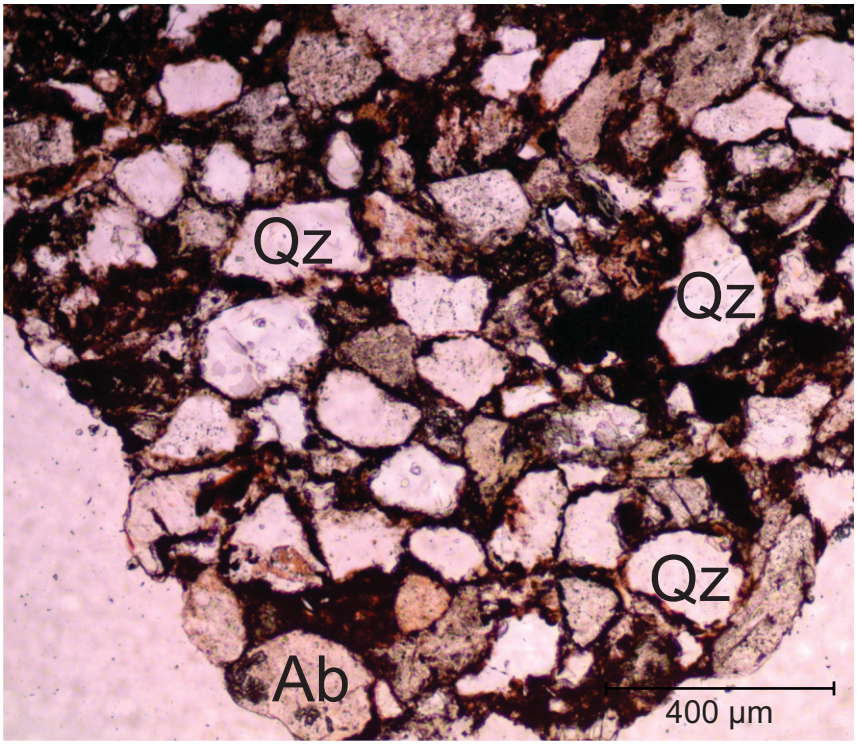


Figure 1-2D.32: Microphotograph. Sample 229.6M, Granule 2. Transmitted light, ppl, 4x. Sandstone.

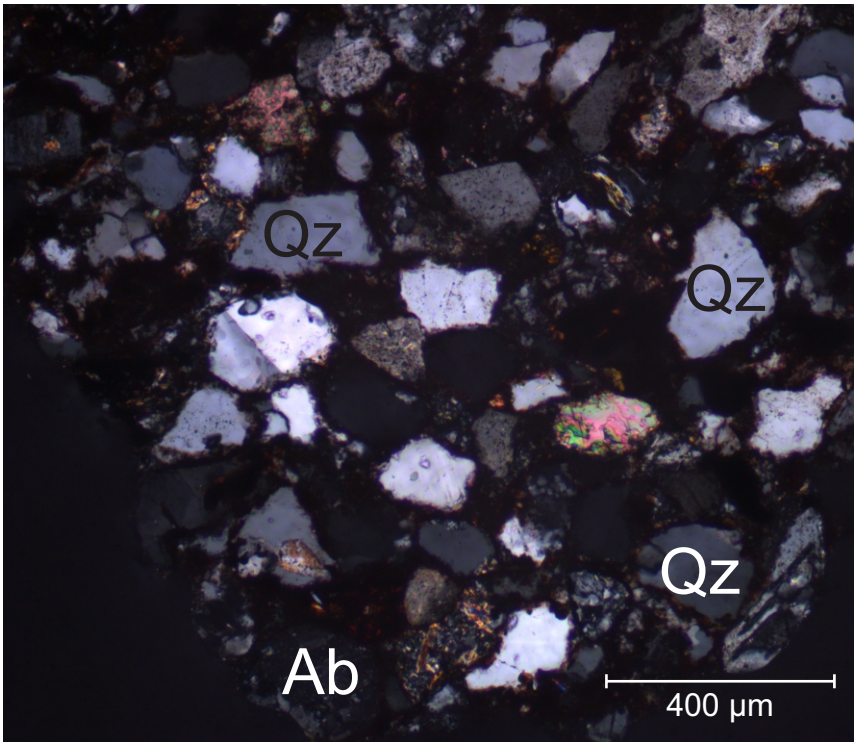


Figure 1-2D.33: Microphotograph. Sample 229.6M, Granule 2. Transmitted light, xpl, 4x.

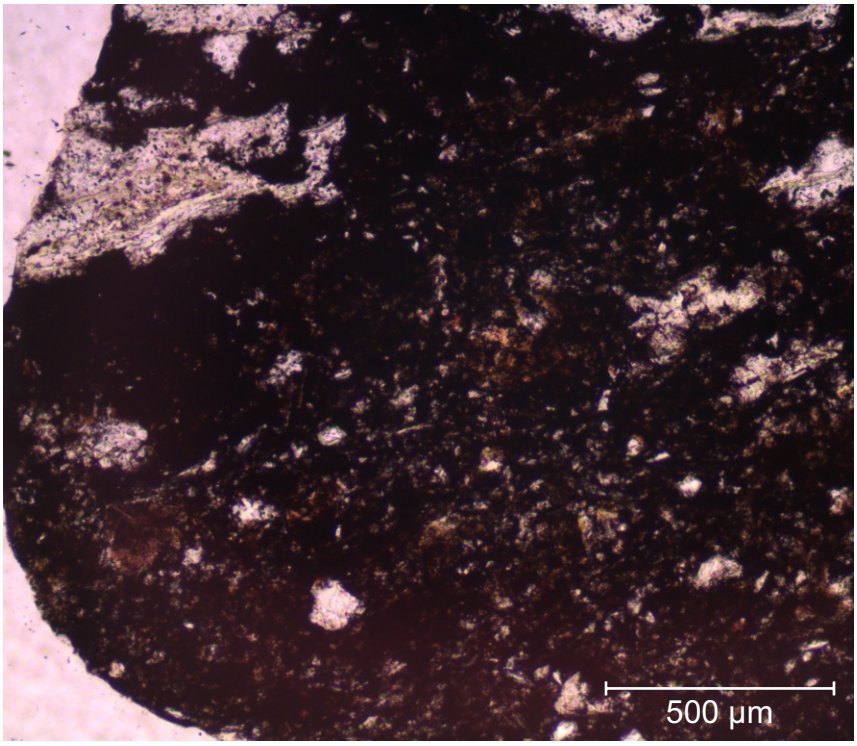


Figure 1-2D.34: Microphotograph. Sample 229.6M, Granule 3. Transmitted light, ppl, 4x. Very fine grained. Cryptocrystalline. Main minerals are quartz and albite. Hydrothermally altered felsic igneous rock.

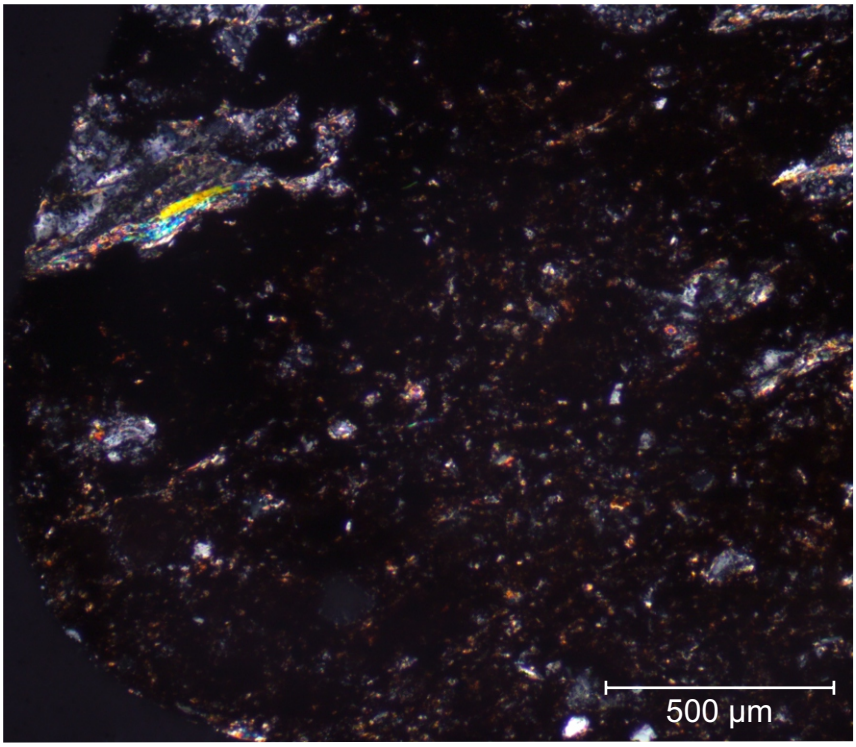


Figure 1-2D.35: Microphotograph. Sample 229.6M, Granule 3.Transmitted light, xpl, 4x. Main minerals are quartz and albite.

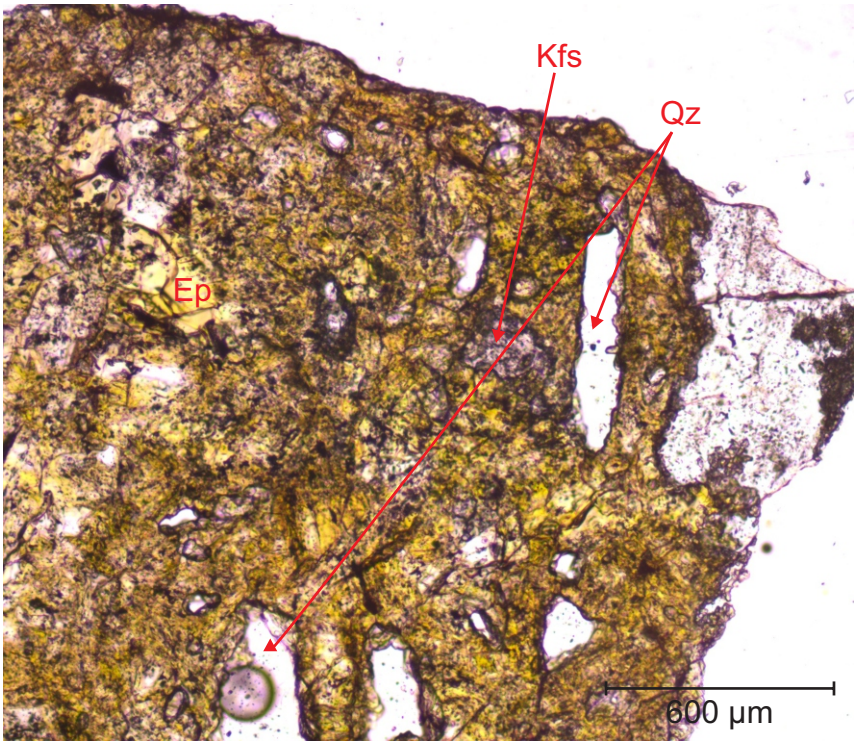


Figure 1-2D.36: Microphotograph. Sample 229.6M, Granule 4.Transmitted light, ppl, 4x. Epidote rich rock. A piece from an epidote-quartz vein.

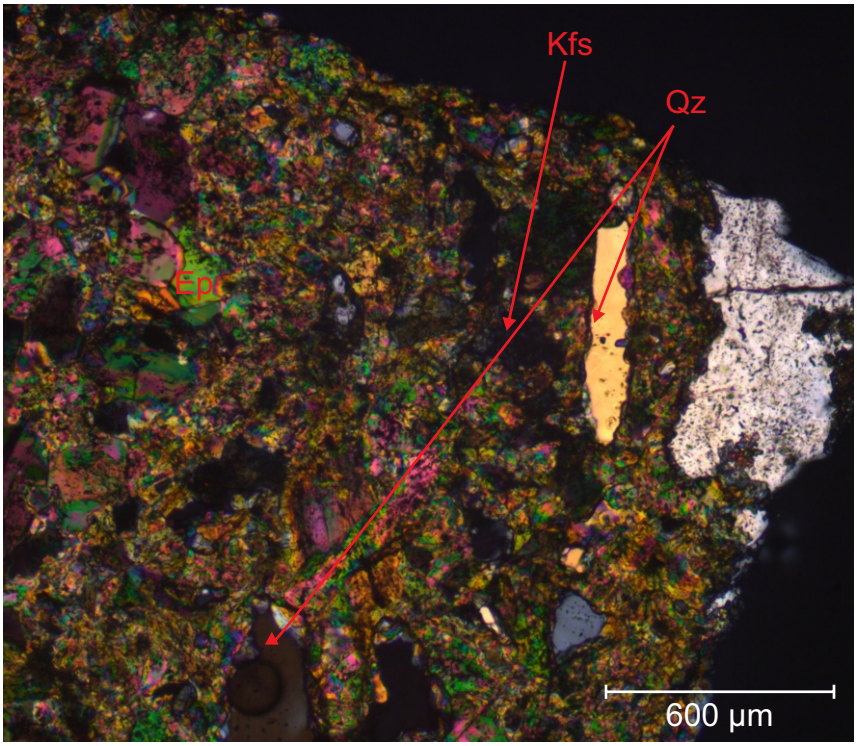


Figure 1-2D.37: Microphotograph. Sample 229.6M, Granule 4. Transmitted light, xpl, 4x.

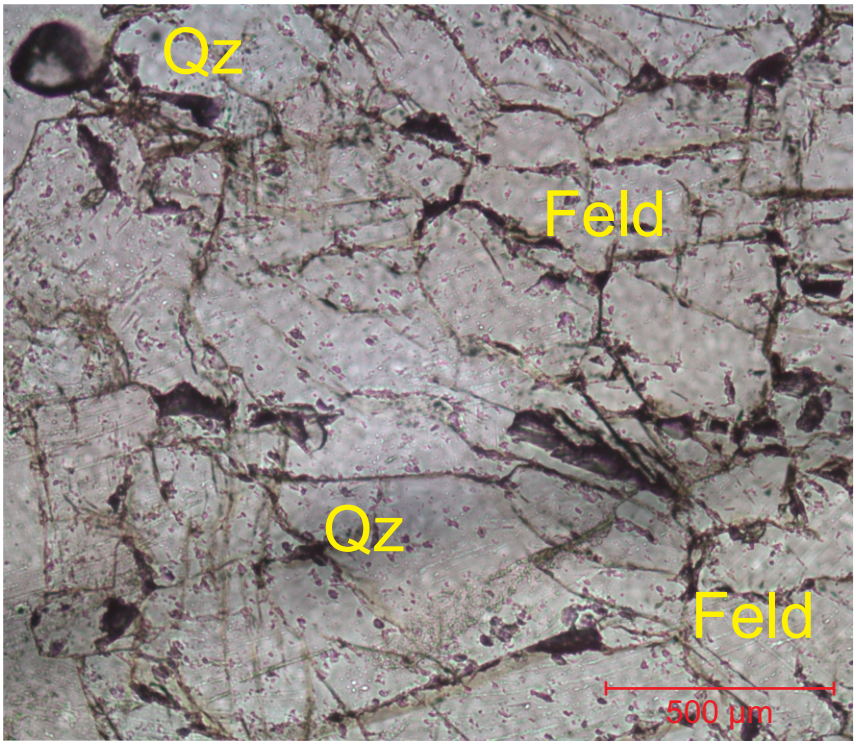


Figure 1-2D.38: Microphotograph. Sample 229.6M, Granule 5. Transmitted light, ppl, 4x. Feldspathic holocrystalline granodiorite.

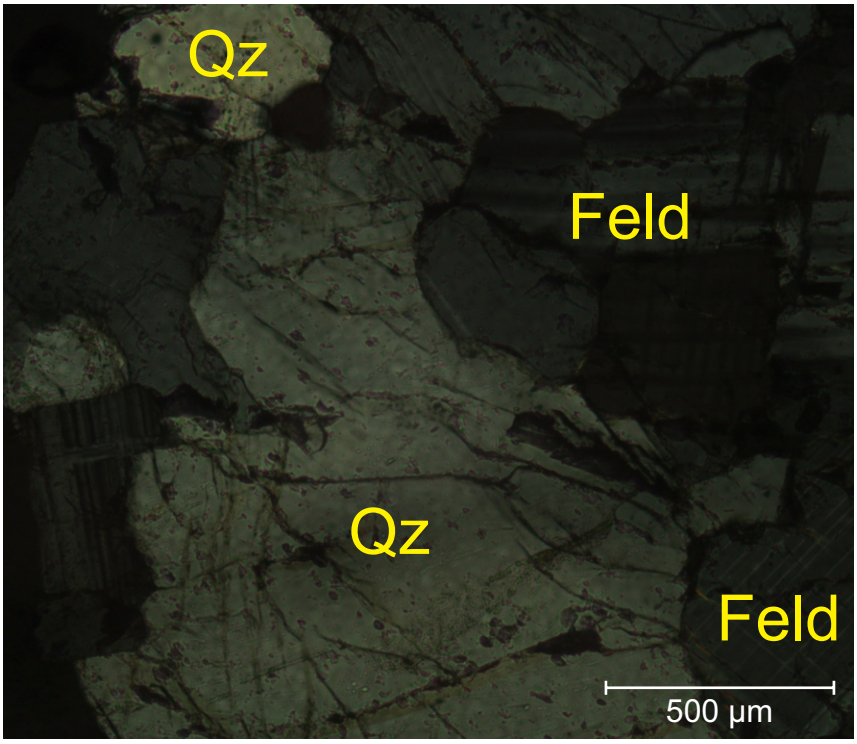


Figure 1-2D.39: Microphotograph. Sample 229.6M, Granule 5. Transmitted light, xpl, 4x. Granodiorite.

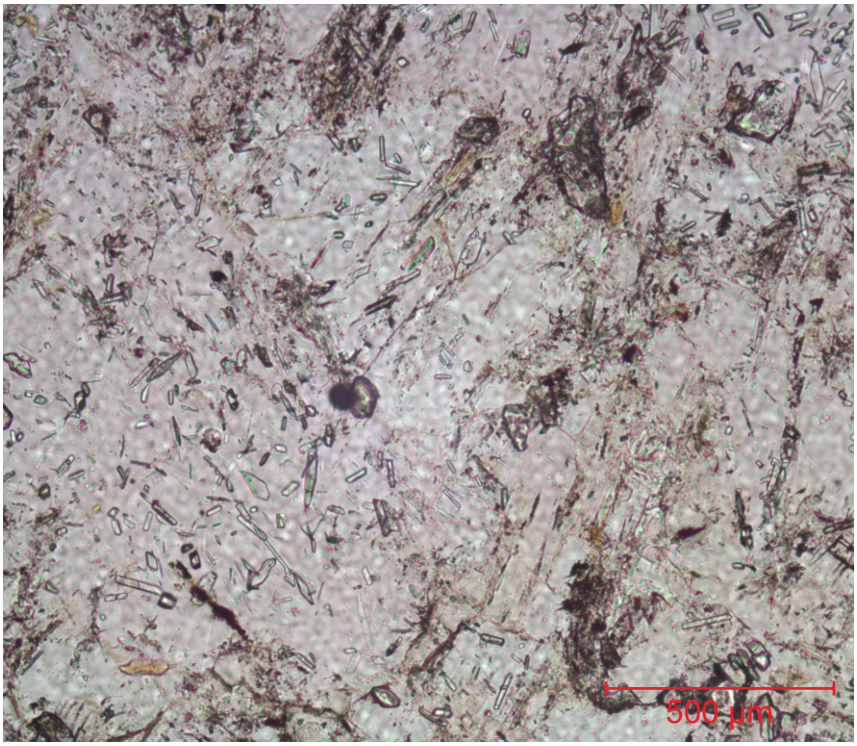


Figure 1-2D.40: Microphotograph. Sample 229.6M, Granule 6. Transmitted light, ppl, 4x. Granodiorite?

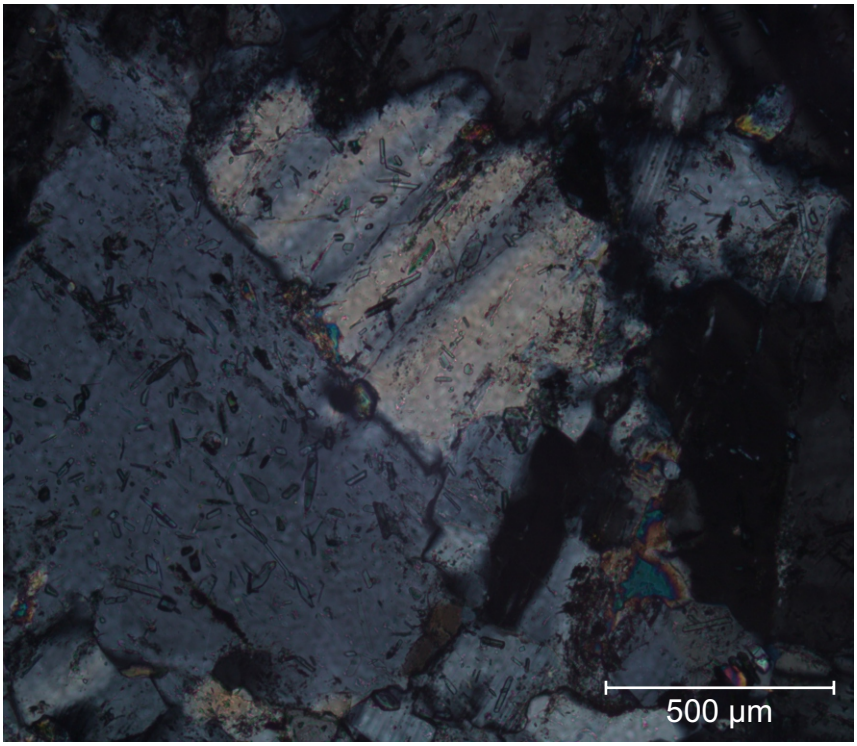


Figure 1-2D.41: Microphotograph. Sample 229.6M, Granule 6. Transmitted light, xpl, 4x. Granodiorite?

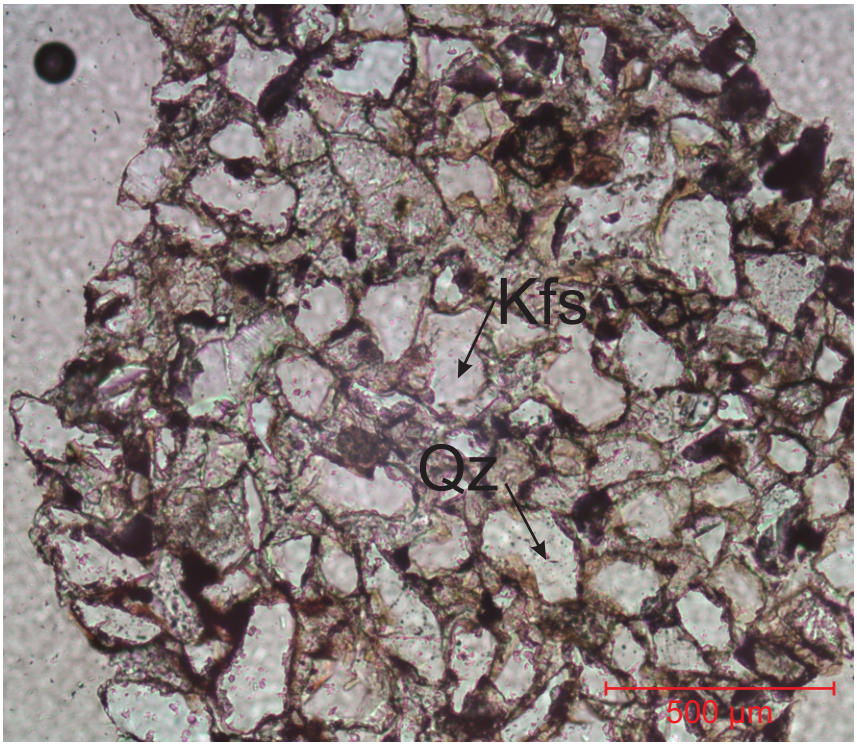


Figure 1-2D.42: Microphotograph. Sample 229.6M, Granule 7. Transmitted light, ppl, 4x. Holocrystalline igneous rock with xenolith. Microgranite?

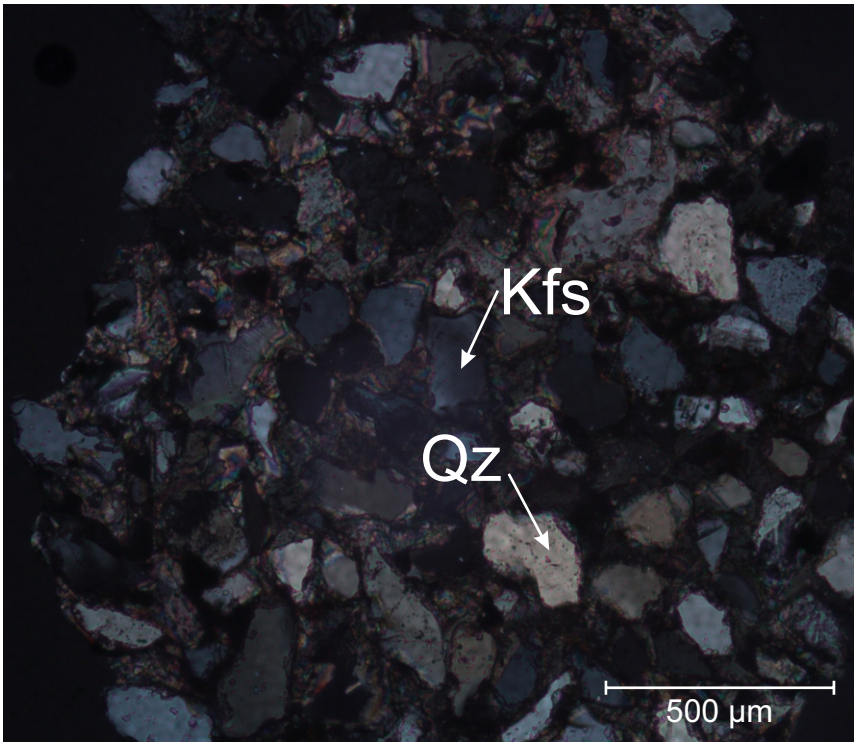


Figure 1-2D.43: Microphotograph. Sample 229.6M, Granule 7. Transmitted light, xpl, 4x. Microgranite?

Table 1-2D.1: Scanning electron microscope chemical analyses of Granules from Flemish Cap. (Sample 229.6M)

Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	V2O5	Cr2O3	NiO	Zincite	ZrO2	BaO	La2O3	Ce2O3	Nd2O3	WO3	Total	Actual Total
1	1	Pl (Bytownite)	49.71		32.54				15.45	2.30																100	109
1	2	Ep	41.70		25.99	9.08			22.96		0.26															100	111
1	3	Pl (Bytownite)	49.56		32.51	0.36			15.24	2.33																100	104
1.1	1	Zincite +	7.40		3.20	3.34		2.83											83.23							100	126
1.1	2	Qz	99.74			0.26																				100	121
1.1	3	Ep	41.59		27.56	7.09			23.76																	100	111
1.1	4	Bt	40.87	1.20	18.21	13.36		14.95	1.57		9.84															100	102
1.1	5	Bt	42.20	1.07	17.85	12.93		15.81			9.98				0.16											100	109
1.1	6	Bt	42.70	1.10	17.14	12.66		16.36			10.05															100	108
1.1	7	Bt	42.01	1.17	17.81	12.84		16.05			10.12															100	108
1.1	8	Chl	33.02		24.58	18.06		24.34																		100	99
1.1	9	Chl	46.23		19.75	15.60	0.26	17.79											0.38							100	105
1.1	10	Pl (Bytownite)	49.78		32.26	0.23			15.35	2.39																100	114
1.1	11	Ep	42.11		29.92	4.19			23.79																	100	112
1.1	12	Chl	32.46		24.98	18.12	0.37	24.07																		100	100
1.1	13	Hbl	46.52	0.51	12.14	14.59	0.34	11.83	11.29	1.42	1.36															100	114
1.1	14	Pl (Bytownite)	49.83		32.19				15.52	2.45																100	115
1.1	15	Ab or Na-rich Kfs (crypto perthite)	67.75		18.47				0.48	9.61	3.69															100	118
1.1	16	Ep	41.45		26.48	8.56			23.52																	100	110
1.2	1	Bt	42.96	1.11	16.95	12.42		16.66			9.89															100	108
1.2	2	Chl	27.97		20.32	16.01	0.26	20.24	0.20																	85	97
1.2	3	Bt	42.39	0.97	17.77	12.78		16.56			9.54															100	111
1.2	4	Chl	28.29		20.40	15.56	0.27	20.49																		85	98
1.2	5	Bt	42.62	1.17	17.04	12.65	0.23	16.19			10.10															100	109
1.2	6	Adr (gt)	40.01		3.19	24.14			32.48		0.19															100	107
1.2	7	Qz	99.66			0.34																				100	121
1.2	8	Qz	99.72			0.28																				100	119
1.2	9	Chl	27.88		20.44	16.29	0.26	20.13																		85	93
1.2	10	Qz	99.73			0.27																				100	121
1.2	11	Bt	42.14	1.20	17.08	13.70		15.50			10.38															100	102
1.2	12	Bt	41.94	1.09	17.83	12.81	0.21	16.11			10.01															100	107
1.2	13	Chl	28.82		19.88	14.91	0.32	21.07																		85	98
1.2	14	Ep	41.52		26.48	8.75			23.24																	100	109
1.2	15	Ep	41.25		26.18	8.89			23.68																	100	108
1.2	16	Qz	98.58	0.55		0.40			0.47																	100	121
1.2	17	Qz	99.60			0.40																				100	121
1.2	18	Qz	99.67			0.33																				100	120
1.3	1	Ep	41.40		26.49	8.57			23.54																	100	108
1.3	2	Bytownite	50.02		32.14				15.43	2.42																100	114
1.3	3	Bytownite	50.12		32.06				15.23	2.59																100	113
2	1	Mag	0.82			99.18																				100	91
2	2	Qz	100.00																							100	117
2	3	Zr	31.30			0.72														67.97						100	105
2	4	Feohy +	9.11	2.59	3.71	82.30	0.41	0.54	0.43		0.42					0.49										100	88
2	5	Feohy +	11.68	2.47	6.16	77.88		1.37								0.44										100	81
2.1	1	Qz	100.00																							100	121
2.1	2	Zincite +	3.15		1.95														94.90							100	126
2.1	3	Zincite	1.60																98.40							100	132
2.2	1	Ti-Mag		5.78		93.52	0.70																			100	94
2.2	2	Bt +	45.43	1.67	21.54	16.62		11.09	0.46		3.19															100	94
2.2	3	Qz	99.67		0.33																					100	121

Table 1-2D.1: Scanning electron microscope chemical analyses of Granules from Flemish Cap. (Sample 229.6M)

Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	V2O5	Cr2O3	NiO	Zincite	ZrO2	BaO	La2O3	Ce2O3	Nd2O3	WO3	Total	Actual Total
2.2	4	Mix	45.61	6.05	31.60	5.13		10.39	0.98		0.25															100	106
2.2	5	Ep	41.42		23.33	13.22			21.65		0.38															100	108
2.2	6	Mix	26.18	45.38	16.81	5.04		5.25	0.74		0.60															100	106
2.2	7	Py +	7.78		5.83	26.02		2.65	0.22		0.19		57.32													100	187
2.2	8	Chl +	43.65	0.72	30.28	9.89	0.28	13.50			1.68															100	101
2.3	1	Ab	68.62		19.52				0.69	10.88	0.29															100	117
2.3	2	Qz	99.19			0.81																				100	118
2.3	3	Ep	41.62		25.57	9.24			23.57																	100	111
2.3	4	Ab	69.98		18.71					11.32																100	119
2.3	5	Cal	0.59				0.66		54.75																	56	57
2.3	6	Ab	68.48		19.26	0.18			1.10	10.84	0.14															100	121
2.3	7	Ab	69.06		19.62				0.29	10.72	0.32															100	117
2.3	8	Ab	69.78		18.92				0.21	11.09																100	116
2.3	9	Feohy +	5.22	7.33	1.59	84.41	0.74		0.27							0.44										100	88
2.3	10	Mix	78.03	0.59	9.87	8.12		1.53	0.36		1.50															100	127
2.3	11	Cal +	15.34	1.94	0.73	1.25	1.56		79.18																	100	65
3	1	Qz	99.02		0.51	0.28					0.20															100	116
3	2	Mnz +	3.67		2.06				1.08		0.78	31.22	1.67	0.82				-0.03				22.54	30.35	5.83		100	105
3	3	Mnz	3.52	4.82	1.38	89.83					0.44															100	92
3	4	Qz	100.00																							100	110
3.1	1	Mnz	1.37		0.44				0.33			34.25		1.13				0.08				17.87	33.66	10.86		100	106
3.1	2	Ab	69.71		18.58	0.21				11.28					0.21											100	113
3.1	3	Ab	69.45		18.57	0.22				11.75																100	119
3.1	4	Mag +	5.58	1.00	2.73	90.08					0.60															100	95
3.1	5	Qz	100.00																							100	123
3.1	6	Mix	31.20	2.22	2.08	63.48					1.02															100	97
3.1	7	Ab	65.42		17.47	0.56				11.17			2.10								3.29					100	114
3.2	1	Qz +	97.83		1.20	0.42					0.55															100	120
3.2	2	Qz	99.55			0.45																				100	122
3.2	3	Kfs	65.84		17.87	0.60				0.49	15.20															100	120
3.2	4	Mag	0.89	0.63		98.48																				100	91
3.2	5	Feohy +	4.01	3.47	1.93	88.98		1.17			0.44															100	93
3.2	6	Feohy +	4.48	5.02	1.90	87.36	0.56				0.69															100	95
3.3	1	Ap +	6.82	1.90	3.60	2.27		0.66	41.67		1.37	37.87		3.84												100	121
3.3	2	Ab	69.60		18.85	0.26			0.23	11.06																100	117
3.3	3	Ms +	50.81	3.84	24.40	5.52		5.12			10.04						0.26									100	107
3.3	4	Ab	66.69		21.77	0.51			0.33	8.87	1.84															100	116
3.3	5	Ms	55.31		27.20	3.14		3.49			10.86															100	109
3.3	6	Ms	54.79	0.38	25.89	4.16		4.02			10.75															100	112
3.3	7	Qz	99.68			0.32																				100	121
3.3	8	Mix	15.36	2.73	6.86	72.09		0.91			2.04															100	100
3.3	9	Bt	42.02	0.82	21.69	10.62		21.69			3.16															100	110
4	1	Qz	100.00																							100	122
4	2	Ep	39.61		20.65	14.27			22.47																	97	107
4	3	Ep	39.78		23.21	11.26			22.75																	97	108
4	4	Kfs +	58.25		18.88	4.71			7.21		10.96															100	113
4	5	Qz	99.80			0.20																				100	117
4	6	Ab	69.63		18.54					11.84																100	113
4.1	1	Mnz	5.69		1.83	0.80			5.42	1.97		27.30	0.76	4.75				-0.09				19.84	25.65	6.09		100	95
4.1	2	Ep	40.23		23.20	10.96			22.61																	97	107
4.1	3	Ab	69.61		18.89					11.50																100	117

Table 1-2D.1: Scanning electron microscope chemical analyses of Granules from Flemish Cap. (Sample 229.6M)

Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	V2O5	Cr2O3	NiO	Zincite	ZrO2	BaO	La2O3	Ce2O3	Nd2O3	WO3	Total	Actual Total
4.2	1	Zincite + Qz	37.90		0.90	0.83			0.23										60.15							100	141
4.2	2	Qz	100.00																							100	119
4.2	3	Ep	39.69		21.08	13.80			22.43																	97	108
4.3	1	Zincite + Qz	46.28			0.41					0.15				0.23				52.93							100	138
4.3	2	Ep	39.71		21.12	13.62			22.55																	97	108
4.3	3	Qz	100.00																							100	120
4.3	4	Qz	99.80			0.20																				100	121
4.3	5	Ep	39.28		18.61	16.99			22.12																	97	108
5	1	Pl (And)	60.39		24.94				7.48	6.80	0.40															100	108
5	2	Qz	100.00																							100	114
5.1	1	Pl (And)	60.22		25.23				7.37	6.93	0.24															100	116
5.1	2	Pl (And)	60.24		25.17				7.29	6.94	0.35															100	116
5.1	3	Kfs	66.03		17.95					0.47	15.56															100	115
5.1	4	Pl (And)	60.41		25.05				7.21	6.96	0.36															100	116
5.1	5	Pl (And)	60.33		25.08				7.28	6.93	0.37															100	116
5.2	1	Mnz	2.26		0.87						0.34	33.24		-0.61								17.06	35.53	11.31		100	105
5.2	2	Pl (And)	60.59		24.84				7.11	7.06	0.40															100	116
5.2	3	Pl (And)	60.28		25.05				7.28	7.01	0.37															100	115
5.2	4	Pl (And)	60.46		24.90				7.15	7.20	0.29															100	115
5.3	1	Qz	100.00																							100	120
5.3	2	Pl (And)	60.06		25.23				7.71	6.79	0.21															100	112
5.3	3	Pl (And)	59.93		25.43				7.45	6.92	0.27															100	117
5.3	4	Pl (And)	60.31		24.90				7.49	6.85	0.45															100	116
5.3	5	Pl (And)	60.96		24.62	0.32			7.70	6.04	0.37															100	100
6	1	Ep	41.54		27.89	6.85			23.72																	100	105
6	2	Ttn	32.66	35.99	2.24	0.70		1.02	27.40																	100	102
6	3	Pl (And)	57.61		26.95				9.35	6.08																100	116
6.1	1	Ep	41.26		26.30	8.85			23.59																	100	109
6.1	2	Ilm		52.88		43.46	2.57		1.08																	100	107
6.1	3	TiO2		98.80					1.20																	100	110
6.1	4	Ttn	33.26	36.57	1.88	0.35			27.94																	100	112
6.1	5	Ttn	32.64	38.09	1.03	0.32			27.92																	100	112
6.1	6	Ep	41.48		26.93	8.05			23.55																	100	110
6.1	7	Ttn	32.79	37.58	1.35	0.29			27.99																	100	111
6.1	8	Ep	41.39		26.90	8.09			23.62																	100	110
6.1	9	Pl (And)	57.77		26.88				9.22	6.13																100	115
6.1	10	Chl	26.92		21.05	18.33	0.23	18.47																		85	98
6.1	11	Chl	27.24		20.77	17.93	0.25	18.82																		85	94
6.1	12	Qz	100.00																							100	121
6.1	13	Pl (And)	58.11		26.74				9.03	6.12																100	116
6.2	1	Ep	41.46		26.88	7.96			23.70																	100	112
6.2	2	Ms +	51.19	1.28	31.70	2.41		2.05		0.26	11.11															100	108
6.2	3	Ep	41.35		26.86	7.93	0.24		23.63																	100	110
6.2	4	Ep	41.34		26.36	8.70			23.61																	100	111
6.2	5	Kfs	66.34		17.62					0.31	15.73															100	115
6.2	6	Qz	100.00																							100	121
6.2	7	Ep	41.49		28.13	6.41	0.24		23.74																	100	110
6.2	8	Pl (And)	56.53		27.70				10.19	5.58																100	115
6.2	9	Ep	43.25	0.47	27.97	3.00		4.59	20.37	0.36																100	106
6.2	10	Kfs	65.55		17.74					0.35	15.50										0.84					100	118
6.2	11	Chl	28.76		20.46	14.93		20.85																		85	94

Table 1-2D.1: Scanning electron microscope chemical analyses of Granules from Flemish Cap. (Sample 229.6M)

Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	V2O5	Cr2O3	NiO	Zincite	ZrO2	BaO	La2O3	Ce2O3	Nd2O3	WO3	Total	Actual Total
6.3	1	Kfs	65.04		17.92					0.35	15.54										1.16					100	116
6.3	2	Chl	28.75		20.30	16.65		19.30																		85	99
6.3	3	Ttn	30.29	35.18	4.01	0.64		0.45	29.42																	100	99
6.3	4	Kfs	64.28		18.23	0.51				0.51	14.65										1.82					100	116
6.3	5	TiO2 +	10.79	81.34	2.15	0.71		0.98	4.03																	100	100
6.3	6	TiO2 +	3.44	95.56	0.48				0.52																	100	107
6.3	7	Kfs	65.78		17.61					0.46	15.07										1.07					100	117
6.3	8	Qz	100.00																							100	119
6.3	9	Pl (And)	58.51		26.30				8.73	6.46																100	115
6.3	10	Kfs	64.89		18.19					0.38	15.39										1.15					100	116
6.3	11	Pl (And)	58.26		26.46				8.91	6.37																100	116
7	1	Kfs	66.11		17.91					0.80	15.18															100	111
7	2	Qz	100.00																							100	117
7	3	Ti-Mag	0.50	11.06		87.27	0.62		0.55																	100	95
7.1	1	Qz	100.00																							100	123
7.1	2	Qz	100.00																							100	121
7.1	3	Mix	75.42		13.79	3.48		1.60			5.71															100	109
7.1	4	Qz	100.00																							100	120
7.1	5	Cal							56.00																	56	58
7.1	6	Kfs +	60.60		24.98	3.30		1.32		3.35	6.45															100	102
7.1	7	Cal					0.82		55.18																	56	58
7.1	8	Ap				0.32		0.85	47.94	0.74		39.62	1.91	7.05											1.58	100	114
7.1	9	Ap				0.41		0.90	49.20	0.77		39.14	1.73	6.34											1.50	100	110
7.1	10	Cal							56.00																	56	59
7.1	11	Ap				0.52		0.84	47.70	0.86		39.88	1.72	6.92											1.57	100	113
7.1	12	Bad Analysis	56.33	0.37	7.97	21.57		4.71	5.38	0.75	2.92															100	63
7.1	13	Bad Analysis	59.44		10.21	18.60		4.46	2.56	0.81	3.40				0.51											100	47
7.1	14	Qz	100.00																							100	123
			Notes																								
			"+" indicates more than one mineral present																								

Appendix 1-3A: SEM-BSE images for Flemish Cap Granules with EDS Mineral Analyses and Microphotographs.
Sample 2008061-217.1M

Flemish Cap Sample 217.1M Lithology Summary Notes

Granule 1 (Sites 1, 1.1) Microphotographs: Figures 1-3A.19, 20

Holocrystalline. Possibly altered. Granitic?
Mineral Assemblage: K-Feldspar, Quartz, Chlorite, Apatite, Magnetite, Titanite, Epidote, Hornblende, Zircon

Granule 2 (Sites 2, 2.1) Microphotographs: Figures 1-3A.21, 22

K-Feldspar in intergrowths with albite, *holocrystalline?* and rhyolitic in composition.
Mineral Assemblage: K-Feldspar, Quartz, Albite, Altered Ilmenite, Titanite

Granule 3 (Sites 3, 3.1) Microphotographs: Figures 1-3A.23, 24Deformed

probably metamorphic rock with fabric.
*Mineral Assemblage: Quartz, Epidote, some minor calcite, two Mg-Pumpellyite needles

Granule 4 (Sites 4, 4.1) Microphotographs: Figures 1-3A.25, 26
Deformed probably metamorphic rock cut by quartz veins. Thought to have a rhyolitic protolith.
*Mineral Assemblage: Dominated by epidote, quartz veins, minor pyrite

Granule 5 (Sites 5, 5.1) Microphotographs: Figures 1-3A.27, 28

Holocrystalline rock with granitic composition with epidote forming as an alteration product.
Mineral Assemblage: K-Feldspar, Epidote via alteration, Albite, Chlorite, minor titanite

Granule 6 (Sites 6, 6.1) Microphotographs: Figures 1-3A.29, 30

Fine grained rhyodacite.
Mineral Assemblage: absence of quartz? Albite and K-Feldspar patchy, abundant pyrite, minor hornblende

Flemish Cap Sample 217.1M Lithology Summary Notes

Granule 7 (Sites 7, 7.1) Microphotographs: Figures 1-3A.31, 32

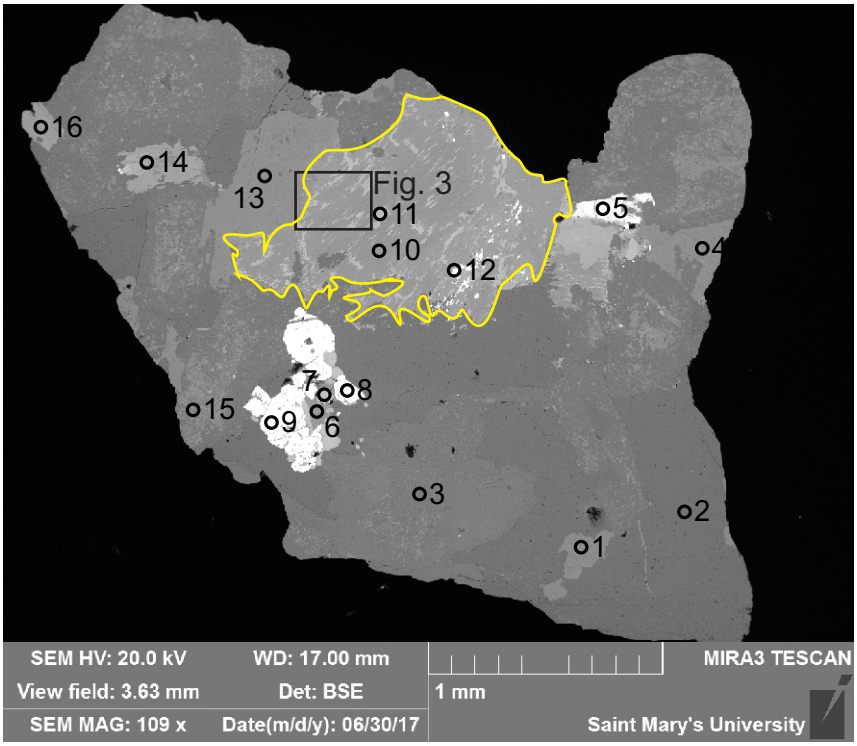
Holocrystalline rock with granitic composition.
Mineral Assemblage: Quartz, K-Feldspar, Andradite, Apatite, Biotite, Chlorite consuming biotite

Granule 8 (Sites 8, 8.1) Microphotographs: Figures 1-3A.33, 34

Probably a piece of quartz vein.
Mineral Assemblage: Quartz and Biotite

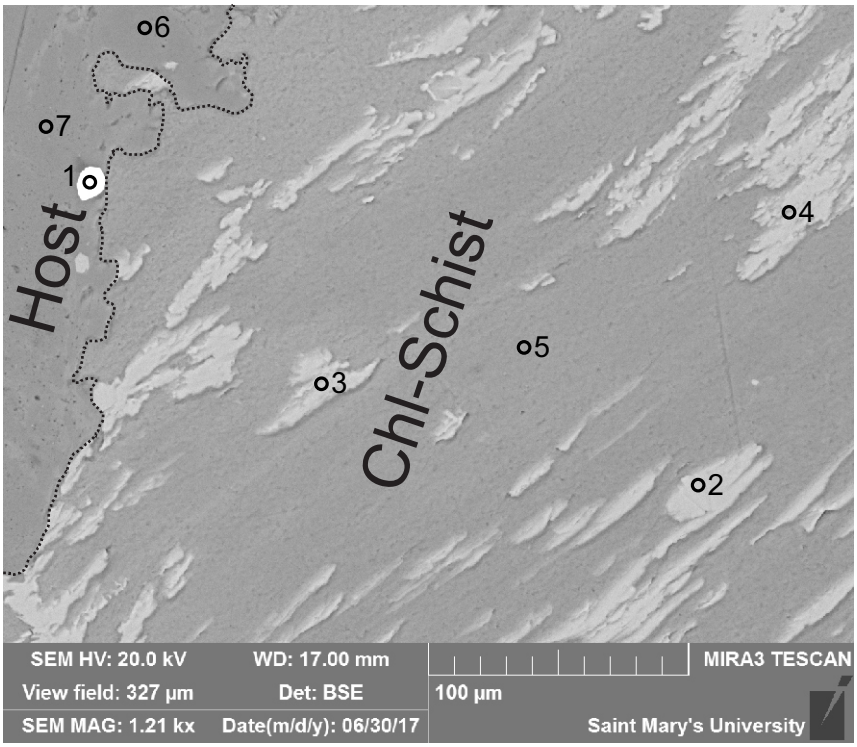
*lithologies (3) and (4) may be one lithology

Figure 1-3A.1: Scanned thin section of Flemish Cap sample 217.1M. Granules are numbered in red corresponding to analysed sites.



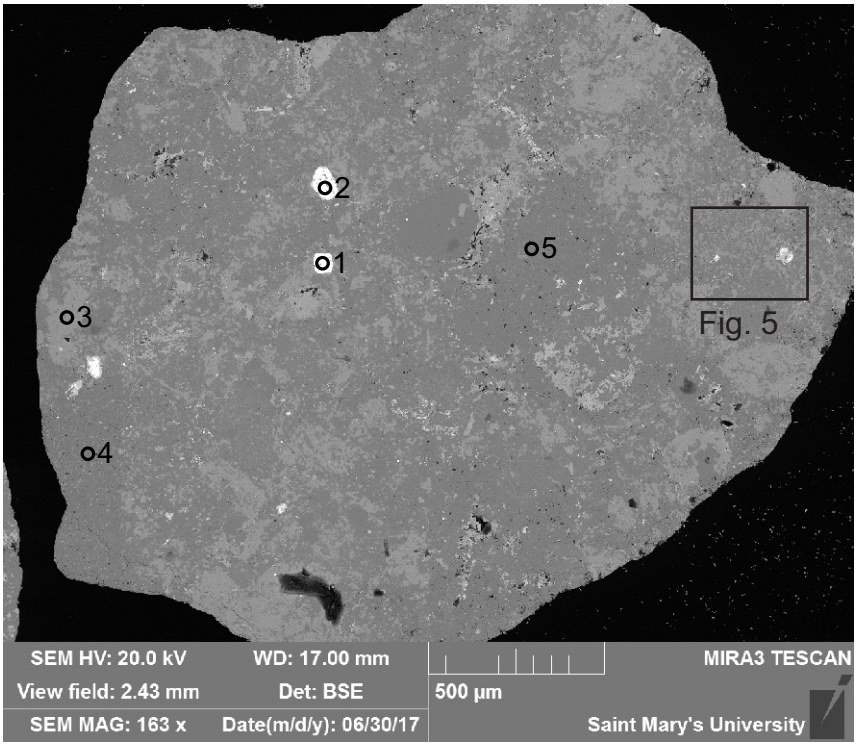
1:K-Feldspar
2:Quartz
3:K-Feldspar
4:K-Feldspar
5:Chlorite +
6:Chlorite
7:Apatite
8:Magnetite
9:Magnetite
10:Chlorite
11:Titanite
12:Magnetite
13:K-Feldspar
14:Epidote
15:K-Feldspar
16:Hornblende

Figure 1-3A.2: Sample 217.1M site 1. The rock is a granitoid, with (outlined in yellow) a xenolith that has foliation, that has been sourced when the felsic magma intruded.



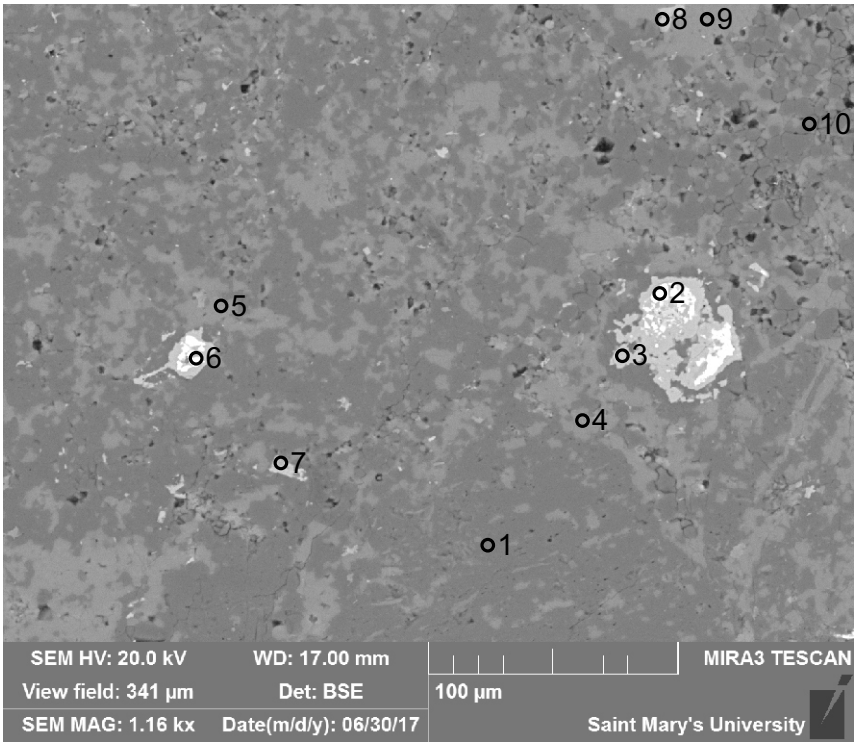
1:Zircon
2:Apatite +
3:Titanite
4:Titanite
5:Chlorite
6:K-Feldspar
7:K-Feldspar

Figure 1-3A.3: Sample 217.1M site 1.1.
Xenolith (Chlorite Schist) with foliation marked by the titanite (3, & 4)



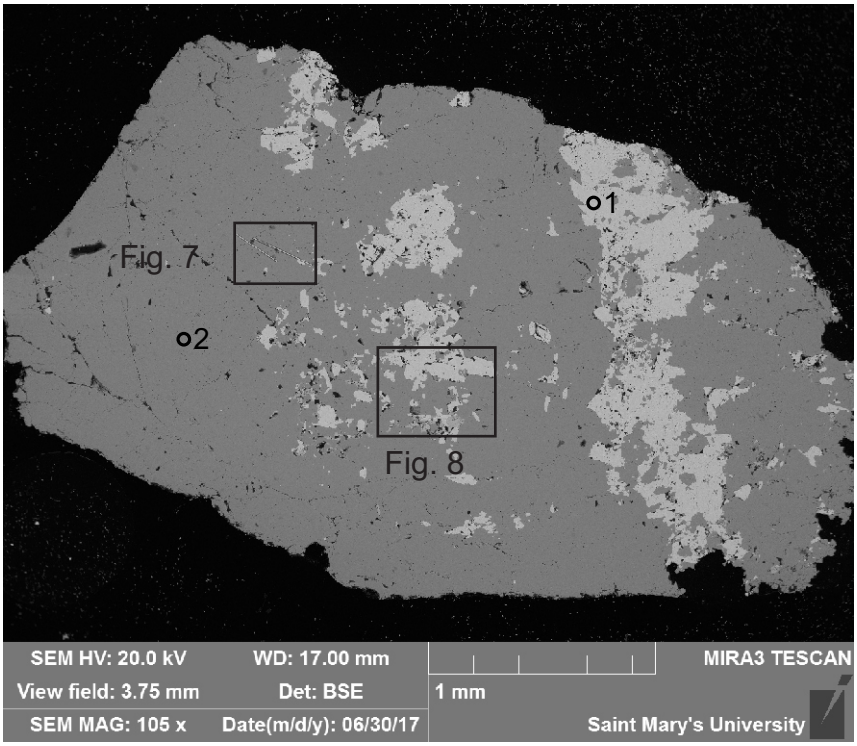
1:Pyrite
2:Ilmenite
3:K-Feldspar
4:Quartz
5:Albite + Quartz

Figure 1-3A.4: Sample 217.1M site 2. This site consists of K-feldspar (3) intergrown with albite. Ilmenite (2) and pyrite (1) are also present.



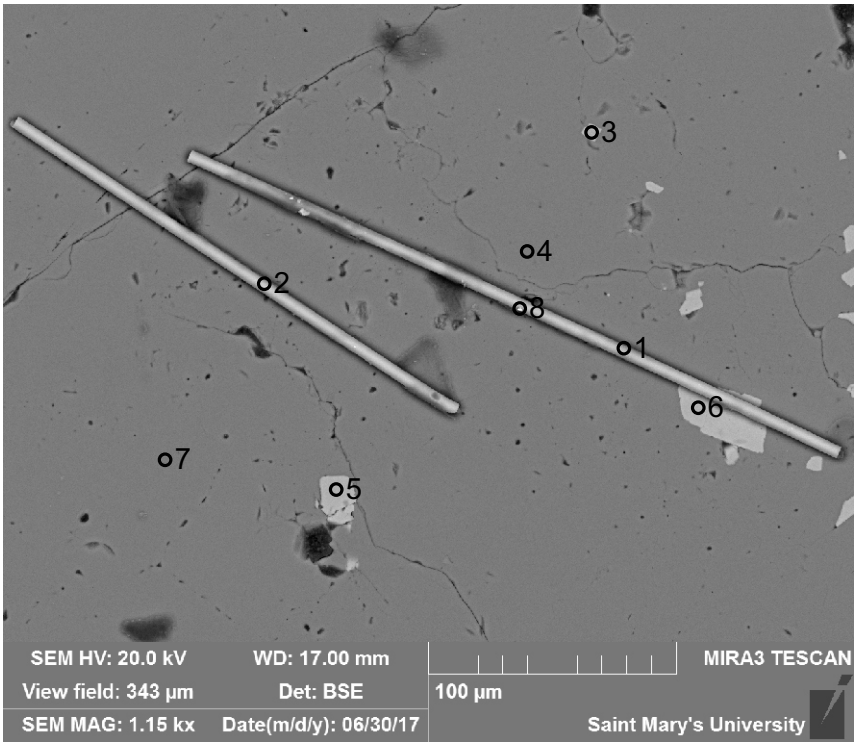
1:Albite
2:Ilmenite
3:Titanite
4:K-Feldspar
5:K-Feldspar
6:Ilmenite
7:Titanite + K-Feldspar
8:Apatite +
9:K-Feldspar
10:Quartz

Figure 1-3A.5: Sample 217.1M site 2.1. This site shows K-Feldspar (4-5, 9) is intergrown with albite (1). Rhyolitic holocrystaline rock (intrusive rhyolite).



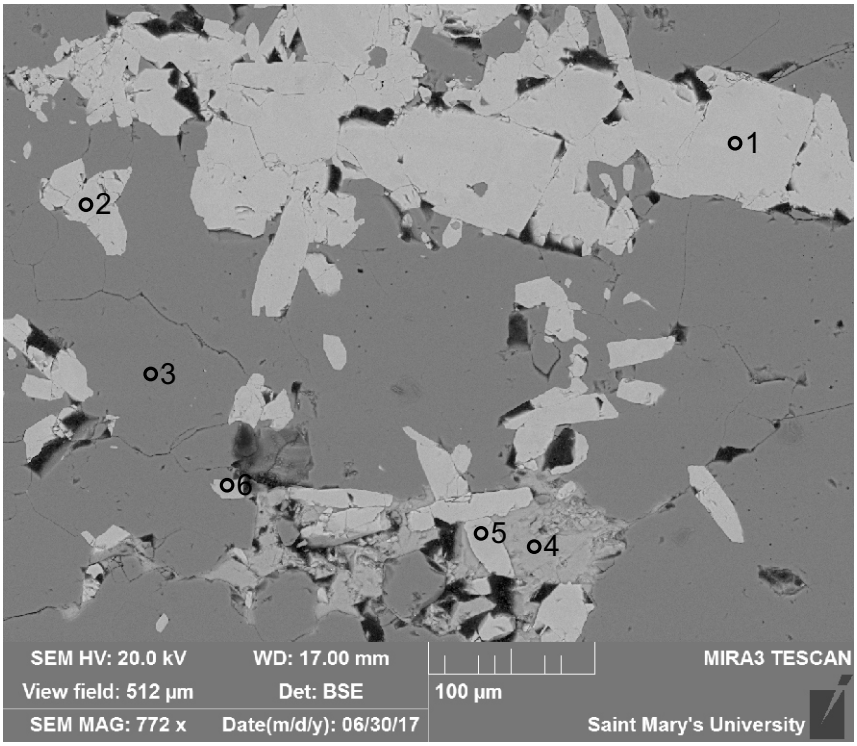
1:Epidote
2:Quartz

Figure 1-3A.6: Sample 217.1M site 3. Deformed quartz-epidote vein with evident fabric seen in Fig. 23.



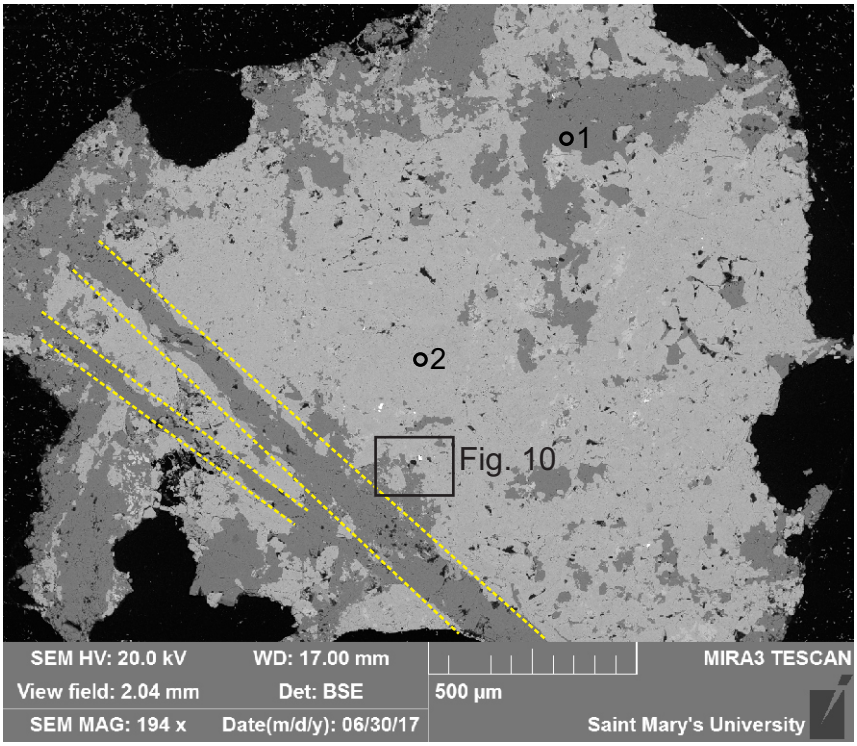
1:Contaminant?
2:Contaminant?
3:Epidote
4:Quartz
5:Epidote
6:Epidote
7:Quartz
8:Zircon +

Figure 1-3A.7: Sample 217.1M site 3.1. This site contains mineral needles in a rock that is made up of predominantly quartz (4, 7) and subhedral epidote (5-6) crystals. Mineral needles cut Zircon inclusion (8).



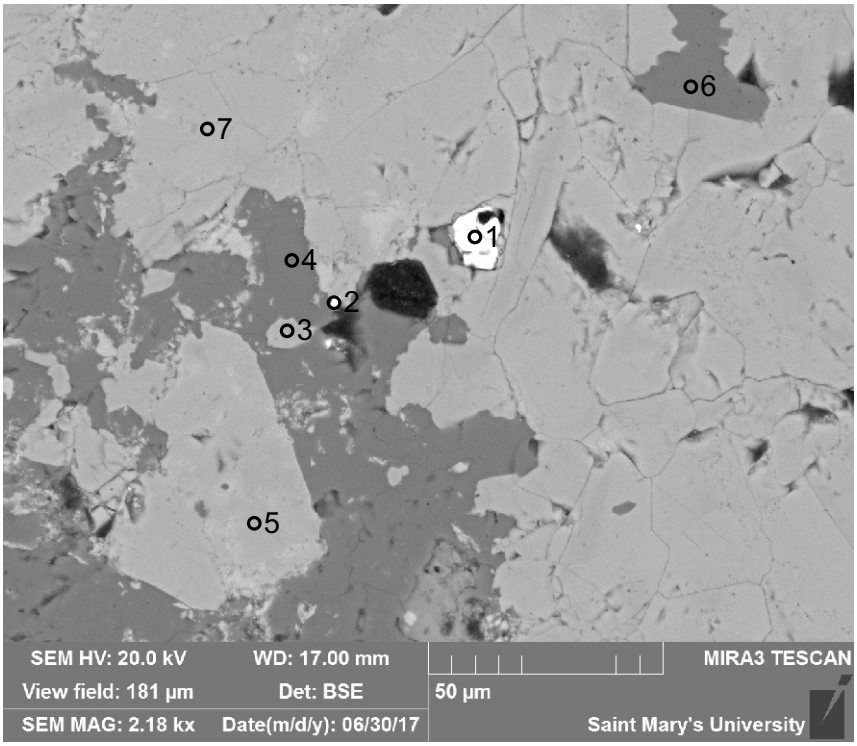
1:Epidote
2:Epidote
3:Quartz
4:Calcite
5:Epidote
6:Epidote

Figure 1-3A.8: Sample 217.1M site 3.2. A quartz-epidote vein with rare calcite (4).



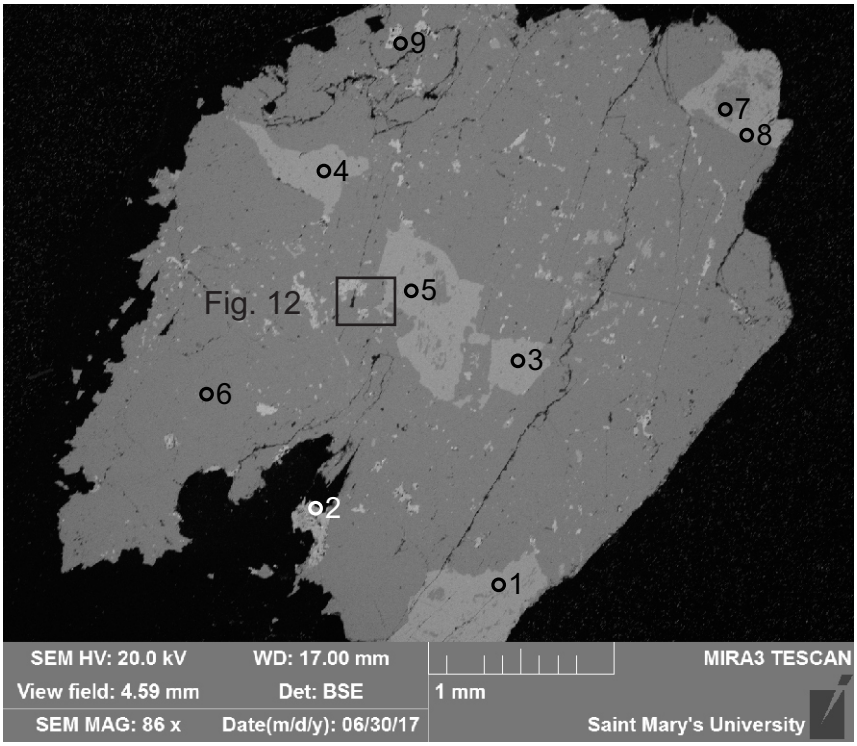
1:Quartz
2:Epidote

Figure 1-3A.9: Sample 217.1M site 4. In this site the epidote (2) is cut by quartz veinlets outlined in yellow. Probably a quartz-epidote vein cut by later quartz veinlets.



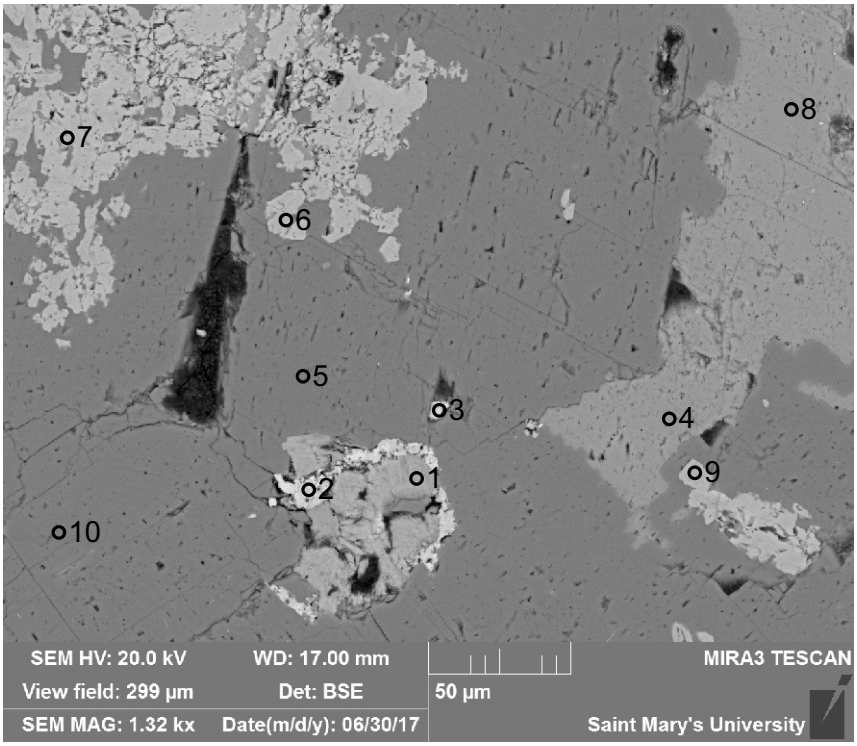
1:Pyrite
2:Pyrite +
3:Epidote
4:Quartz
5:Epidote
6:Quartz
7:Epidote

Figure 1-3A.10: Sample 217.1M site 4.1. Quartz-epidote vein with pyrite (1) filling voids.



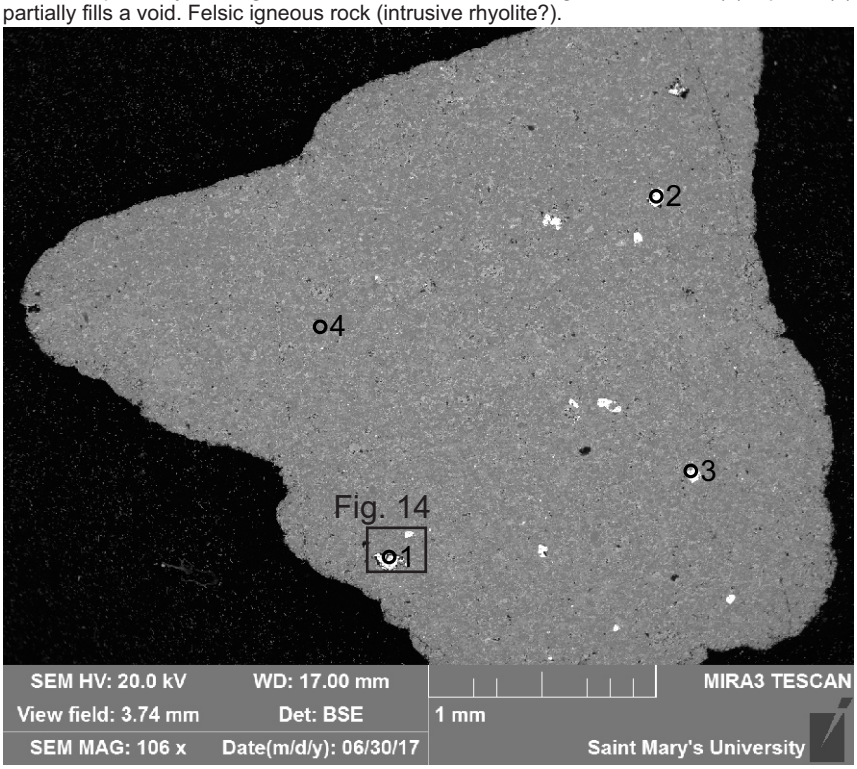
1:K-Feldspar
2:Epidote
3:K-Feldspar
4:K-Feldspar
5:K-Feldspar
6:Quartz + Albite +
7:Albite
8:K-Feldspar
9:Epidote

Figure 1-3A.11: Sample 217.1M site 5. Holocrystalline igneous rock with granitic mineralogy. Epidote (2, 9) is an alteration product. K-feldspar (8) contains albite (7) patches/inclusions.



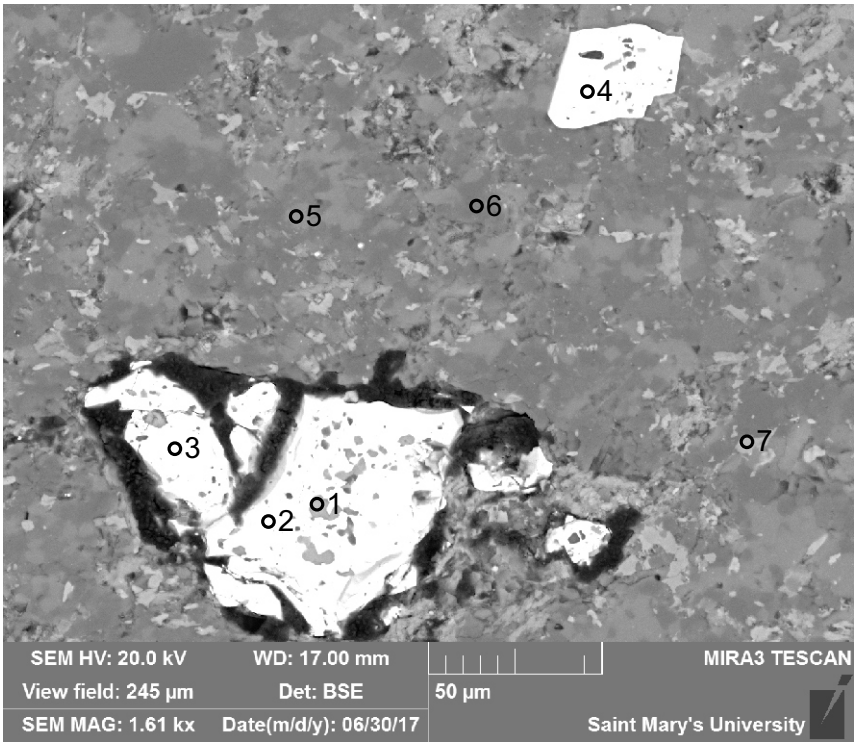
1:Chlorite
2:Titanite
3:Apatite +
4:K-Feldspar
5:Albite
6:Epidote
7:Epidote
8:K-Feldspar
9:Epidote
10:Albite

Figure 1-3A.12: Sample 217.1M site 5.1. The main mineral in this site is albite (5, 10) and K-feldspar (4, 8). Both of these minerals contain abundant voids. Epidote (7, 9) is a common, probably a secondary mineral, that appears to be replacing the feldspars. Chlorite is probably forming from the alteration of a ferromagnesian mineral (1). Apatite (3) partially fills a void. Felsic igneous rock (intrusive rhyolite?).



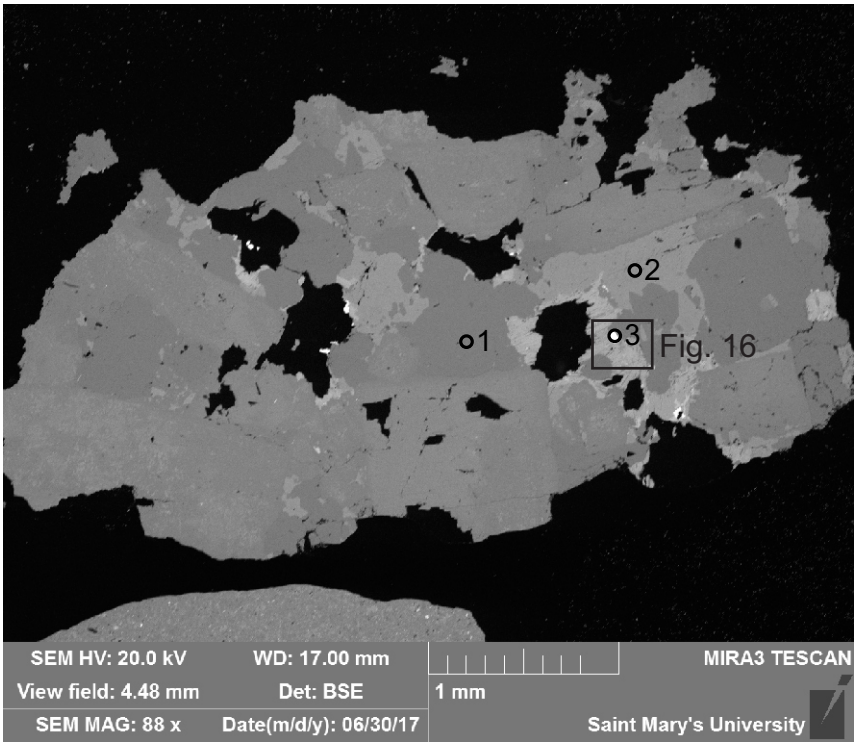
1:Pyrite
2:Pyrite
3:Pyrite
4:Quartz + Albite

Figure 1-3A.13: Sample 217.1M site 6. Fine grained felsic igneous rock (rhyolite?) made up of mainly feldspars. Due to fine grained nature of the rock, it is thought to have cooled exceptionally quickly. Thought to be extrusive or formed in the shallow subsurface.



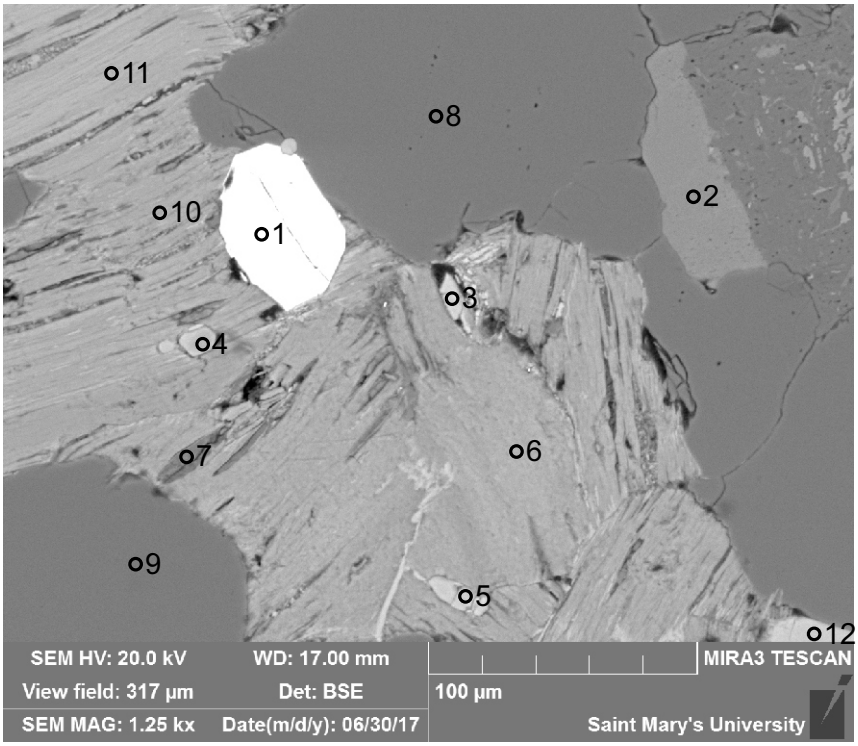
1:Clinopyroxene
2:Pyrite
3:Pyrite
4:Pyrite
5:K-Feldspar
6:Albite
7:Actinolite

Figure 1-3A.14: Sample 217.1M site 6.1. This site appears to consist mainly of finely intergrown K-feldspar (5) and oligoclase (6) and some quartz. Relatively larger crystals of pyrite (2-4) appear to have replaced clinopyroxene (1). Scattered laths of actinolite (7) are also present. Pyrite (4) appears to be late.



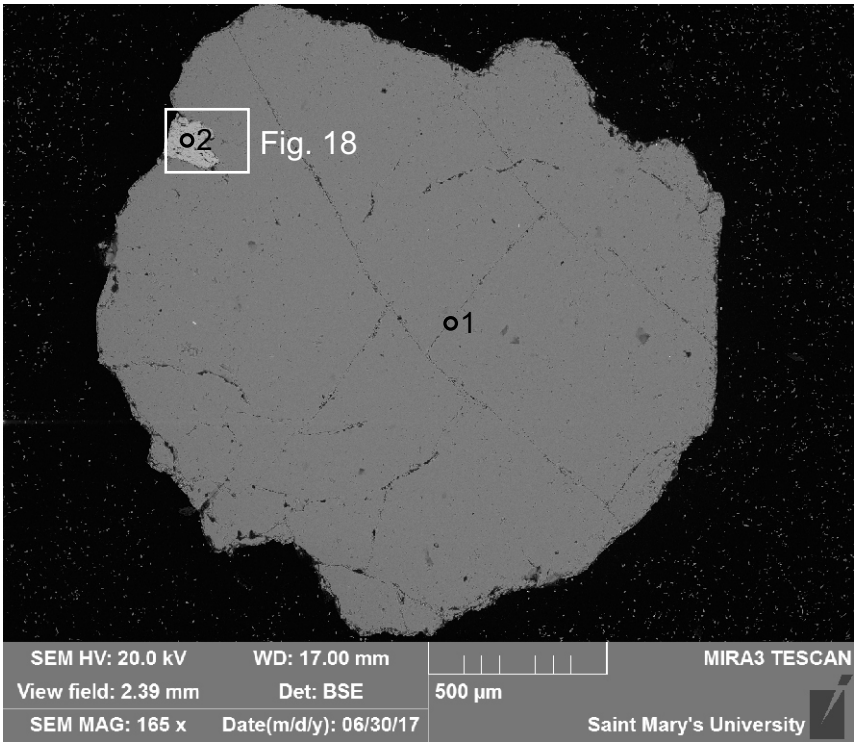
1:Quartz
2:K-Feldspar
3:Zircon

Figure 1-3A.15: Sample 217.1M site 7. Holocrystalline rock with granitoid mineralogy. This site contains zircon (3), quartz (1), and K-Feldspar (2).



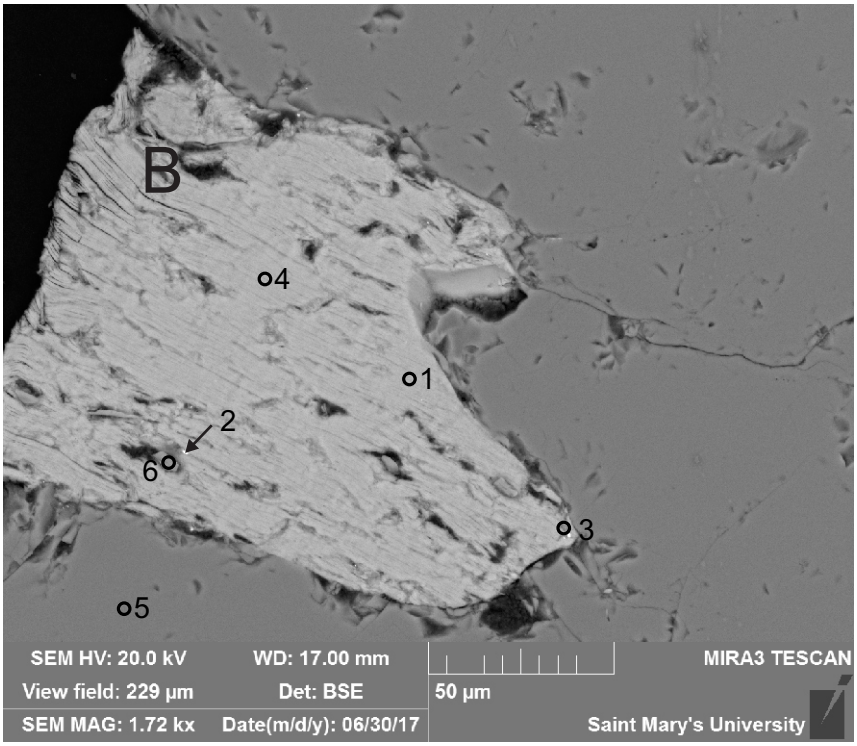
1:Zircon
2:K-Feldspar
3:Andradite (Garnet)
4:Apatite +
5:Apatite
6:Biotite +
7:Chlorite
8:Quartz
9:Quartz
10:Chlorite
11:Biotite +
12:Apatite

Figure 1-3A.16: Sample 217.1M site 7.1. Partly chloritized biotite (6, 7) appears to contain inclusions of zircon (1), apatite (4, 5, 12) and garnet (andradite) (3).



1:Quartz
2:Biotite

Figure 1-3A.17: Sample 217.1M site 8. Granule with fractured quartz (1) crystals and minor biotite (2), probably from an igneous rock.



1:Biotite
2:Biotite
3:Biotite
4:Biotite
5:Quartz
6:Quartz +

Figure 1-3A.18: Sample 217.1M site 8.1. Quartz vein with biotite. Cleavage planes of biotite are observed to be slightly deformed. Most are well preserved (B). The biotite shows no signs of being subjected to alteration.

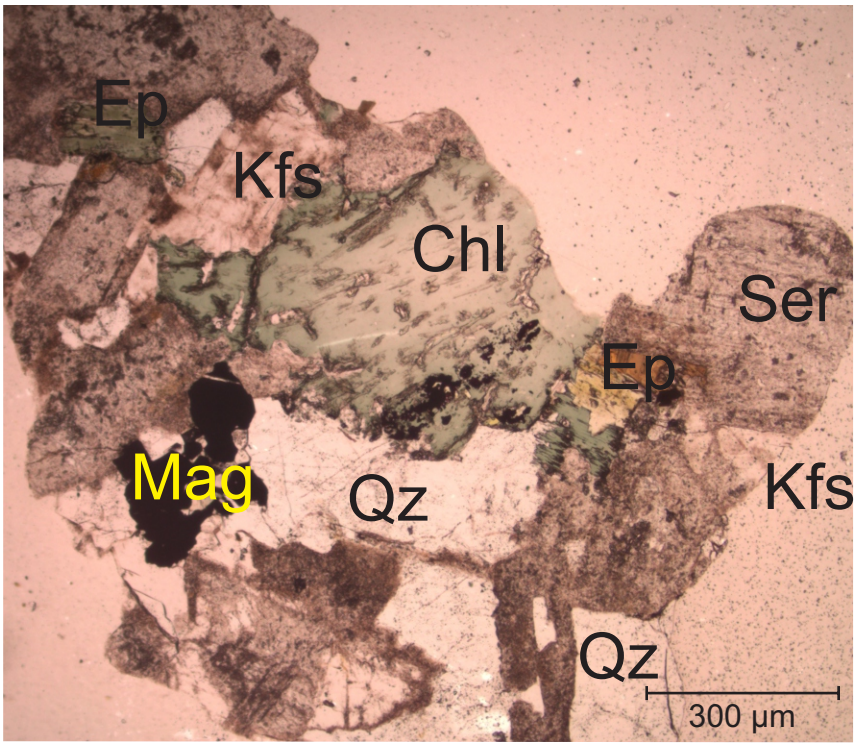


Figure 1-3A.19: Microphotograph. Sample 217.1M. Transmitted light, ppl, 4x. Granule from site 1. Granitoid rock.

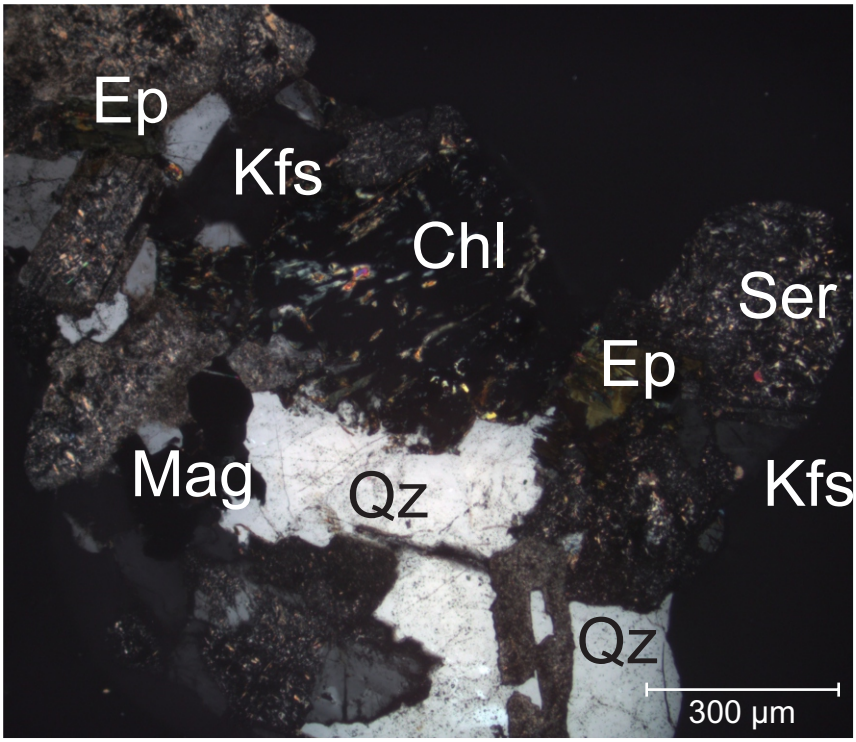


Figure 1-3A.20: Microphotograph. Sample 217.1M. Transmitted light, xpl, 4x. Granule from site 1.

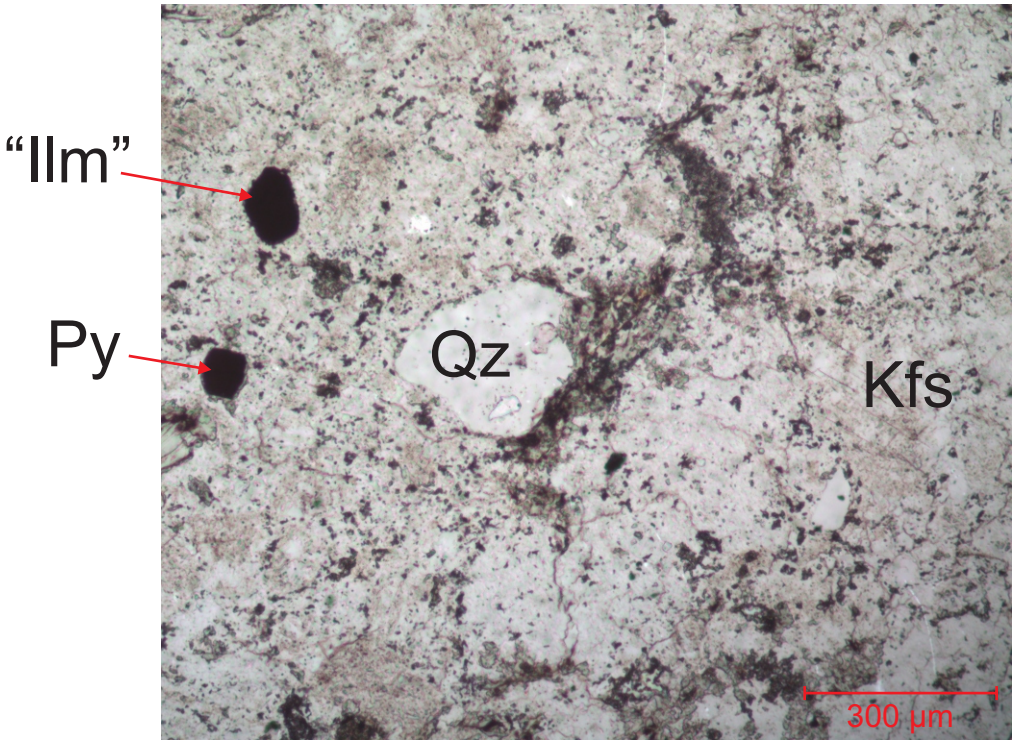


Figure 1-3A.21: Microphotograph. Sample 217.1M. Transmitted light, ppl, 4x. Granule from site 2. Rhyolite.

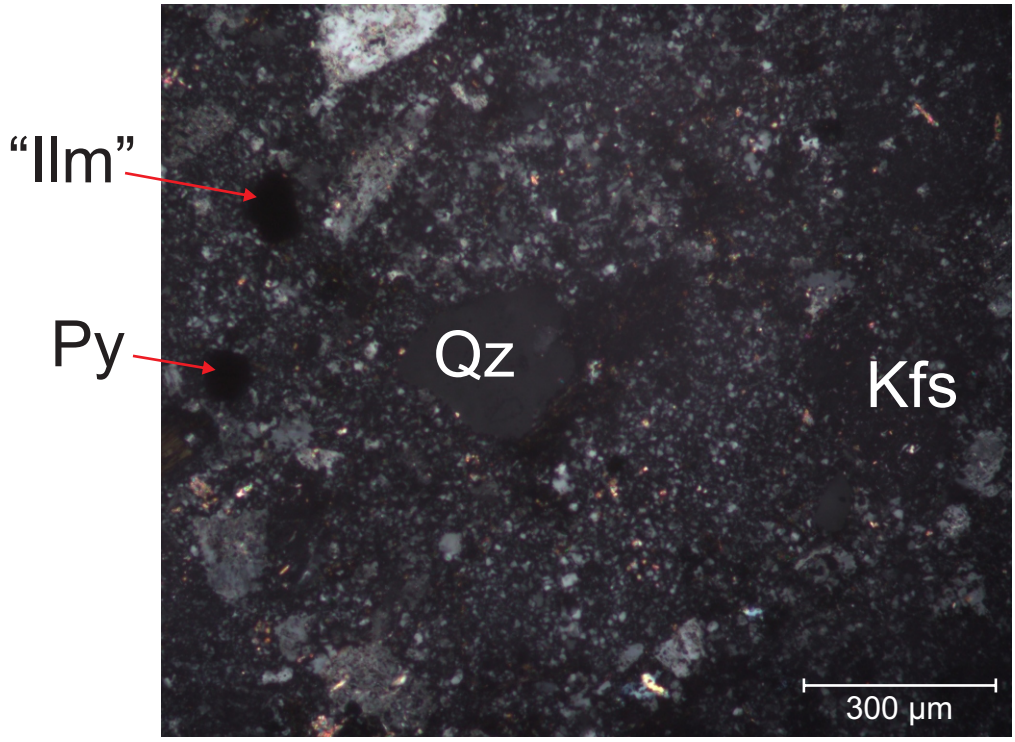


Figure 1-3A.22: Microphotograph. Sample 217.1M. Transmitted light, xpl, 4x. Granule from site 2.

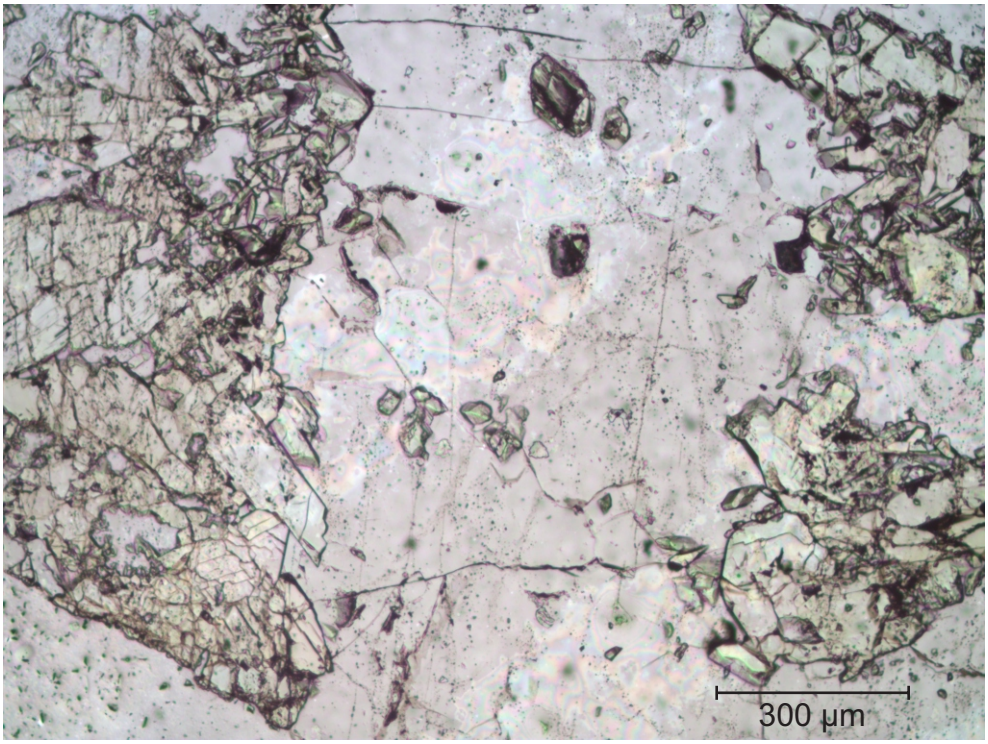


Figure 1-3A.23: Microphotograph. Sample 217.1M. Transmitted light, ppl, 4x. Epidote and Quartz are the dominant minerals. Granule from site 3. Epidote vein cut by quartz.

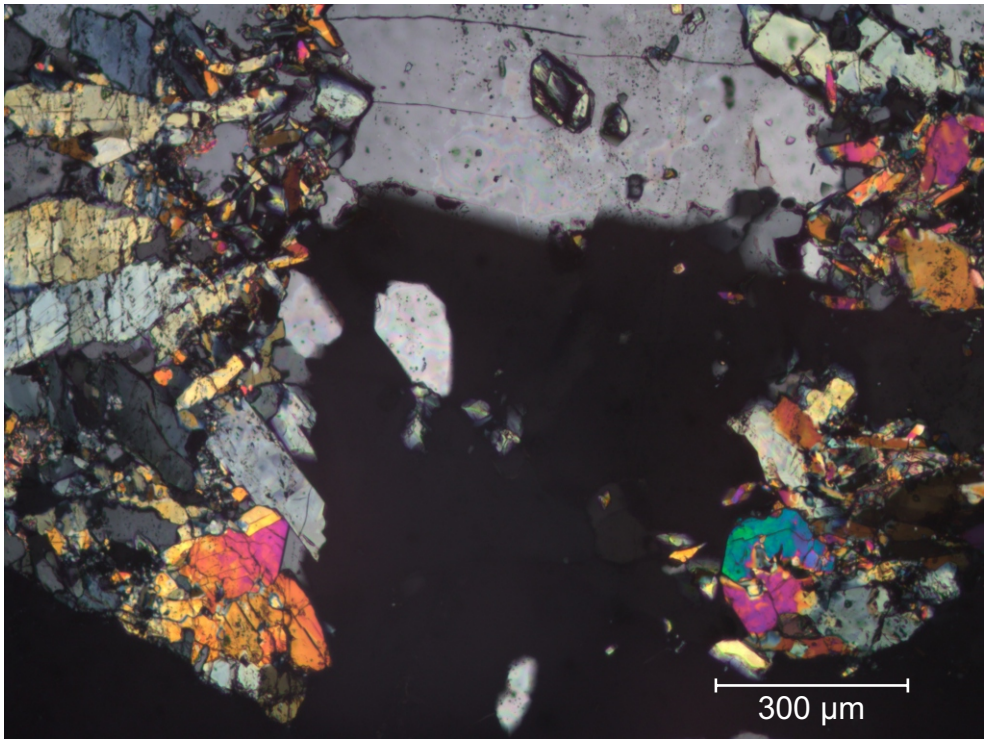


Figure 1-3A.24: Microphotograph. Sample 217.1M. Transmitted light, xpl, 4x. Granule from site 3.

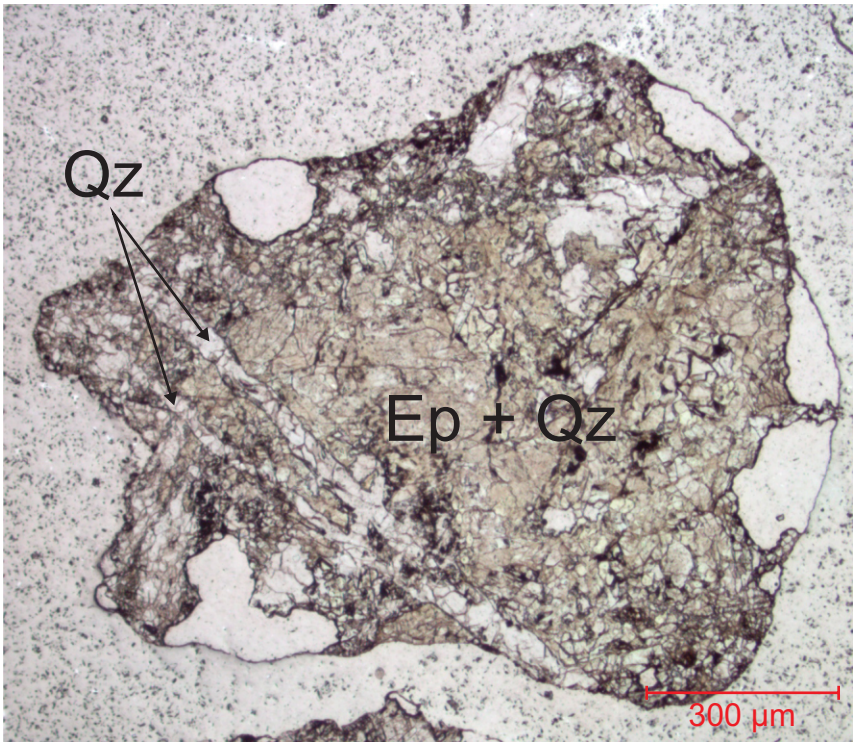


Figure 1-3A.25: Microphotograph. Sample 217.1M. Transmitted light, ppl, 4x. Epidote and quartz intergrowths, probably a quartz + epidote vein. This vein is cut by later quartz veinlets. Granule from site 4.

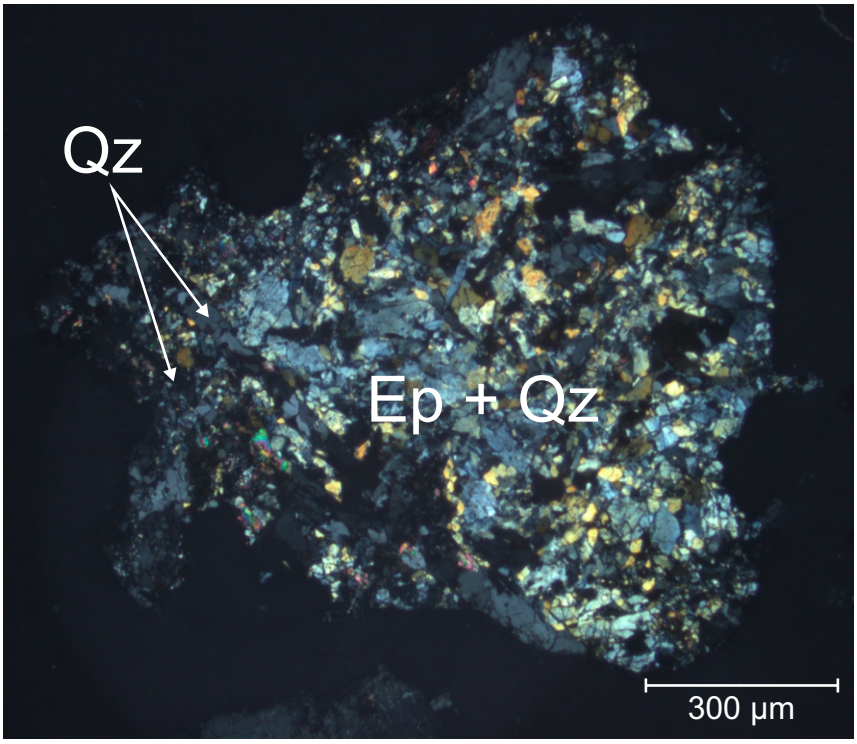


Figure 1-3A.26: Microphotograph. Sample 217.1M. Transmitted light, xpl, 4x. Granule from site 4.

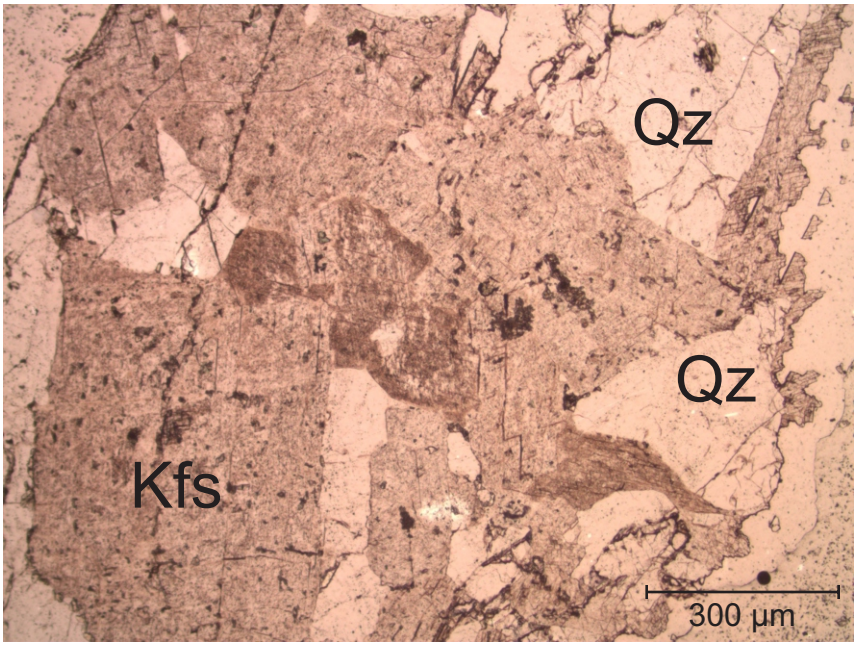


Figure 1-3A.27: Microphotograph. Sample 217.1M. Transmitted light, ppl, 4x. Granitoid Granule from site 5.

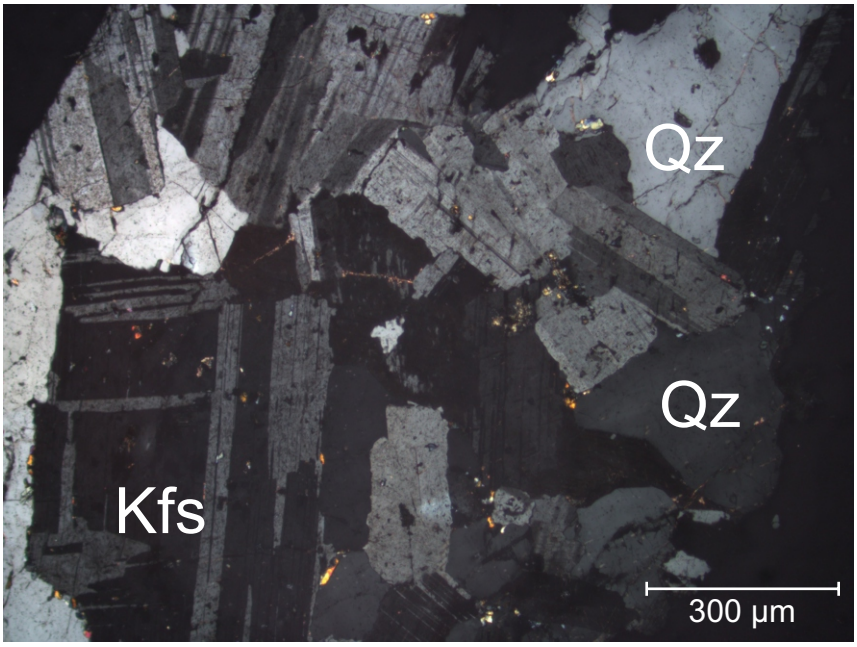


Figure 1-3A.28: Microphotograph. Sample 217.1M. Transmitted light, xpl, 4x. Granule from site 5.

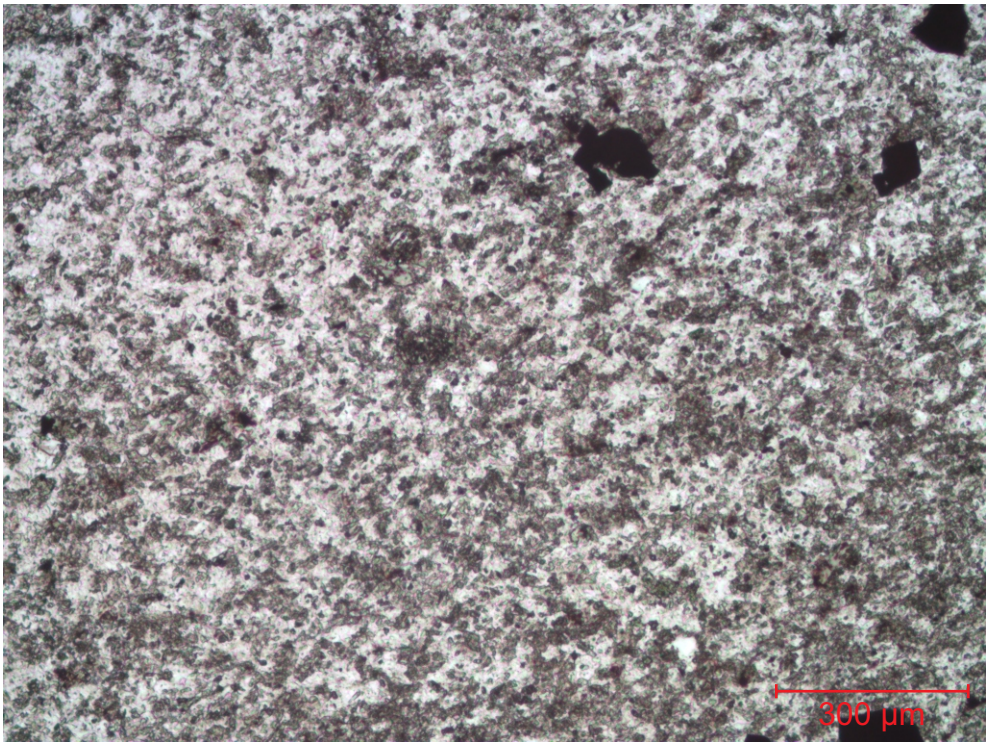


Figure 1-3A.29: Microphotograph. Sample 217.1M. Transmitted light, ppl, 4x. Fine grained extrusive volcanic (rhyolite). Granule from site 6.

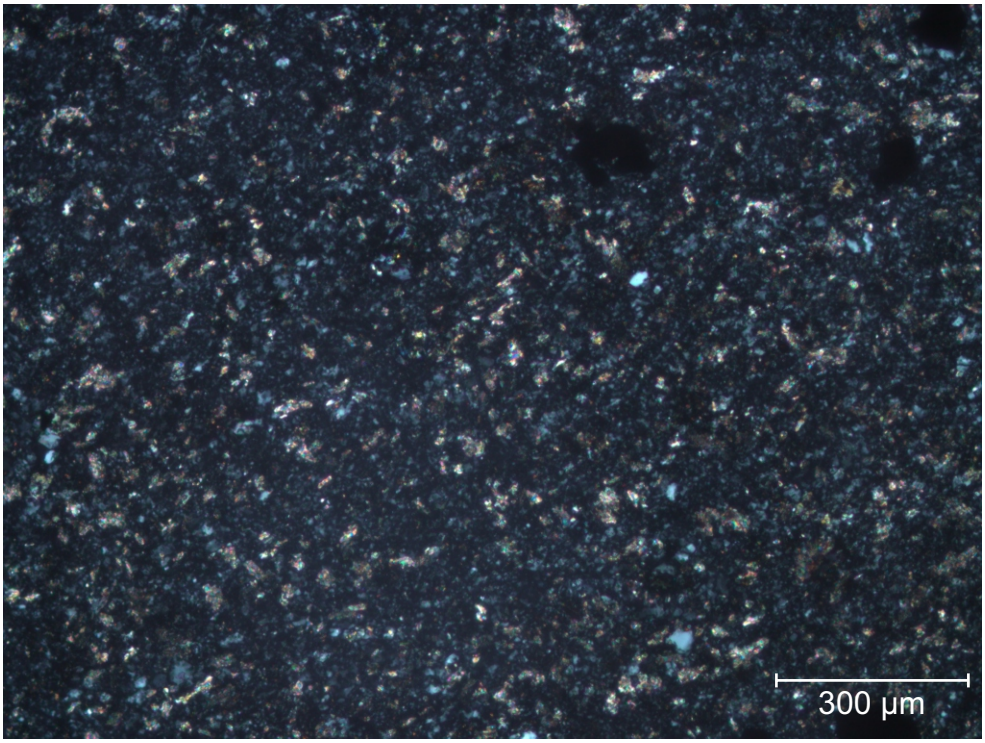


Figure 1-3A.30: Microphotograph. Sample 217.1M. Transmitted light, xpl, 4x. Granule from site 6.

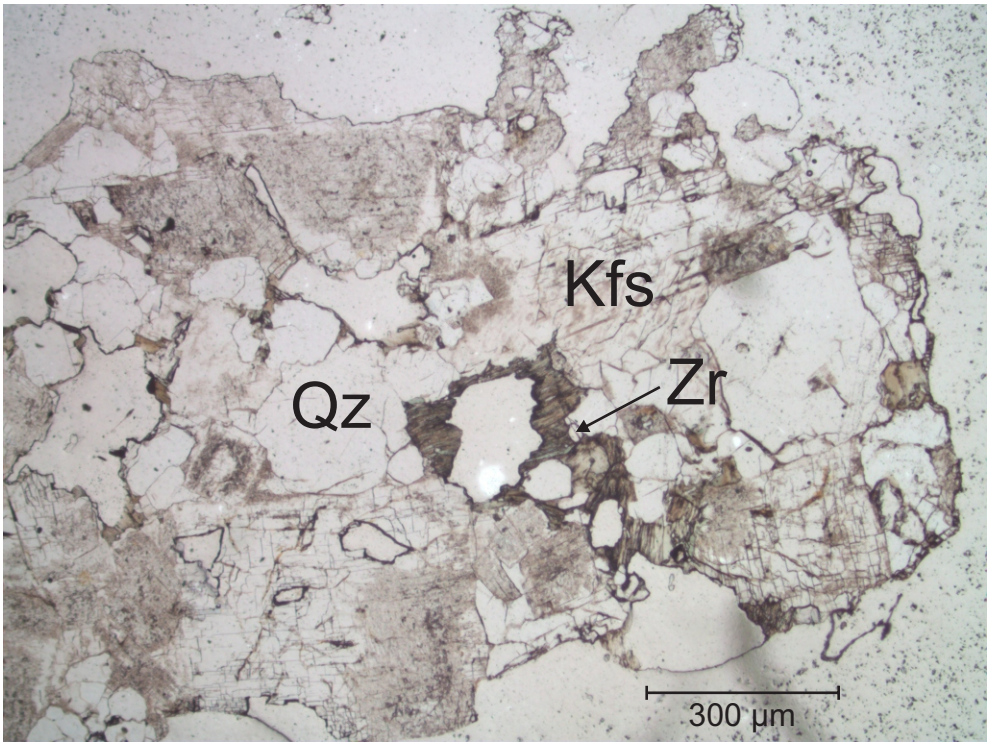


Figure 1-3A.31: Microphotograph. Sample 217.1M. Transmitted light, ppl, 4x. Granule from site 7. Granitoid.

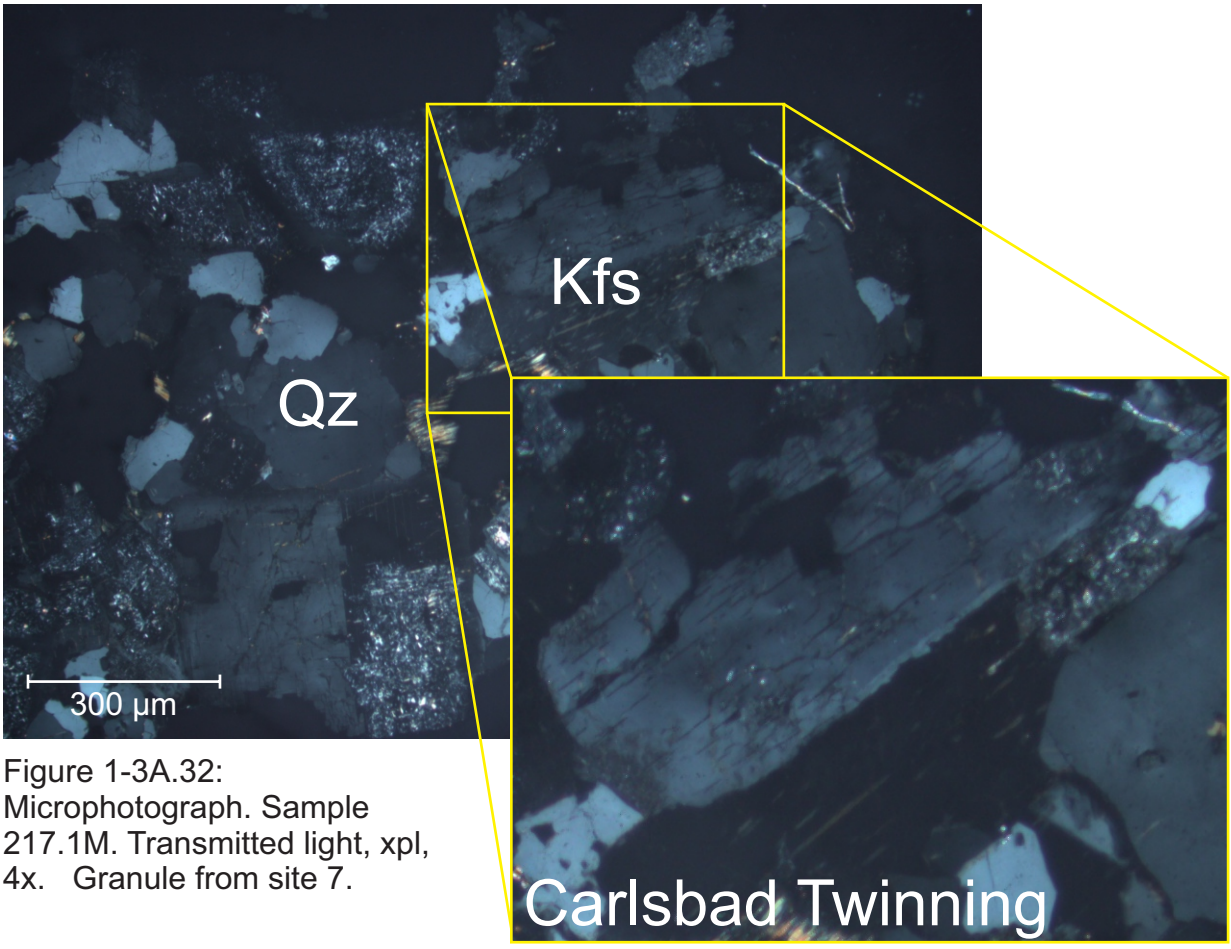


Figure 1-3A.32: Microphotograph. Sample 217.1M. Transmitted light, xpl, 4x. Granule from site 7.

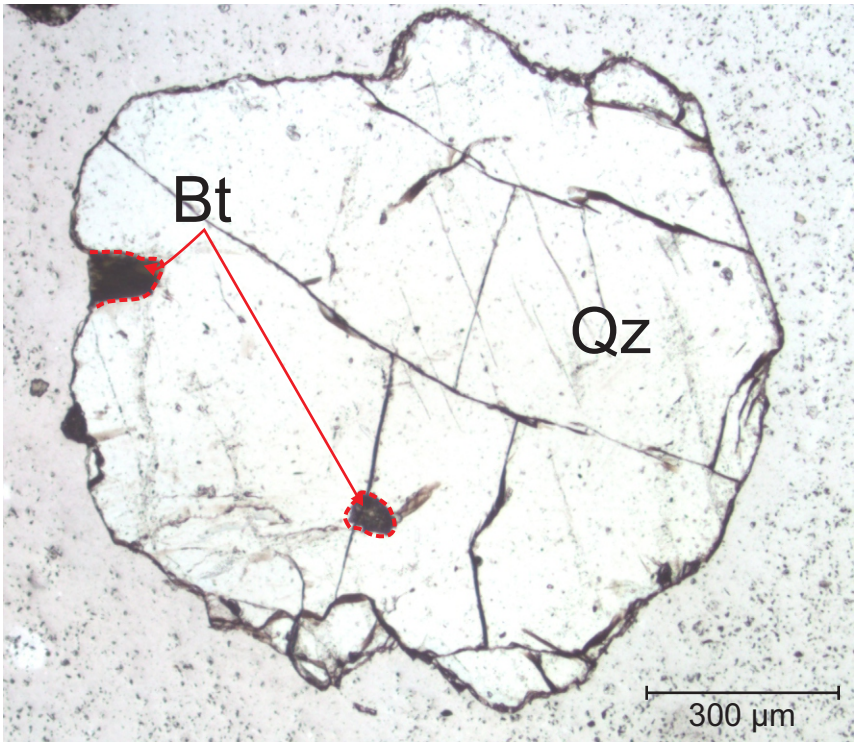


Figure 1-3A.33: Microphotograph. Sample 217.1M. Transmitted light, ppl, 4x. Granule made of fractured quartz crystals and minor biotite (red outline) indicating igneous rock. Granule from site 8.

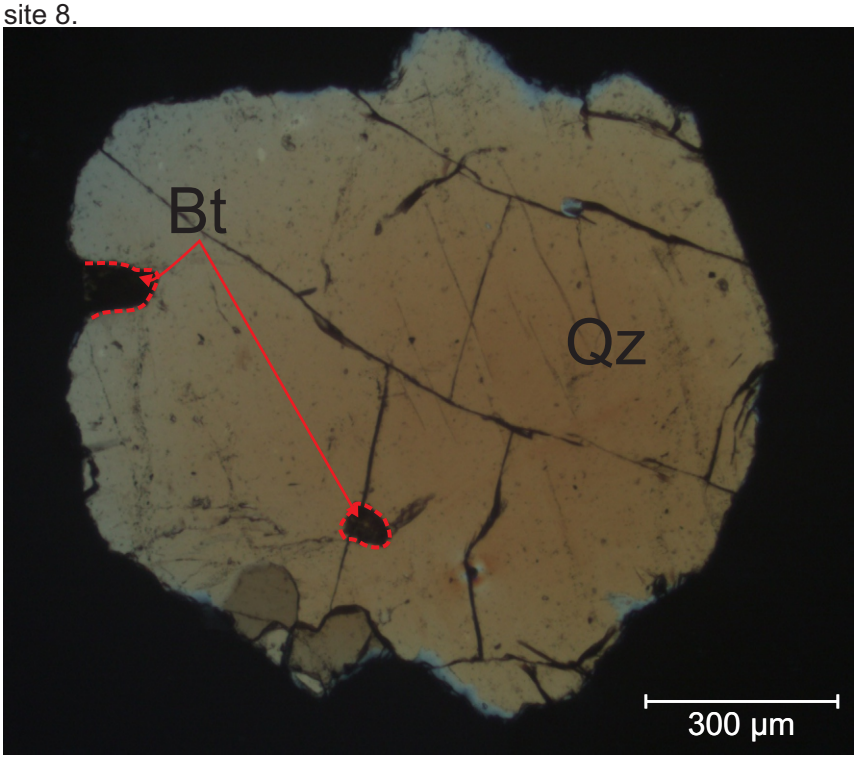


Figure 1-3A.34: Microphotograph. Sample 217.1M. Transmitted light, xpl, 4x. Granule from site 8.

Table 1-3A.1: Scanning electron microscope chemical analyses of Granules from Flemish Cap. (Sample 217.1M)

Sample	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	V2O5	NiO	ZnO	ZrO2	MoO3	BaO	La2O3	Ce2O3	Nd2O3	WO3	Total	Actual Total
37.209.1M	1	1	Kfs	65.89		17.67					0.39	16.05															100	119
37.209.1M	1	2	Qz	100.00																							100	124
37.209.1M	1	3	Kfs	58.85		27.47	0.60			1.07	6.34	5.68															100	114
37.209.1M	1	4	Kfs	65.95		17.71					0.41	15.93															100	104
37.209.1M	1	5	Chl +	36.70	2.22	13.02	12.35	0.96	1.20	9.31	0.86												7.82	12.99	2.57		100	87
37.209.1M	1	6	Chl	29.04		17.22	18.96	0.65	19.14																		85	94
37.209.1M	1	7	Ap				0.41			49.08			44.69		3.69	0.51										1.63	100	117
37.209.1M	1	8	Mag		0.38		99.07										0.55										100	91
37.209.1M	1	9	Mag		0.39		99.17										0.43										100	90
37.209.1M	1	10	Chl	28.56		17.90	19.36	0.68	18.50																		85	92
37.209.1M	1	11	Ttn	32.45	30.88	4.30	1.34			28.37			0.98		1.66												100	103
37.209.1M	1	12	Mag		0.43		99.57																				100	86
37.209.1M	1	13	Kfs	66.13		17.80					0.31	15.76															100	102
37.209.1M	1	14	Ep	42.55		19.58	13.53		1.30	20.03																	97	94
37.209.1M	1	15	Kfs	60.92		22.98	0.65				0.86	13.95										0.64					100	98
37.209.1M	1	16	Hbl	50.02	0.87	5.45	14.28	0.79	13.57	10.30	1.24	0.48															97	91
37.209.1M	1.1	1	Zr	31.29																68.71							100	117
37.209.1M	1.1	2	Ap +	1.91	1.75		0.44			47.84			42.56		3.08	0.83										1.59	100	121
37.209.1M	1.1	3	Ttn	33.80	34.30	2.21	2.34			27.36																	100	112
37.209.1M	1.1	4	Ttn	31.50	33.18	3.04	3.76		1.60	26.91																	100	107
37.209.1M	1.1	5	Chl	28.45		17.27	20.37	0.75	18.16																		85	99
37.209.1M	1.1	6	Kfs	63.69		17.85	2.36		1.28		0.28	14.54															100	114
37.209.1M	1.1	7	Kfs	66.20		17.77					0.26	15.77															100	114
37.209.1M	2	1	Py	0.14			27.56							71.34				0.97									100	227
37.209.1M	2	2	Ilm		50.67		39.62	9.71																			100	102
37.209.1M	2	3	Kfs	66.56		17.63						15.81															100	111
37.209.1M	2	4	Qz	99.79								0.21															100	114
37.209.1M	2	5	Ab + Qz	76.44		14.15				0.34	8.93	0.14															100	124
37.209.1M	2.1	1	Ab	66.77		20.26	0.26			1.51	10.51	0.69															100	119
37.209.1M	2.1	2	Ilm		52.33		36.05	11.13		0.49																	100	107
37.209.1M	2.1	3	Ttn	33.08	37.54	1.21	0.80			27.37																	100	111
37.209.1M	2.1	4	Kfs	67.43		16.96					0.33	14.58										0.71					100	116
37.209.1M	2.1	5	Kfs	68.76		16.34					0.37	14.53															100	116
37.209.1M	2.1	6	Ilm	1.17	50.52		37.20	9.92		1.20																	100	106
37.209.1M	2.1	7	Ttn + Kfs	42.40	27.72	5.13	0.96			21.06	0.67	2.07															100	108
37.209.1M	2.1	8	Ap +	2.06		0.55				46.77		0.74	42.18		6.13											1.57	100	124
37.209.1M	2.1	9	Kfs	66.17		17.63					0.56	15.15										0.48					100	117
37.209.1M	2.1	10	Qz	98.21		0.91						0.88															100	121
37.209.1M	3	1	Ep	39.55		22.54	12.01	0.63		22.27																	97	103
37.209.1M	3	2	Qz	100.00																							100	114
37.209.1M	3.1	1	Contaminant?	47.22	0.28	9.45		0.26	10.21	29.74	0.75	0.77		1.32													100	108
37.209.1M	3.1	2	Contaminant?	46.24	0.39	9.17		0.29	10.41	29.84	0.74	0.74									2.17						100	109
37.209.1M	3.1	3	Ep	41.10		22.11	11.41			22.39																	97	108
37.209.1M	3.1	4	Qz	100.00																							100	119
37.209.1M	3.1	5	Ep	40.24		22.62	11.42			22.72																	97	109
37.209.1M	3.1	6	Ep	40.09		22.84	11.39			22.68																	97	110
37.209.1M	3.1	7	Qz	100.00																							100	120

Table 1-3A.1: Scanning electron microscope chemical analyses of Granules from Flemish Cap. (Sample 217.1M)

Sample	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	V2O5	NiO	ZnO	ZrO2	MoO3	BaO	La2O3	Ce2O3	Nd2O3	WO3	Total	Actual Total
37.209.1M	3.1	8	Zr +	36.37		4.74			5.05	10.93		0.36		0.54	1.94	0.39			39.69								100	115
37.209.1M	3.2	1	Ep	40.04		21.82	12.73			22.40																	97	108
37.209.1M	3.2	2	Ep	40.04		22.07	12.12			22.78																	97	107
37.209.1M	3.2	3	Qz	100.00																							100	120
37.209.1M	3.2	4	Cal							56.00																	56	57
37.209.1M	3.2	5	Ep	39.55		22.64	11.63			23.18																	97	110
37.209.1M	3.2	6	Ep	39.99		22.32	11.92	0.68		22.09																	97	107
37.209.1M	4	1	Qz	100.00																							100	113
37.209.1M	4	2	Ep	39.84		22.55	11.84		1.17	21.59																	97	108
37.209.1M	4.1	1	Py	0.21			28.20			0.20				71.39													100	226
37.209.1M	4.1	2	Py +	6.49		1.37	26.89			1.45				63.34				0.47									100	187
37.209.1M	4.1	3	Ep	40.10		21.61	13.00			22.29																	97	108
37.209.1M	4.1	4	Qz	100.00																							100	118
37.209.1M	4.1	5	Ep	39.80	0.55	22.87	11.42	0.59		21.77																	97	109
37.209.1M	4.1	6	Qz	99.27		0.51					0.23																100	119
37.209.1M	4.1	7	Ep	40.04		22.15	12.53			22.27																	97	108
37.209.1M	5	1	Kfs	66.22		17.63					0.28	15.87															100	122
37.209.1M	5	2	Ep	39.43		21.96	12.63	0.34	0.54	22.10																	97	100
37.209.1M	5	3	Kfs	65.97		17.70					0.29	16.05															100	119
37.209.1M	5	4	Kfs	66.06		17.68					0.28	15.97															100	105
37.209.1M	5	5	Kfs	65.78		17.49					0.34	16.39															100	107
37.209.1M	5	6	Qz + Ab +	82.94		8.69	0.74			2.34	4.96					0.34											100	111
37.209.1M	5	7	Ab	69.60		18.87					11.54																100	84
37.209.1M	5	8	Kfs	65.88		17.53					0.27	15.80										0.51					100	86
37.209.1M	5	9	Ep	40.45		24.06	10.62	0.93		20.94																	97	90
37.209.1M	5.1	1	Chl	27.79		18.53	23.33	0.52	14.53		0.31																85	100
37.209.1M	5.1	2	Ttn	24.83	48.07	3.94	0.63			20.72					1.80												100	110
37.209.1M	5.1	3	Ap +	4.75		1.29				45.75	1.18		42.51		3.97	0.55											100	119
37.209.1M	5.1	4	Kfs	66.14		17.65					0.27	15.94															100	116
37.209.1M	5.1	5	Ab	69.68		18.84					11.49																100	117
37.209.1M	5.1	6	Ep	40.95		23.04	11.25			21.55		0.20															97	107
37.209.1M	5.1	7	Ep	40.95		23.02	10.74			21.93		0.36															97	107
37.209.1M	5.1	8	Kfs	65.97		17.79					0.27	15.97															100	113
37.209.1M	5.1	9	Ep	40.33		23.68	10.45			22.54																	97	108
37.209.1M	5.1	10	Ab	69.91		18.78					11.30																100	114
37.209.1M	6	1	Py	1.29	0.70	0.19	28.18			0.75				68.89													100	225
37.209.1M	6	2	Py	0.22			28.70							71.08													100	206
37.209.1M	6	3	Py	1.08	0.66		28.26			0.63				69.36													100	231
37.209.1M	6	4	Qz + Ab	92.79		4.82				0.88	1.36	0.15															100	115
37.209.1M	6.1	1	Cpx	51.58		1.35	16.49	1.84	6.90	20.96				0.88													100	113
37.209.1M	6.1	2	Py				28.80							71.20													100	229
37.209.1M	6.1	3	Py	0.19			28.72							71.10													100	231
37.209.1M	6.1	4	Py	0.21			28.63							71.16													100	227
37.209.1M	6.1	5	Kfs	65.94		17.93	0.21				0.31	15.62															100	114
37.209.1M	6.1	6	Ab	67.61		20.24	0.22			3.77	7.67	0.50															100	120
37.209.1M	6.1	7	Act	52.01		4.07	19.12	1.40	8.64	10.66	0.50	0.60															97	112
37.209.1M	7	1	Qz	100.00																							100	122

Table 1-3A.1: Scanning electron microscope chemical analyses of Granules from Flemish Cap. (Sample 217.1M)

Sample	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	V2O5	NiO	ZnO	ZrO2	MoO3	BaO	La2O3	Ce2O3	Nd2O3	WO3	Total	Actual Total
37.209.1M	7	2	Kfs	66.51		17.70					1.86	13.92															100	110
37.209.1M	7	3	Zr	38.92																61.08							100	118
37.209.1M	7.1	1	Zr	31.17																68.83							100	121
37.209.1M	7.1	2	Kfs	66.37		17.46					0.29	15.88															100	117
37.209.1M	7.1	3	Adr (Gt)	38.14	1.99	7.31	17.93	0.42		34.22																	100	105
37.209.1M	7.1	4	Ap +	10.47			0.28			45.56			41.00		2.06	0.63											100	119
37.209.1M	7.1	5	Ap				0.33			48.46			45.10		3.77	0.69										1.65	100	125
37.209.1M	7.1	6	Bt +	36.56	3.73	16.06	24.27	0.55	13.89	1.46		3.48															100	103
37.209.1M	7.1	7	Chl	39.30		9.08	11.40	0.37	24.10	0.76																	85	95
37.209.1M	7.1	8	Qz	100.00																							100	121
37.209.1M	7.1	9	Qz	100.00																							100	122
37.209.1M	7.1	10	Chl	29.18	1.27	15.26	22.98	0.63	14.43	1.09		0.16															85	101
37.209.1M	7.1	11	Bt +	36.82	3.59	15.95	24.09	0.66	14.34	0.41		3.97				0.18											100	104
37.209.1M	7.1	12	Ap	0.42						49.21			44.82		3.17	0.92										1.47	100	123
37.209.1M	8.1	1	Bt	39.34	2.02	15.63	17.32	0.27	11.93			9.50															96	109
37.209.1M	8.1	2	Bt	31.95	1.34	12.15	34.50	0.28	9.73			6.06															96	118
37.209.1M	8.1	3	Bt	33.14	1.56	12.27	32.12	0.30	9.54			7.07															96	110
37.209.1M	8.1	4	Bt	39.35	2.22	15.38	17.44		11.77			9.84															96	106
37.209.1M	8.1	5	Qz	100.00																							100	120
37.209.1M	8.1	6	Qz	97.18		0.71	0.26		0.44			0.14			1.28												100	206
			Notes																									
			"+" indicates more than one mineral present																									

Appendix 1-4A: SEM-BSE images for Flemish Cap Granules with EDS Mineral Analyses and Microphotographs
Sample 2008061-216.1L

Flemish Cap Sample 216.1L Lithology Summary Notes

Granule 1 (Sites 1, 1.1, 1.2) Microphotographs: Figures NoneHolocrystalline granitic rock. May have been altered. Contains some magnetite. K-feldspar, albite, and quartz make up the dominant minerals.
Chlorite and minor apatite are present in what seems to have been an altered grain (Fig. 3). The crystal also contains bright exsolution lamellae.

Granule 2 (Sites 2, 2.1, 2.2, 2.3) Microphotographs: Figures 1-4A.48, 49
Composed of larger crystals lacking quartz. More dominant are epidote, albite, and K-feldspar. Albite and epidote seem to be intergrown. There is chlorite present that may be a result of alteration. Zircon is present as well as magnetite. Titanite occurs in the chlorite masses and in epidote.

Granule 3 (Sites 3, 3.1) Microphotographs: Figures None
Igneous rock maybe alkali granite. Composed of albite, chlorite, apatite, and some quartz. Ti-magnetite, TiO_2, and apatite appear to be associated with chlorite. The dominant mineral in the Granule is albite. Muscovite is present in lesser amounts.

Granule 4 (Sites 4, 4.1, 4.2) Microphotographs: Figures None
Fine-grained rock made of albite and K-feldspar that show interlocking texture. There is some apatite, muscovite, and TiO_2 present but in lesser amounts and tend to occur together. This may be a rock that was subject to low grade metamorphism or a fine-grained igneous rock.

Granule 5 (Sites 5, 5.1, 5.2) Microphotographs: Figures None
Probably epidosite. Very porous rock composed almost entirely of epidote, at least >90%. Other minerals present are albite, chlorite, minor K-feldspar, and very minor calcite.

Granule 6 (Sites 6, 6.1, 6.2) Microphotographs: Figures NoneHolocrystalline granitic rock. Composed of large quartz, interstitial K-feldspar crystals in places, with large amounts of chlorite showing fabric (Fig. 18).Zircon is also present.

Granule 7 (Sites 7, 7.1) Microphotographs: Figures None
Fine-grained rhyolite, composed of K-feldspar, quartz, and albite. Some chlorite alteration seems to be present.

Flemish Cap Sample 216.1L Lithology Summary Notes

Granule 8 (Sites 8, 8.1) Microphotographs: Figures 1-4A.50, 51Holocrystalline igneous rock. The main minerals are quartz, albite, and epidote. There is lesser amounts of muscovite, and titanite.

Granule 9 (Sites 9, 9.1, 9.2) Microphotographs: Figures None
Likely an igneous rock. Composed of quartz, albite, and K-feldspar as the main mineral assemblage. Minor titanite, magnetite, muscovite, and apatite are present. Very small specs of chalcopyrite are present.

Granule 10 (Sites 10, 10.1, 10.2) Microphotographs: Figures None
Igneous rock, granite. Composed of K-feldspar, quartz, and albite. Large amount of chlorite probably derived from alteration. Minor magnetite and zircon are present.

Granule 11 (Sites 11, 11.1) Microphotographs: Figures 1-4A.52, 53, 54, 55
Epidosite. Fine-grained composed of epidote and quartz with minor albite, chlorite, and minor calcite.

Granule 12 (Sites 12, 12.1, 12.2, 12.3, 12.3, 12.4, 12.5) Microphotographs: Figures None
Probably a piece of a quartz epidote vein.

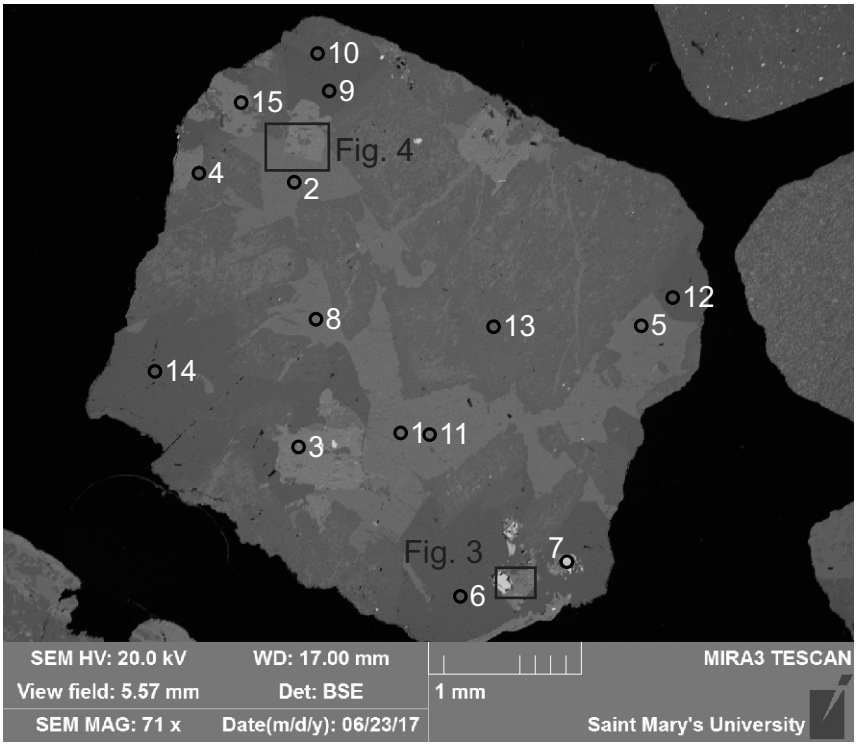
Granule 13 (Sites 13, 13.1) Microphotographs: Figures None
Fine-grained rock. Quartz, andesine, and K-feldspar making up most of the Granule. Some well preserved crystals of epidote, apatite, and Ti-magnetite are present.

Granule 14 (Sites 14, 14.1, 14.2) Microphotographs: Figures None
Very fine-grained rock with possible fabric (Fig. 1-4A.41). Mainly composed of quartz and K-feldspar, with some muscovite, magnetite, and epidote.

Granule 15 (Sites 15, 15.1) Microphotographs: Figures None
Common magnetite throughout the Granule. Quartz grains and oligoclase make up most of the Granule with larger scattered grains of epidote andapatite.

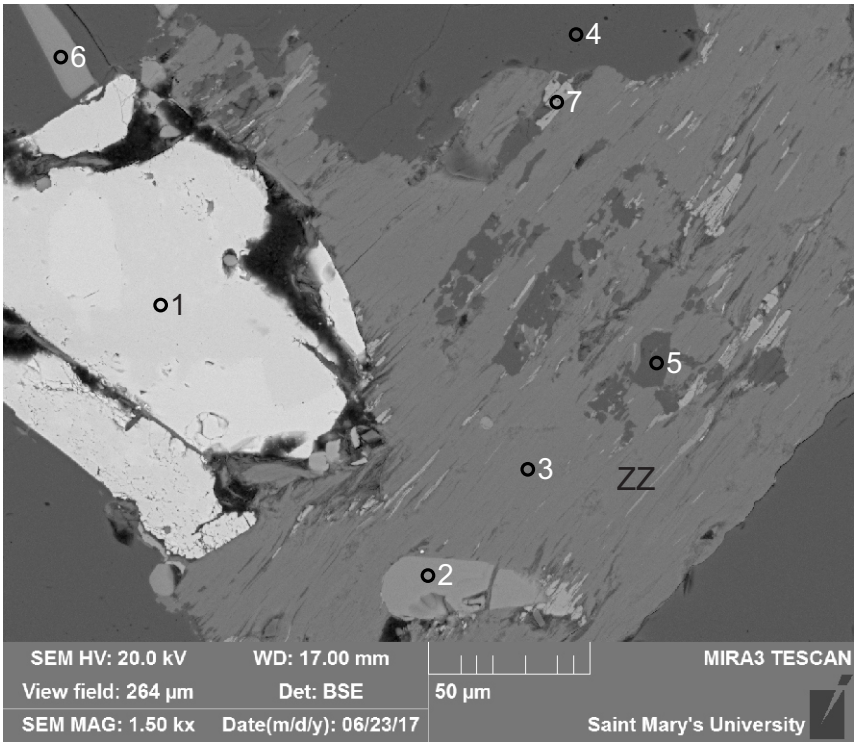
Granule 16 (Sites 16, 16.1, 16.2) Microphotographs: Figures None
Fine-grained rock composed of quartz, epiodote, and albite. The epidote is riddled with quartz and albite relics. This is likely to be epidosite that may have formed in a slightly different environment than the previous two Granules named epidosite. To note, there was a chalcopyrite grain analyzed in this Granule but none found in the previous epidosite Granules.

Figure 1-4A.1: Scanned thin section of Flemish Cap sample 216.1L. Granules are numbered in red corresponding to analysed sites.



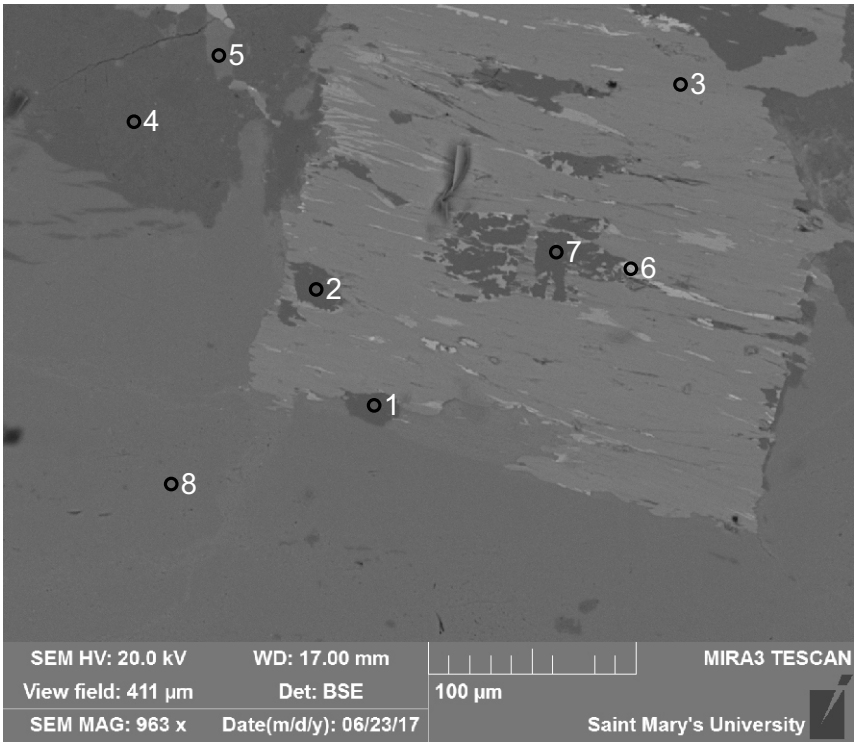
1:K-Feldspar
2:K-Feldspar
3:Chlorite + TiO_2
4:Chlorite
5:K-Feldspar
6:Quartz
7:Magnetite
8:K-Feldspar
9:Quartz
10:Albite
11:K-Feldspar
12:Quartz
13:Albite
14:Quartz
15:Chlorite

Figure 1-4A.2: Sample 216.1L site 1. Holocrystalline granitoid rock that has been altered. Mainly composed of K-Feldspar (1, 2, 11), albite (10, 13), and quartz (6).



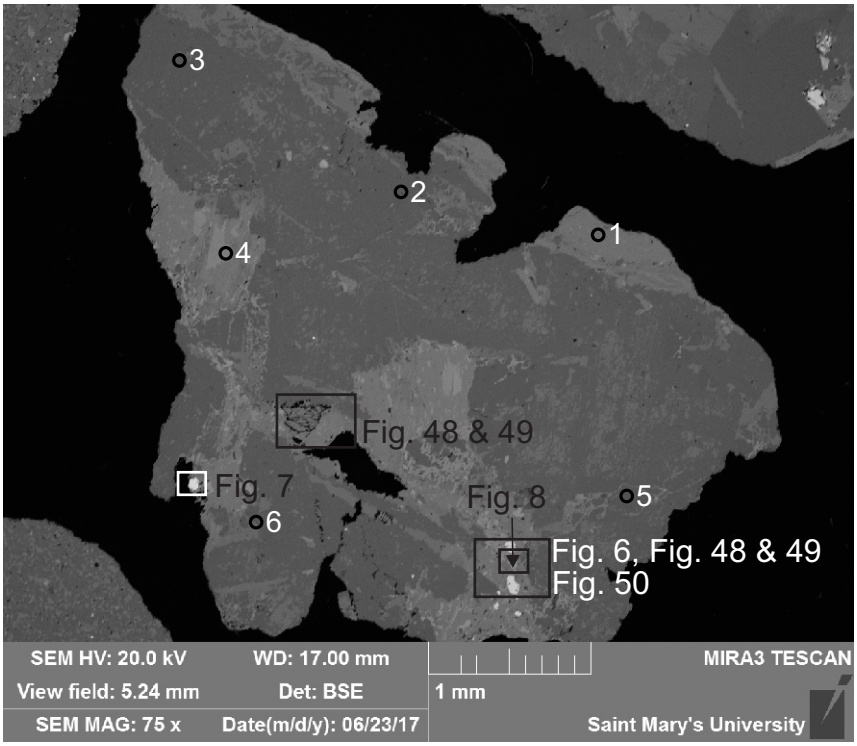
1:Magnetite
2:Apatite
3:Chlorite
4:Quartz
5:Quartz
6:Apatite
7:TiO_2

Figure 1-4A.3: Sample 216.1L site 1.1. Contains magnetite (1) K-feldspar, albite, and quartz (4 & 5) make up the dominant minerals. Chlorite and lesser apatite are present in what seems to have been an altered grain with originally bright exsolution lamellae (ZZ).



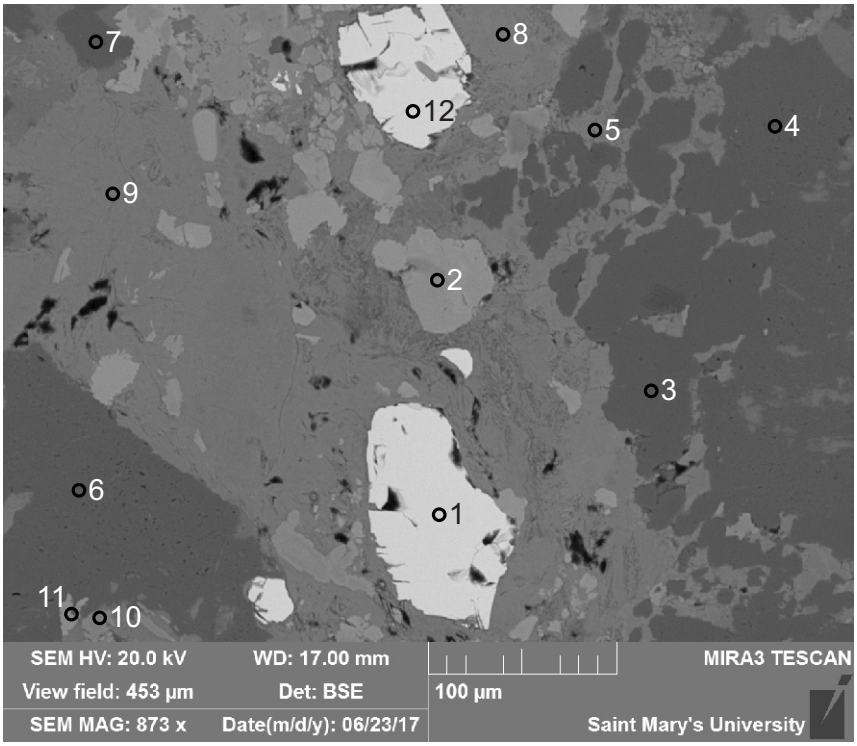
1:Quartz
2:Quartz
3:Chlorite + TiO_2
4:Albite
5:K-Feldspar
6:Ilmenite +
7:Quartz
8:K-Feldspar

Figure 1-4A.4: Sample 216.1L site 1.2. This site contains an altered to chlorite mineral grain (3). This grain also contains quartz inclusions (1, 2, 7), and ilmenite (6) irregular patches in some orientation.



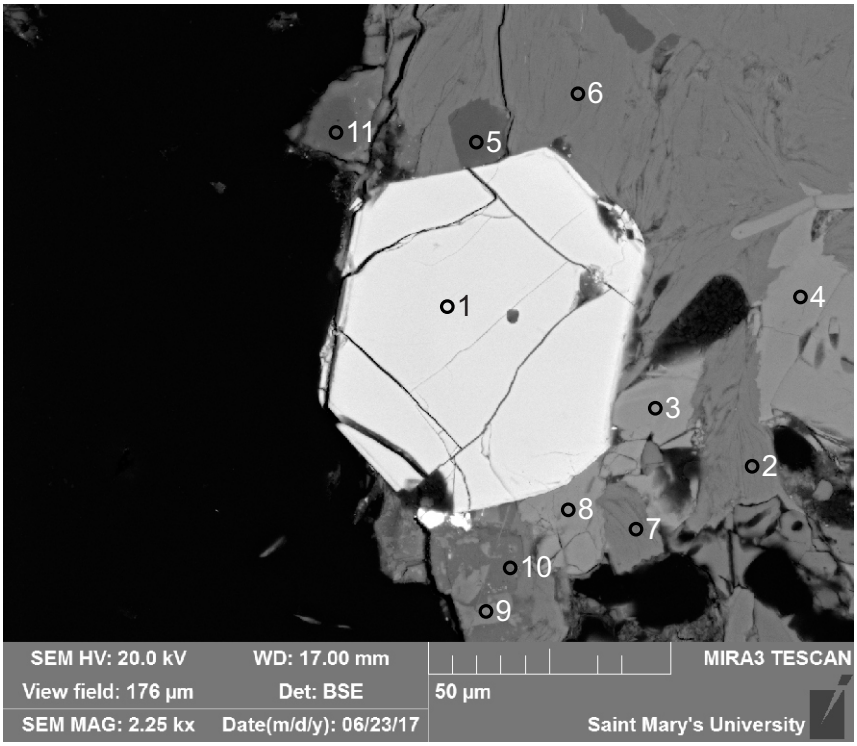
1:Epidote +
2:Albite
3:Albite
4:Epidote
5:Albite
6:K-Feldspar

Figure 1-4A.5: Sample 216.1L site 2. This site is composed of larger crystals than other Granules and lacks quartz. More dominant minerals are epidote (4), albite (2, 3, & 5), and K-feldspar (6). Albite and epidote seem to be intergrown. Granitoid.



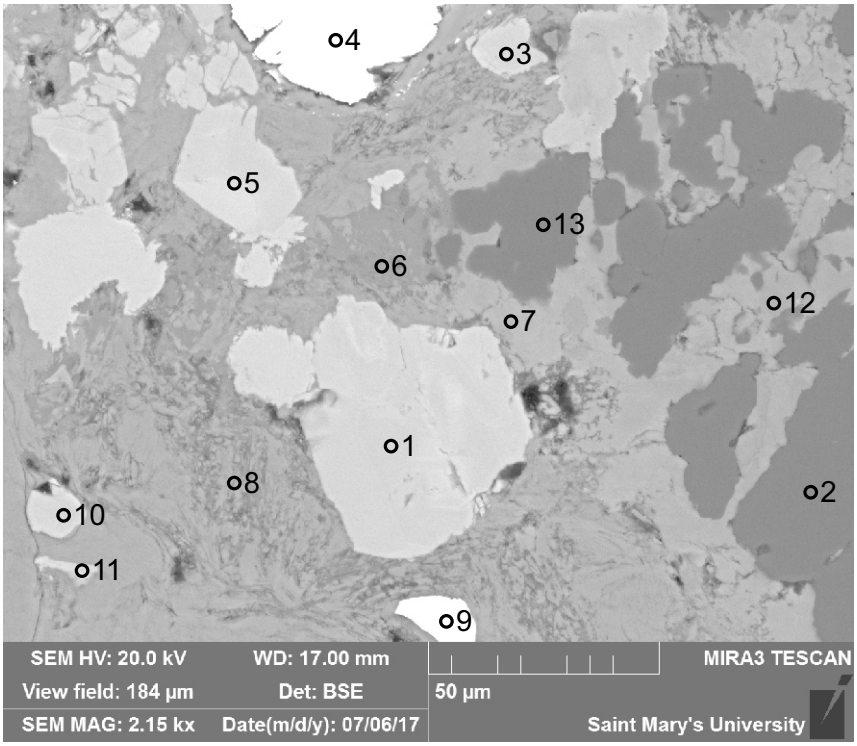
1:Magnetite
2:Titanite
3:Quartz
4:Albite
5:Epidote
6:Albite
7:Albite
8:Epidote
9:Chlorite
10:Actinolite
11:Titanite
12:Magnetite

Figure 1-4A.6: Sample 216.1L site 2.1. Epidotized granitoid rock. This site consists of epidote (5, 8), quartz (3), albite (4,6-7), chlorite (9) and minor amounts of Fe-oxides (1, 12), titanite (11), and actinolite (10).



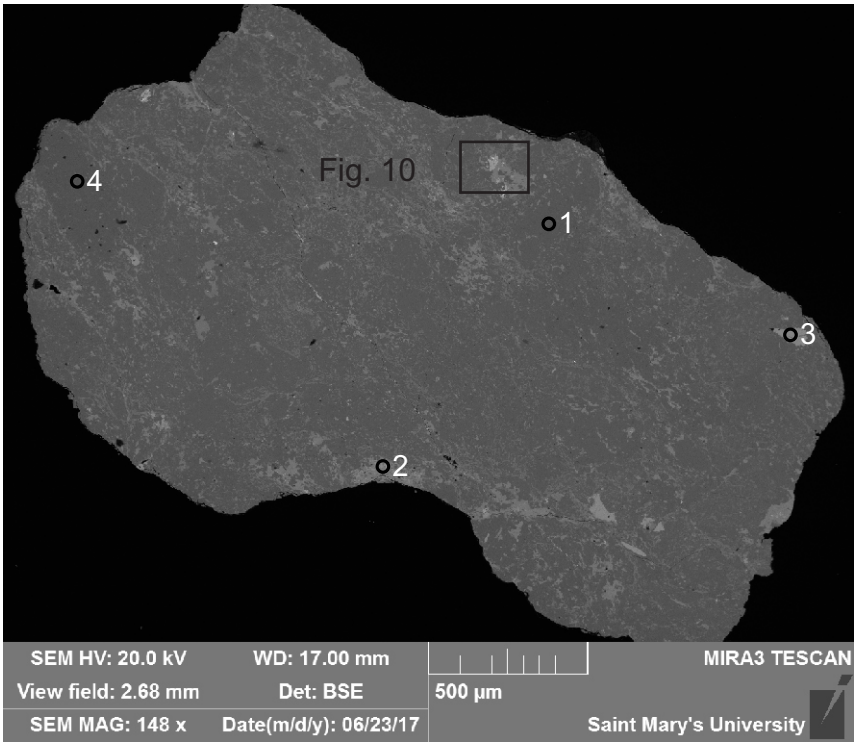
1:Zircon
2:Chlorite
3:Titanite
4:Titanite
5:Albite
6:Chlorite
7:Chlorite
8:Titanite
9:Epidote
10:K-Feldspar
11:Albite

Figure 1-4A.7: Sample 216.1L site 2.2. This site consists of a large zircon (1) crystal surrounded by similar mineral assemblage as in previous site with more titanite (3-4, 8) present.



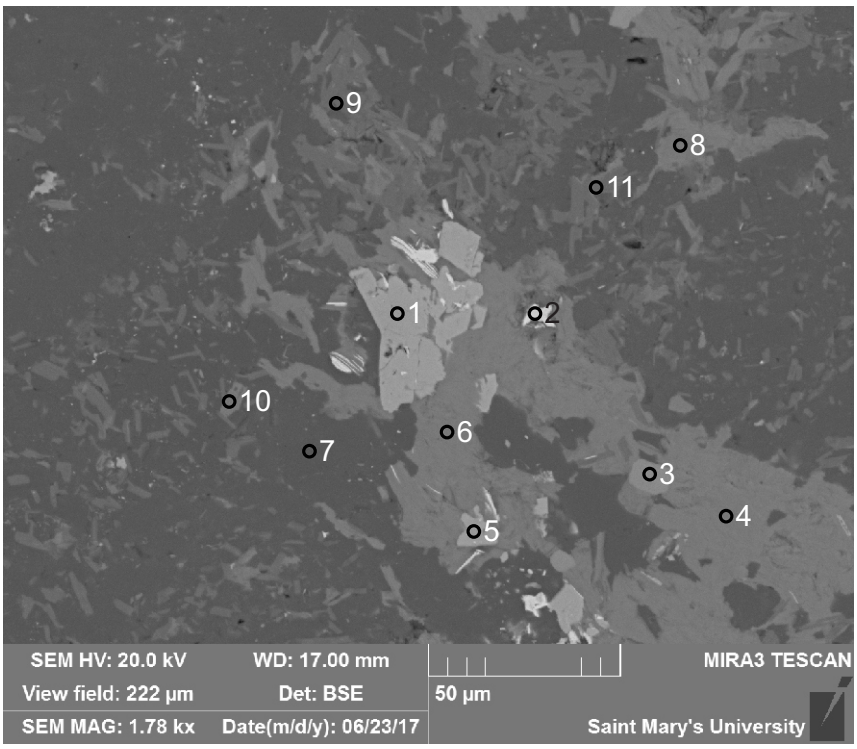
1:Titanite +
2:Quartz
3:Titanite +
4:Magnetite
5:Titanite
6:K-Feldspar
7:Epidote
8:Epidote
9:Magnetite
10:Titanite +
11:Titanite +
12:Epidote
13:Quartz

Figure 1-4A.8: Sample 216.1L site 2.3. Similar site to previous sites 2.1 & 2.2, but with much more epidote (7, 8, 12) and titanite (1, 3, 5, 10, 11).



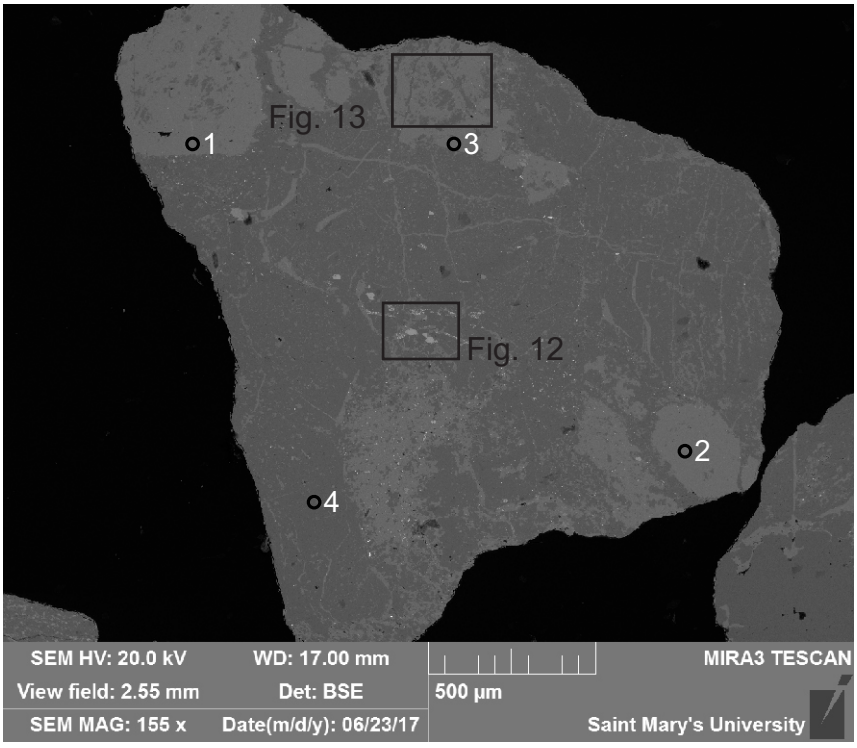
1:Albite
2:Chlorite
3:Apatite
4:Quartz

Figure 1-4A.9: Sample 216.1L site 3. Metaigneous rock ? Dominant minerals are albite (1) and chlorite (2).



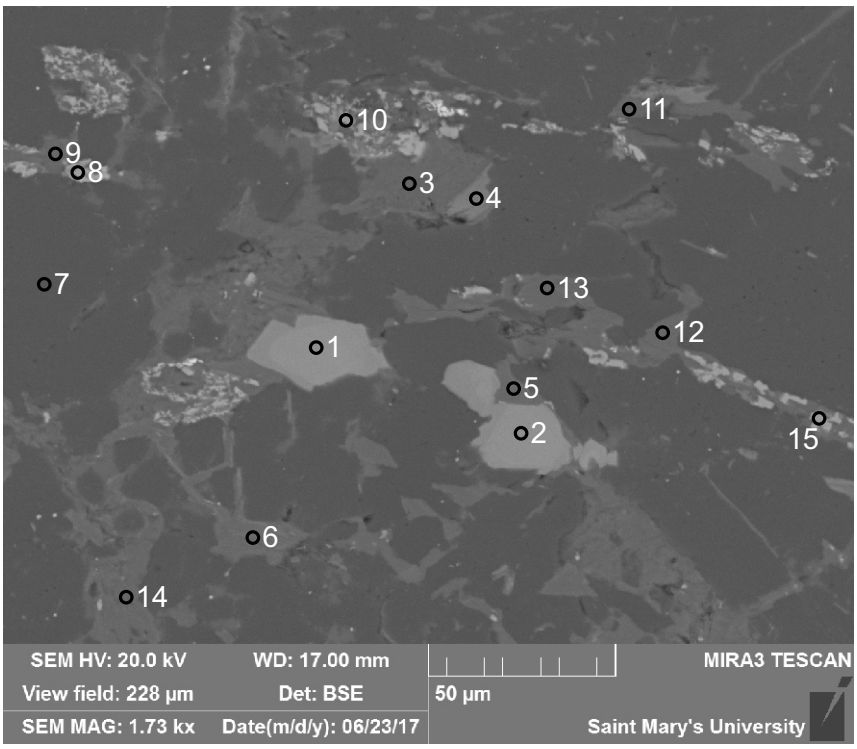
1:TiO_2
2:Ti-Mag
3:Apatite
4:Chlorite
5:TiO_2 +
6:Chlorite
7:Albite
8:Chlorite
9:Muscovite
10:Chlorite
11:Muscovite

Figure 1-4A.10: Sample 216.1L site 3.1. Chlorite (10) is possibly replacing albite (7) as a result of alteration.



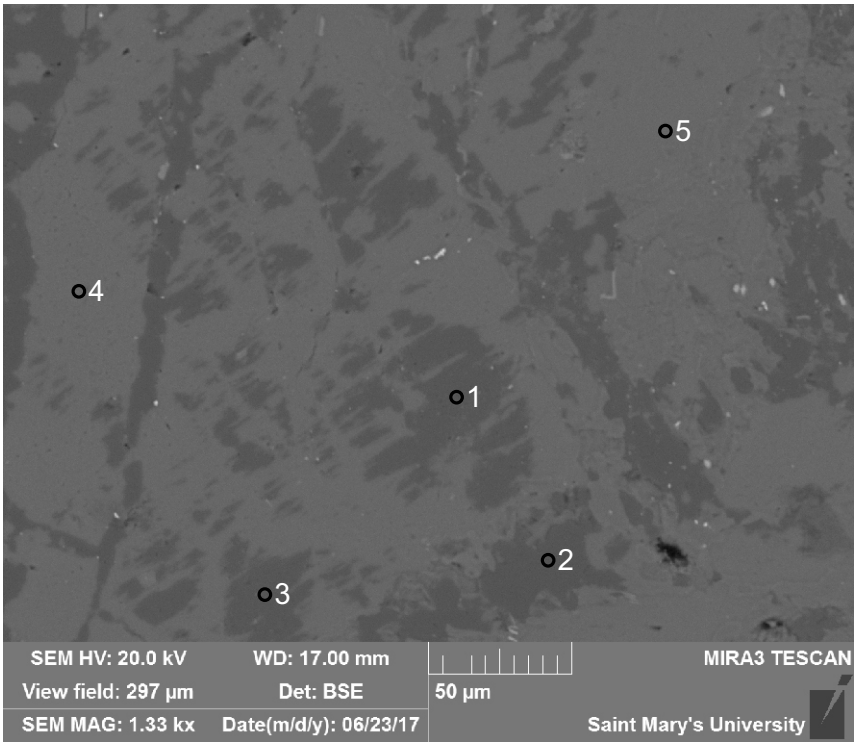
1:K-Feldspar
2:K-Feldspar
3:K-Feldspar
4:Albite

Figure 1-4A.11: Sample 216.1L site 4. Altered igneous rock. Composed of mainly K-Feldspar (1-3) and albite (4).



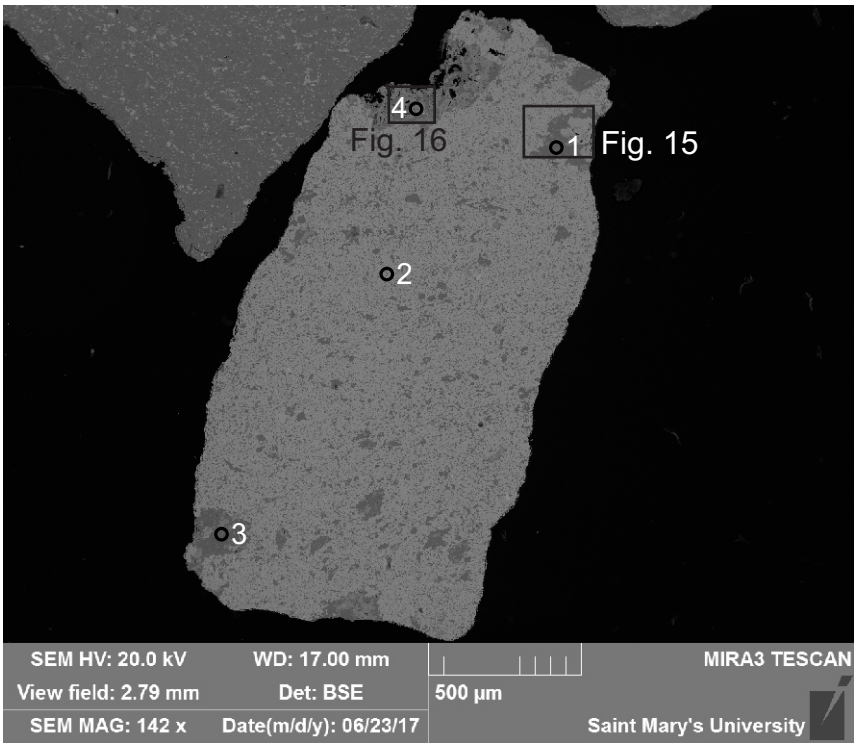
1:Apatite
2:Apatite
3:Muscovite
4:Chlorite
5:Muscovite
6:Muscovite
7:Albite
8:TiO_2
9:K-Feldspar
10:TiO_2
11:Muscovite
12:Muscovite
13:Muscovite
14:Muscovite
15:TiO_2 +

Figure 1-4A.12: Sample 216.1L site 4.1. This site consists of apatite (1, 2), muscovite (3, 5-6, 9, 12-14), chlorite (4) (likely alteration product), minor K-Feldspar (11), and late TiO_2 (8, 10).



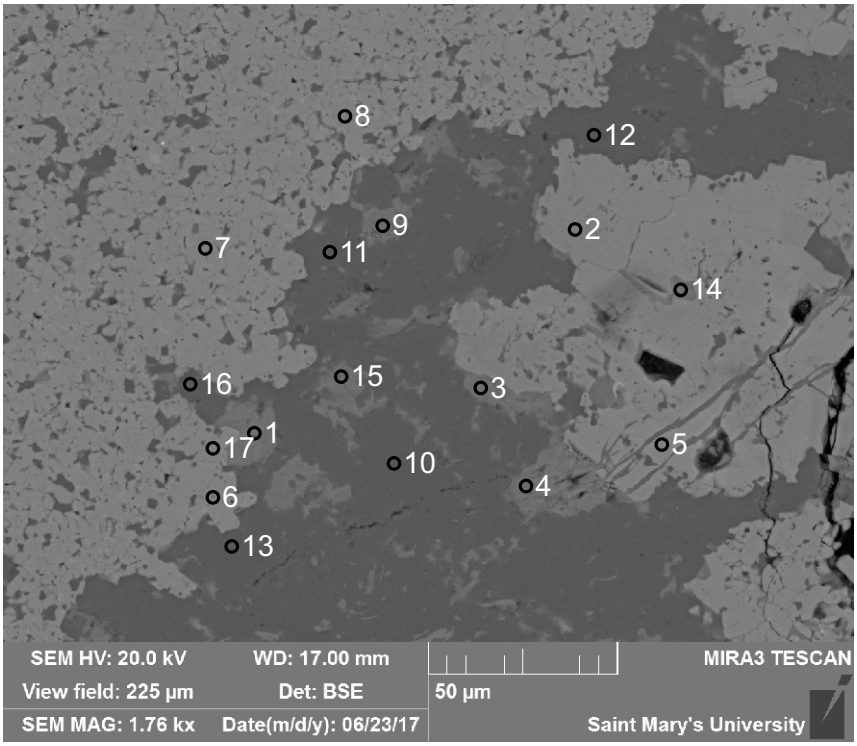
1:Albite
2:Quartz +
3:Albite
4:K-Feldspar
5:K-Feldspar

Figure 1-4A.13: Sample 216.1L site 4.2. This site consists of quartz (2), albite (1, 3) and K-Feldspar (4-5), all intergrown. It is probably a deformed igneous rock.



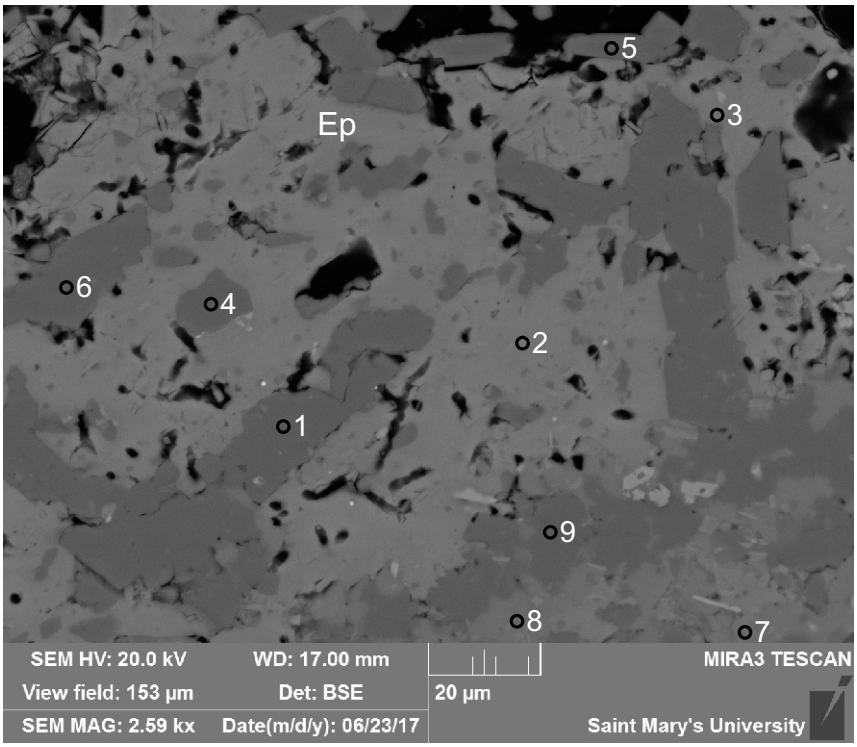
1:Albite
2:Epidote +
3:Albite
4:Calcite +

Figure 1-4A.14: Sample 216.1L site 5. Probably metamorphic rock, epidosite. Very porous rock composed mostly of epidote (at least 90%).



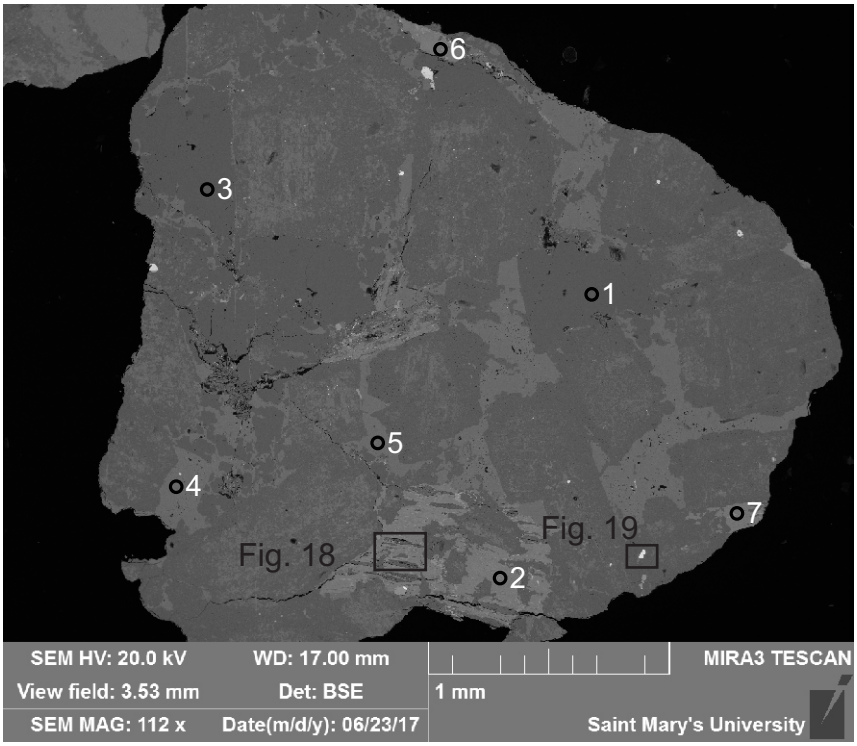
1:Chlorite
2:Epidote
3:Chlorite
4:Chlorite
5:Epidote
6:Epidote
7:Epidote
8:Epidote
9:Chlorite
10:Albite
11:Albite
12:Albite
13:Albite
14:Chlorite
15:Chlorite
16:Albite
17:Epidote

Figure 1-4A.15: Sample 216.1L site 5.1. Mineral in lesser abundance include albite (10-13, & 16), and chlorite (3 & 4).



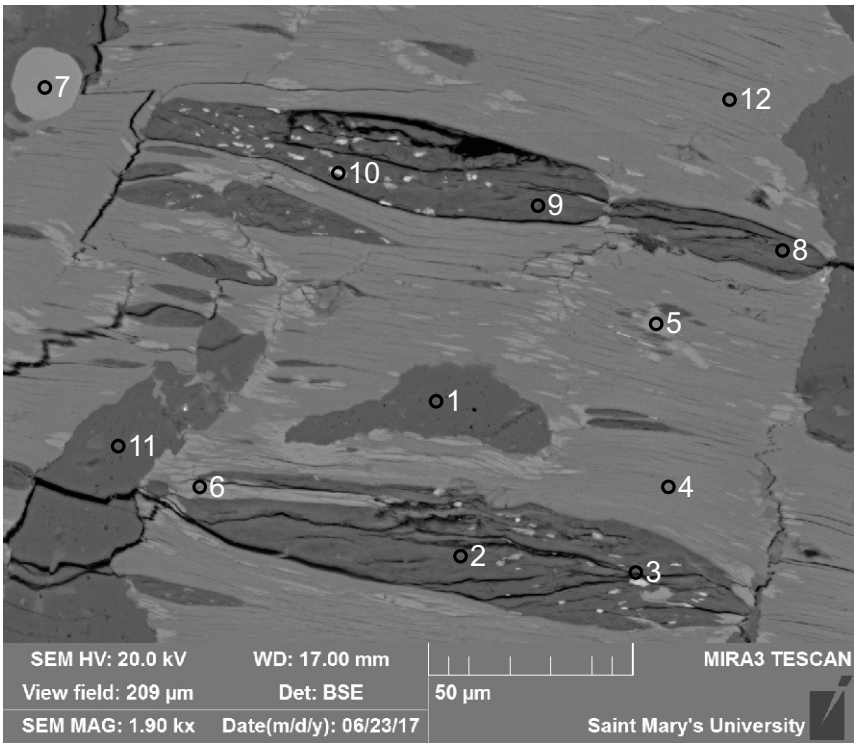
1:Albite
2:Calcite + Chlorite
3:Calcite + Chlorite
4:Albite
5:Albite
6:Albite
7:K-Feldspar
8:K-Feldspar
9:Albite

Figure 1-4A.16: Sample 216.1L site 5.2. This site consists of epidote, albite (1, 4, 5, 6, 9) and minor K-feldspar (7, 8) and calcite + chlorite (2, 3).



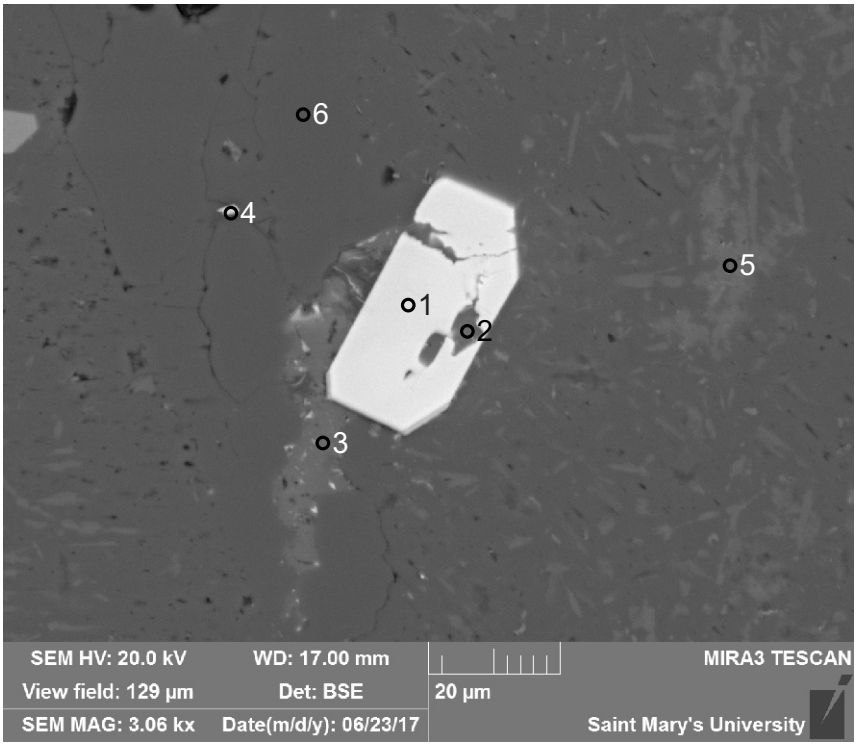
1:Quartz
2:Chlorite
3:Quartz
4:K-Feldspar
5:K-Feldspar
6:Chlorite
7:Chlorite

Figure 1-4A.17: Sample 216.1L site 6. Holocrystalline felsic rock, composed of large quartz (1, 3), K-feldspar (4-5), and chlorite (2, 6-7).



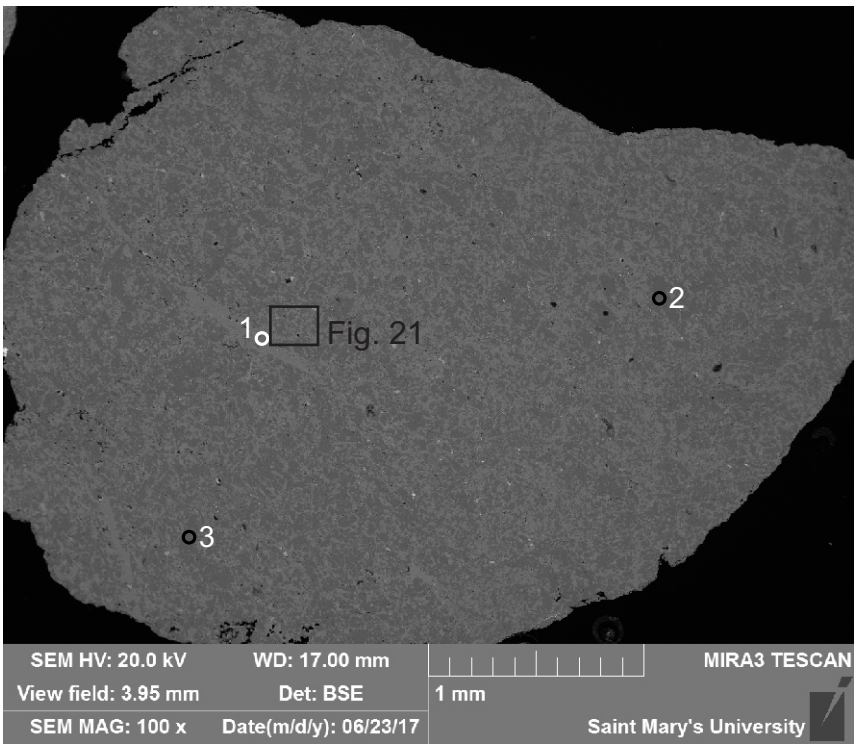
1:Albite
2:?
3:Pyrite +
4:Chlorite +
5:Titanite +
6:Titanite + Chlorite
7:Apatite
8:?
9:?
10:Pyrite + other
11:Albite
12:Chlorite

Figure 1-4A.18: Sample 216.1L site 6.1. Large amounts of chlorite that contain interesting textures, probably replacing relatively large ferromagnesian crystals.



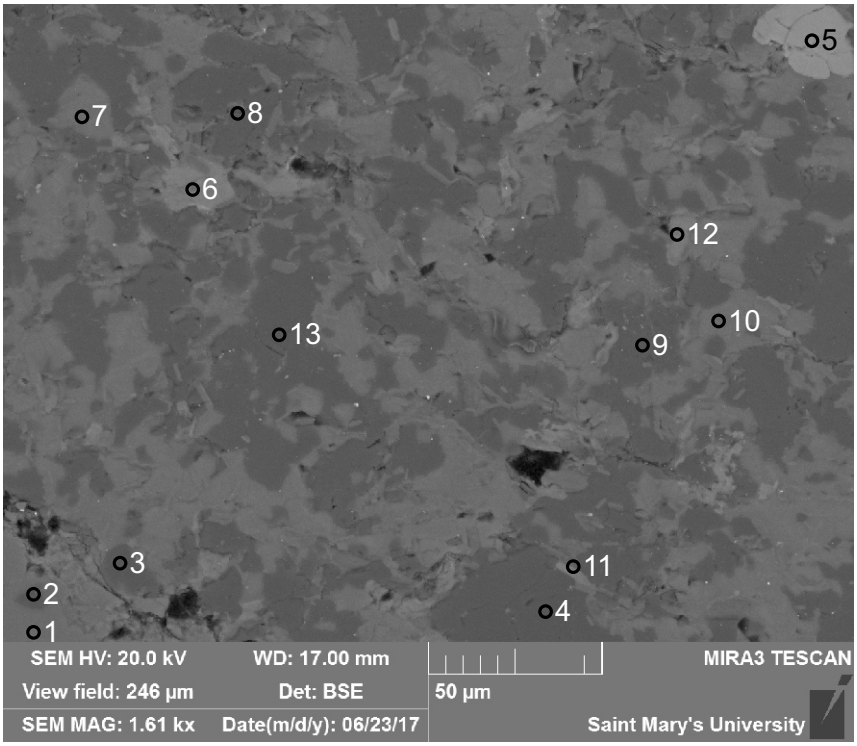
1:Zircon
2:K-Feldspar
3:K-Feldspar +
4:Albite + Magnetite
5:K-Feldspar
6:Quartz

Figure 1-4A.19: Sample 216.1L site 6.2. This site consists of intergrown K-feldspar (3, 5) and quartz (6), zircon (1) with K-feldspar inclusion (2) and scattered microlites of Fe-oxide (?magnetite).



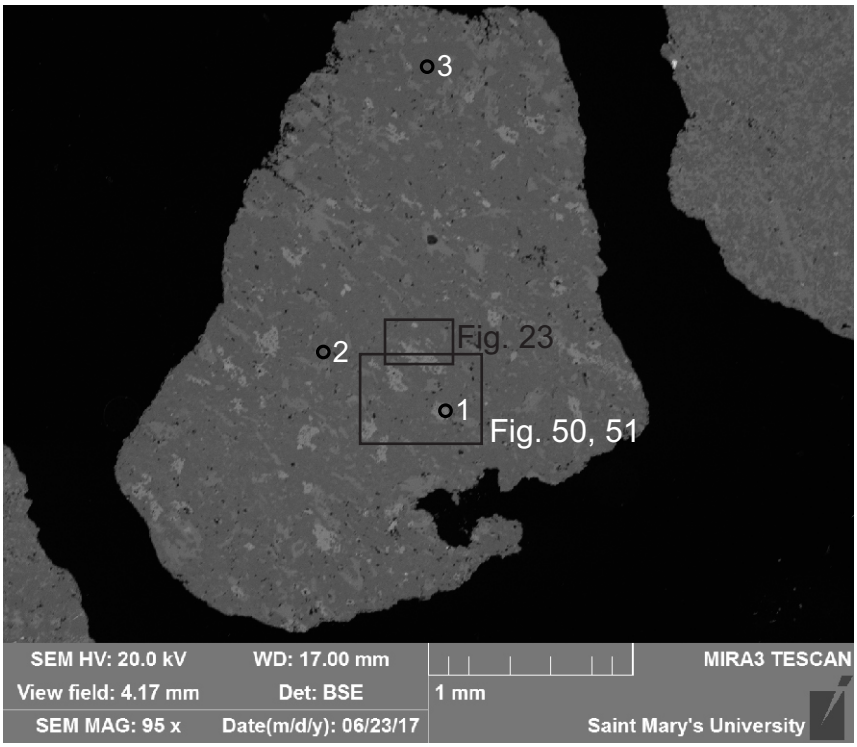
1:K-Feldspar
2:Quartz + Albite
3:Albite

Figure 1-4A.20: Sample 216.1L site 7. Fine-grained rock, rhyolite.



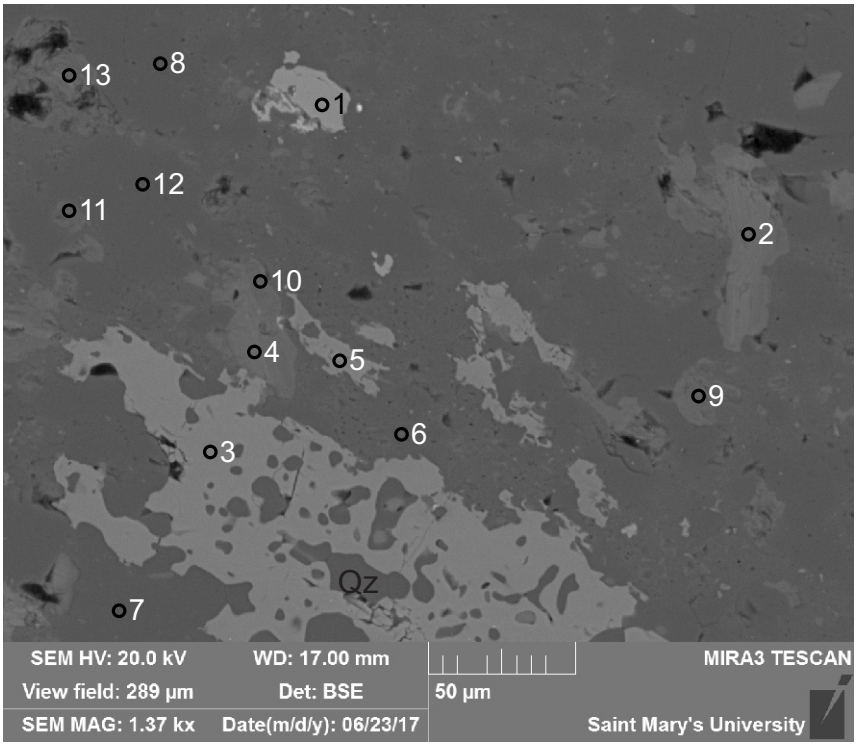
1:K-Feldspar
2:Quartz
3:Quartz
4:Quartz
5:Apatite
6:Chlorite + K-Feldspar
7:K-Feldspar
8:Albite
9:Albite
10:K-Feldspar
11:Chlorite
12:Chlorite
13:Albite

Figure 1-4A.21: Sample 216.1L site 7.1. This site consists of albite (8-9, 13) that is synchronous with K-Feldspar (10), quartz (2-4), minor apatite (5), and chlorite (11, 12) as an alteration mineral.



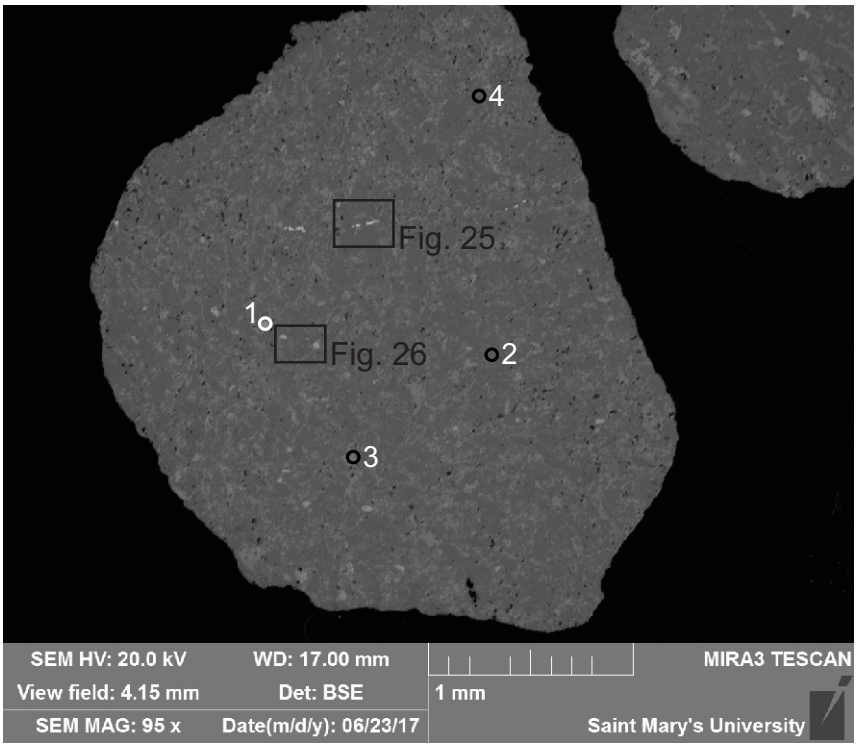
1:Epidote
2:Quartz + Albite
3:K-Feldspar + Albite

Figure 1-4A.22: Sample 216.1L site 8. Holocrystalline igneous rock. The main minerals are quartz (2), albite (2), and epidote (1).



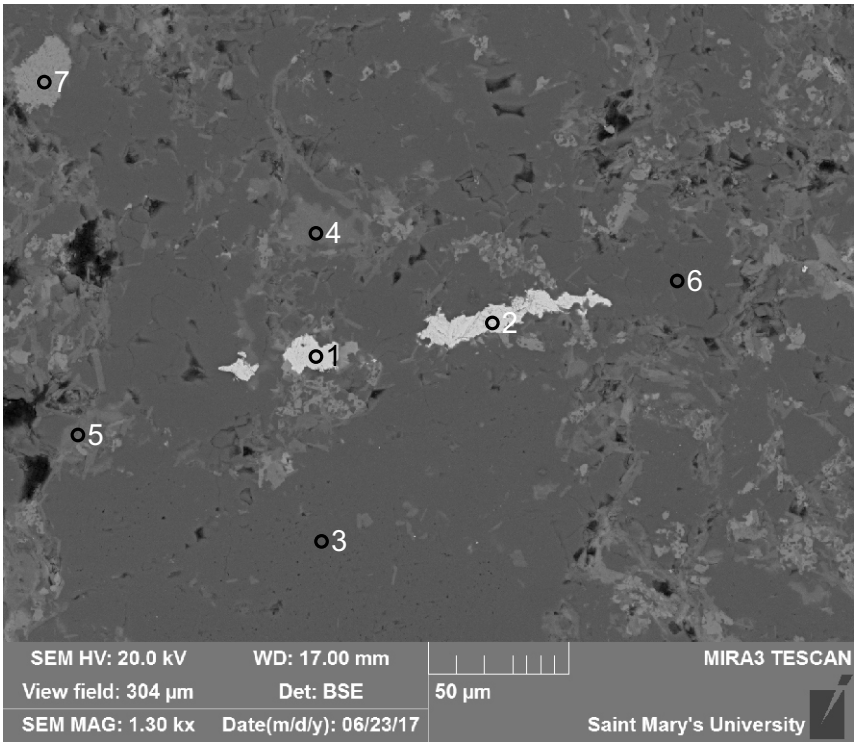
1:Titanite
2:Muscovite
3:Epidote
4:Muscovite
5:Epidote
6:Albite +
7:Quartz
8:Quartz
9:Muscovite
10:Muscovite
11:Muscovite
12:Quartz
13:Muscovite

Figure 1-4A.23: Sample 216.1L site 8.1. This site is similar to site 8 but also contains muscovite (2, 4, 9, 11, 13) and minor titanite (1). Epidote (3) contains quartz (Qz) patches. Granitoid rock with epidote alteration.



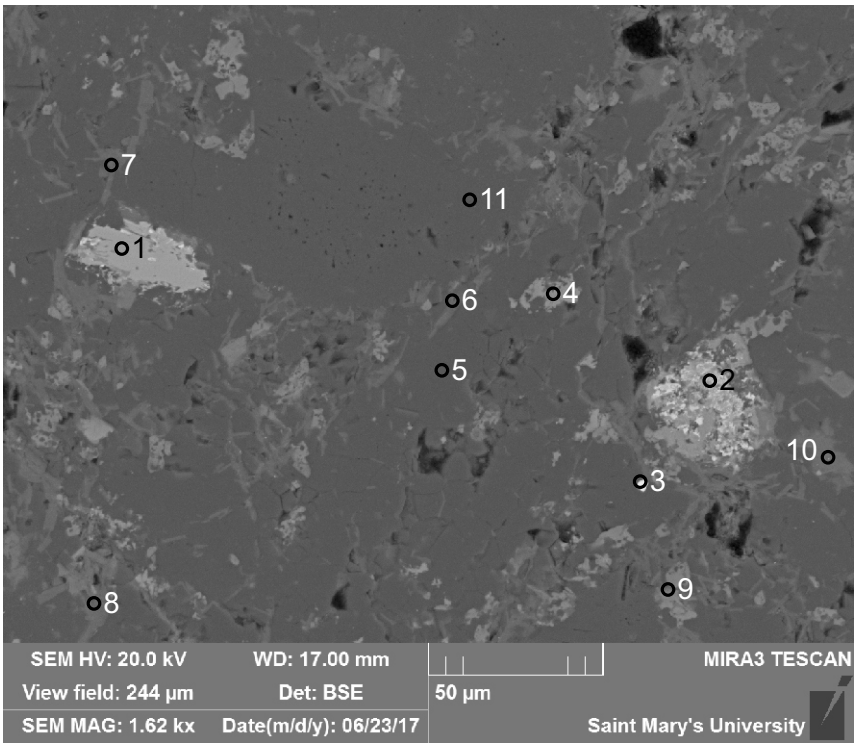
1:Apatite
2:Quartz +
3:Chlorite
4:Quartz

Figure 1-4A.24: Sample 216.1L site 9. Likely a granitoid rock. Composed of quartz (2), albite, and K-Feldspar as the main mineral assemblage.



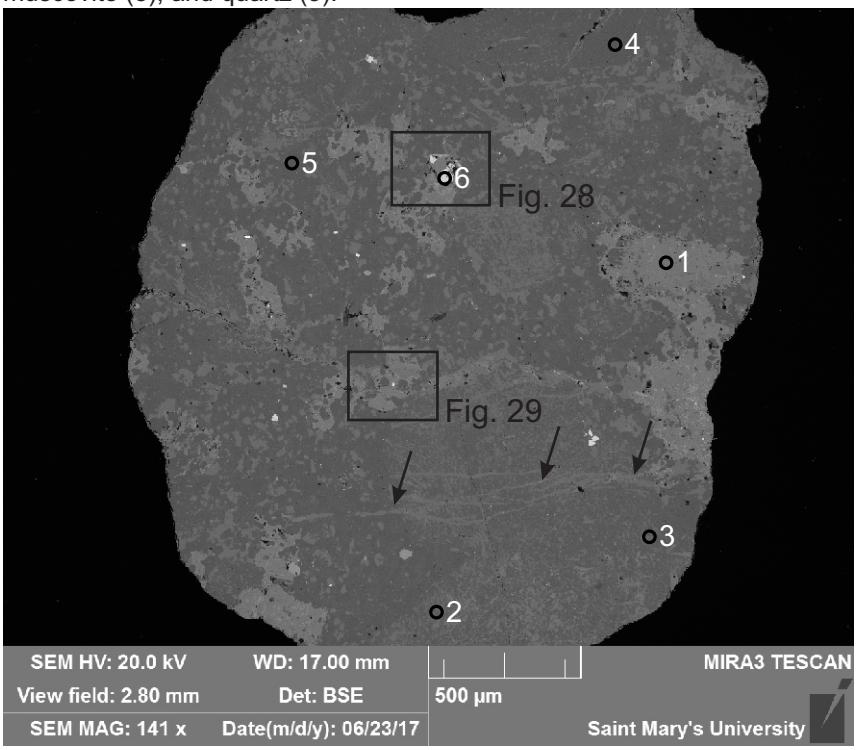
1:Feohy
2:Feohy
3:Albite
4:K-Feldspar
5:K-Feldspar
6:Quartz
7:Titanite

Figure 1-4A.25: Sample 216.1L site 9.1. This site consists of quartz (6), K-feldspar (4, 5), albite (3), and titanite (7) and Feohy (1, 2) likely later. Altered rock.



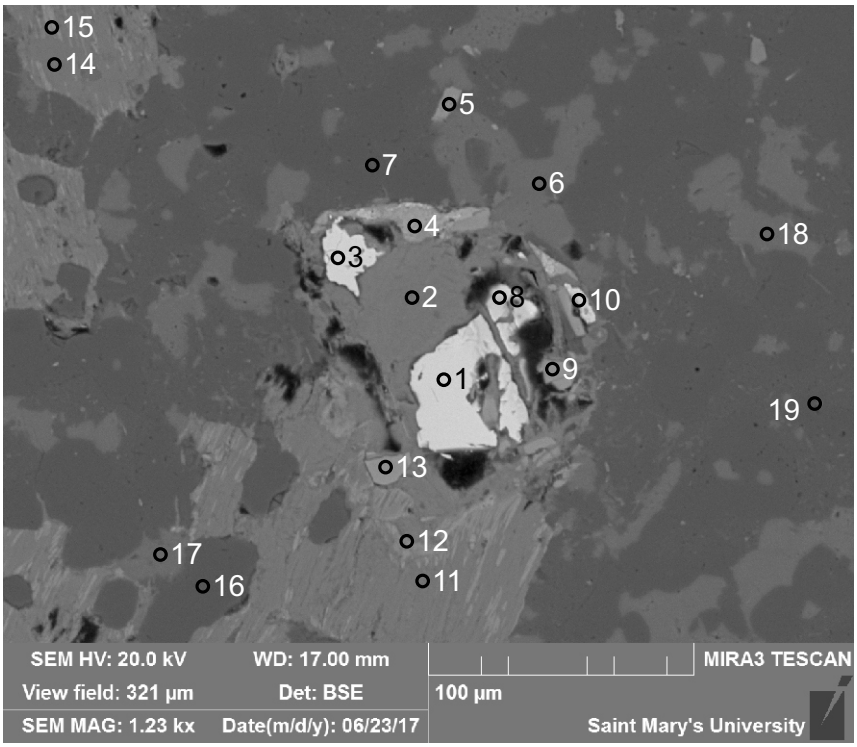
1:TiO_2
2:Altered Ilmenite +
3:Chalcopyrite +
4:Titanite
5:Quartz
6:K-Feldspar
7:Muscovite
8:Muscovite +
9:Epidote
10:K-Feldspar
11:Albite

Figure 1-4A.26: Sample 216.1L site 9.2. This site consists of many secondary minerals TiO_2 (1), chalcopyrite (3), and epidote (9). The main minerals are K-Feldspar (6, 10) albite (11), rare altered ilmenite (2), muscovite (8), and quartz (5).



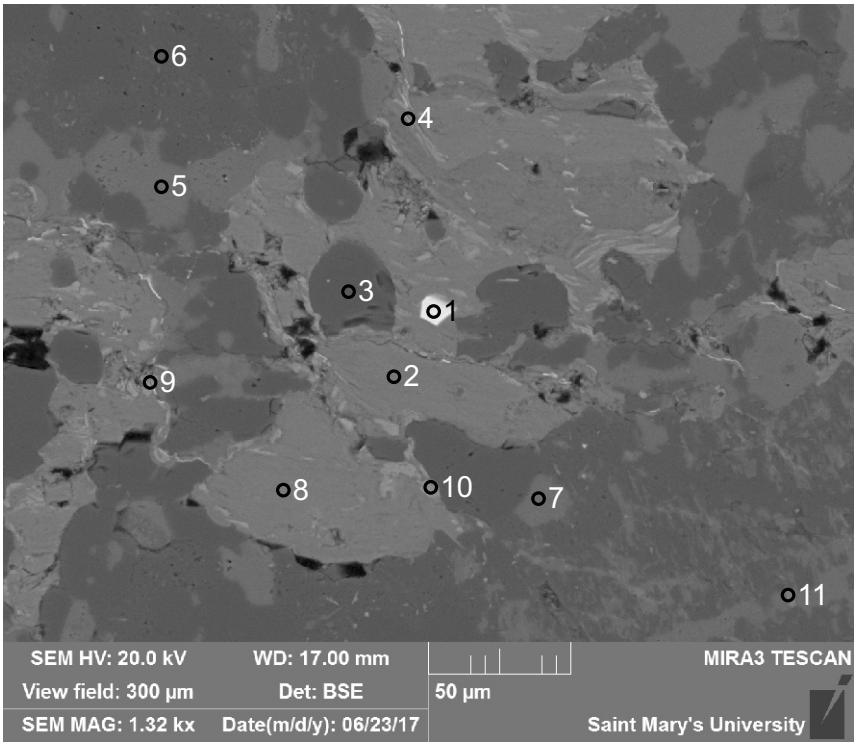
1:Chlorite
2:Albite
3:Albite + K-feldspar
4:Albite
5:Quartz
6:Magnetite

Figure 1-4A.27: Sample 216.1L site 10. Probably a meta-igneous (?granitoid) rock made up of albite, K-feldspar, quartz, and ferromagnesian minerals that have been altered to chlorite and other minerals. Veins cut the rock see arrows.



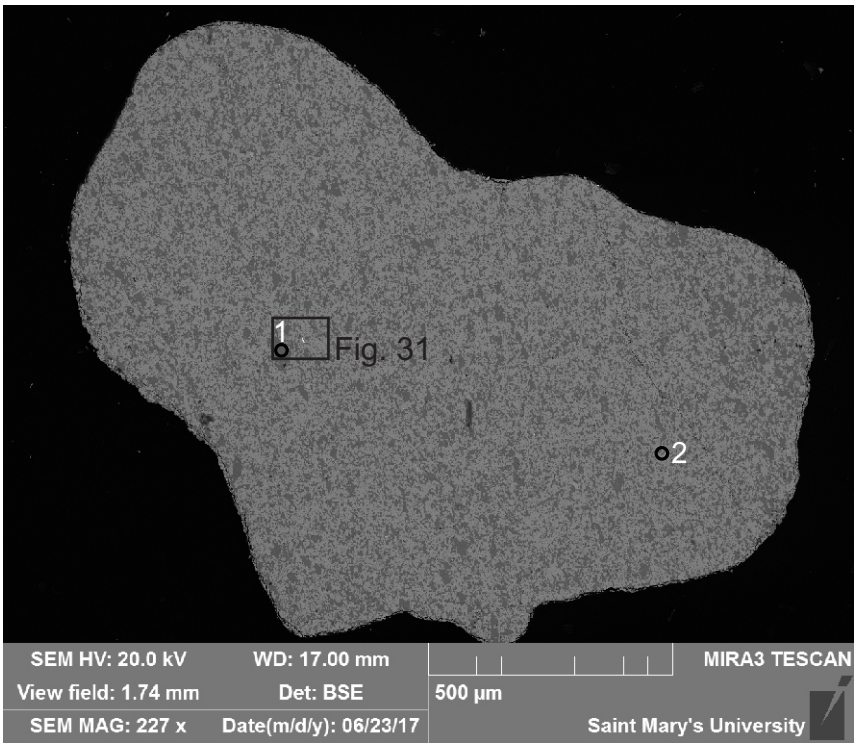
1:Magnetite
2:Chlorite
3:Magnetite
4:TiO_2 +
5:Apatite +
6:K-Feldspar
7:Quartz
8:Magnetite +
9:Apatite
10:Magnetite
11:Chlorite
12:Titanite
13:Apatite
14:Chlorite
15:Titanite
16:Quartz
17:K-Feldspar
18:K-Feldspar
19:Quartz

Figure 1-4A.28: Sample 216.1L site 10.1. This site consists of mainly quartz (7, 16, 19), K-feldspar (6, 17-18), and a group of alteration minerals that include chlorite (2, 4, 11) and titanite (12, 15). There is also another group of minerals that have precipitated later. This group includes magnetite (1, 3, 8) and apatite (5, 9, 13).



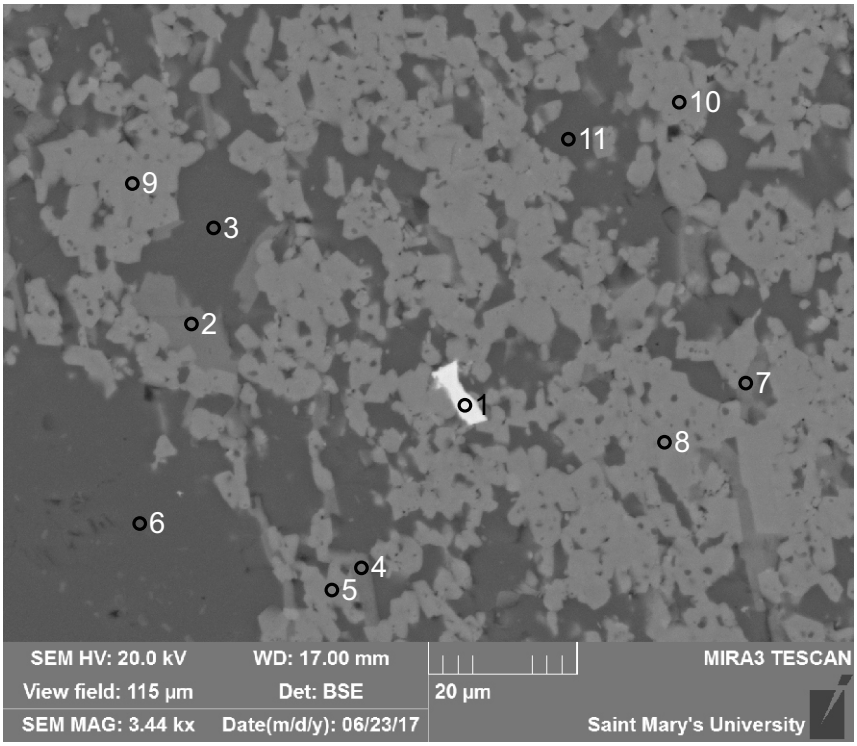
1:Zircon
2:Chlorite
3:Quartz
4:Mix
5:K-Feldspar
6:Albite
7:K-Feldspar
8:Chlorite +
9:Apatite +
10:Titanite
11:Chlorite

Figure 1-4A.29: Sample 216.1L site 10.2. Similar to site above.



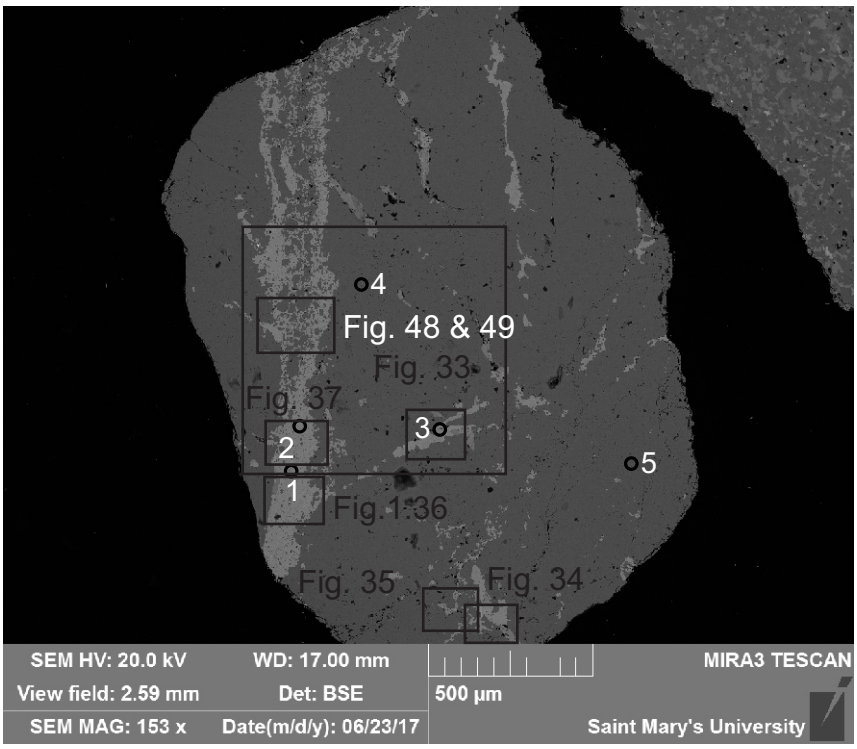
1:Quartz
2:Epidote

Figure 1-4A.30: Sample 216.1L site 11. Epidosite. Fine-grained rock composed mainly of epidote (2) and quartz (1).



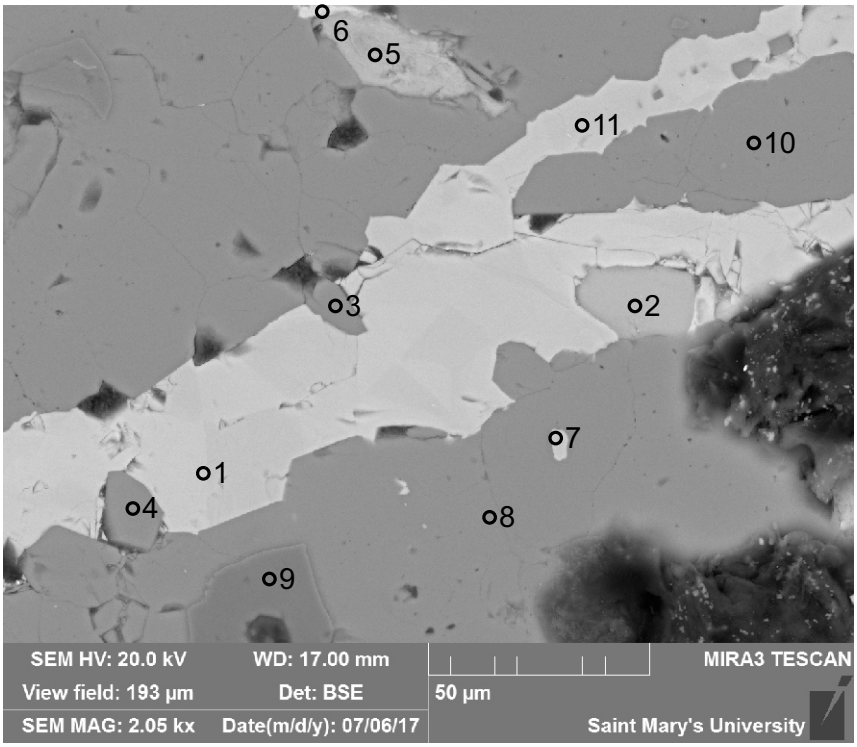
1:Zircon
2:Chlorite
3:Albite
4:Chlorite +
5:Epidote
6:Quartz
7:Chlorite + Calcite
8:Epidote
9:Epidote
10:Epidote
11:Quartz

Figure 1-4A.31: Sample 216.1L site 11.1. This site consists of mainly epidote (5, 8-10) and quartz (6, 11) with minor albite (3), chlorite (2), zircon (1), and minor calcite (7).



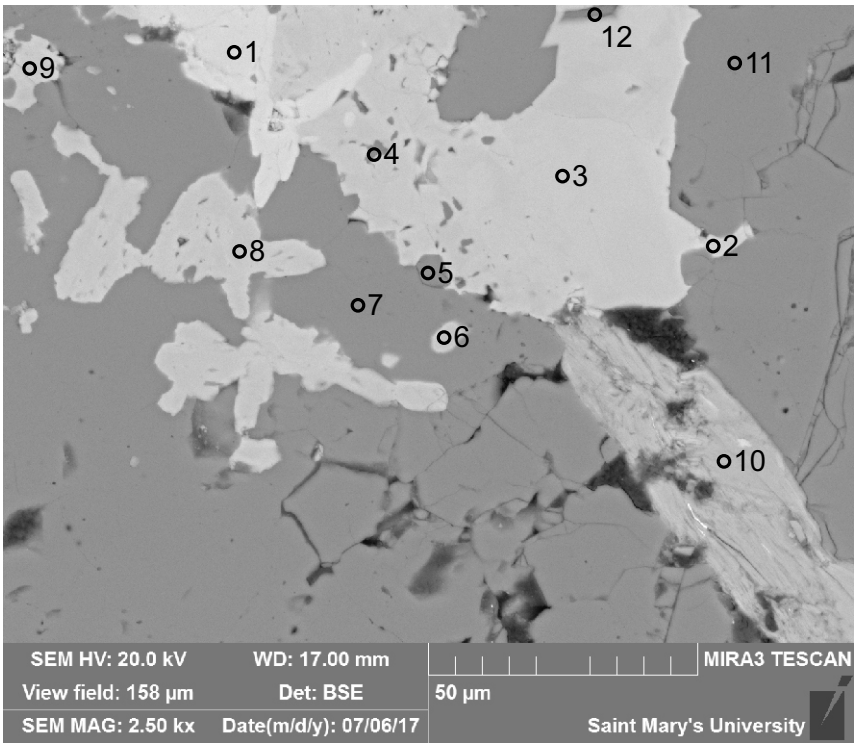
1:Epidote
2:Epidote
3:Epidote
4:Quartz
5:Quartz

Figure 1-4A.32: Sample 216.1L site 12. Probably a piece of a quartz epidote vein.



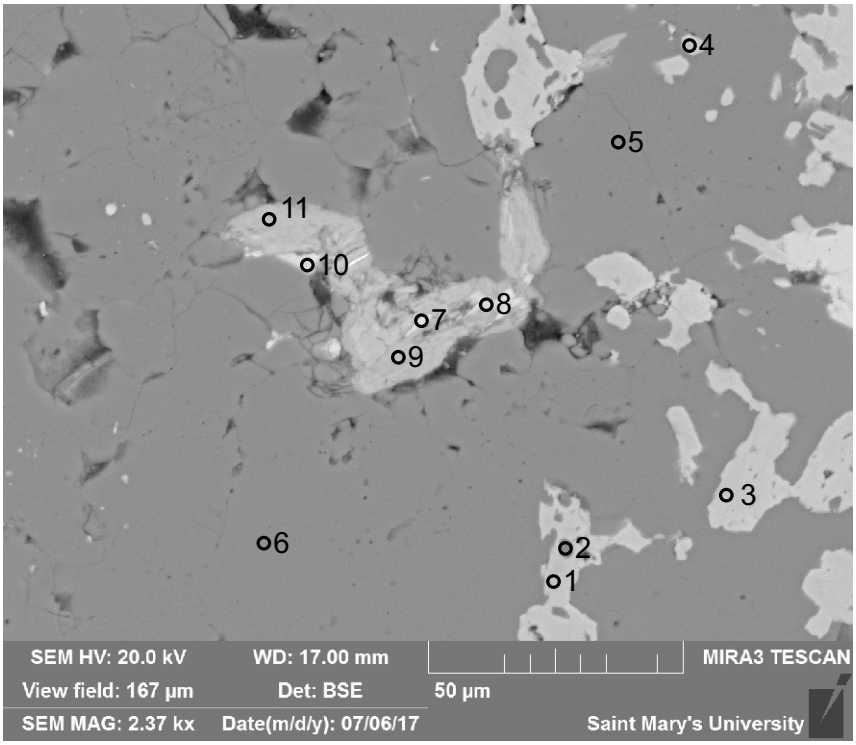
1:Epidote
2:Calcite
3:Quartz
4:Quartz
5:Chlorite
6:Titanite
7:Epidote
8:Quartz
9:Quartz
10:Quartz
11:Epidote

Figure 1-4A.33: Sample 216.1L site 12.1. Epidote (1) veinlets cutting the quartz (8) vein, some calcite also present (2).



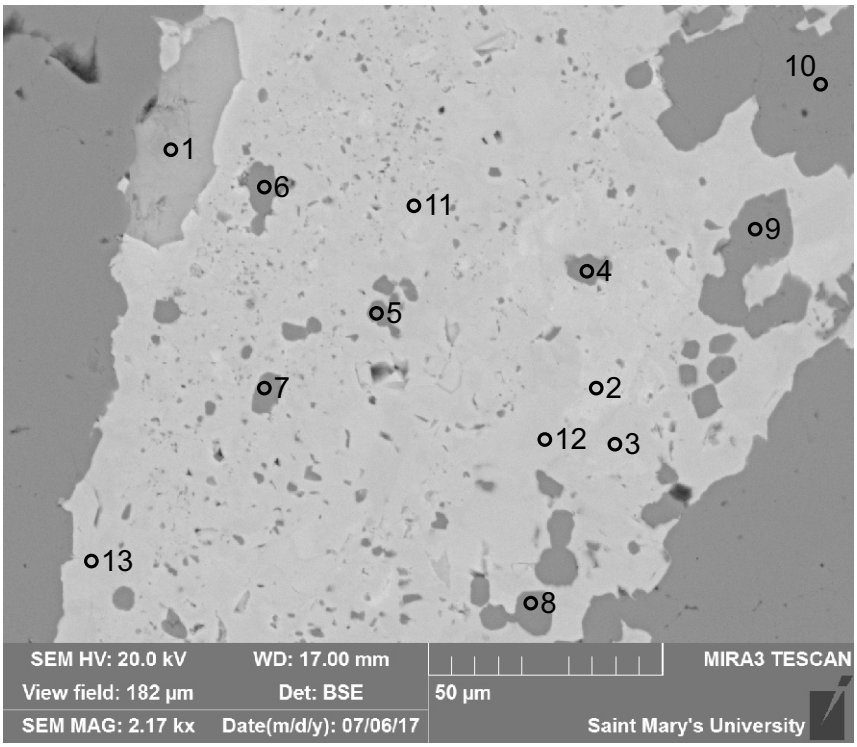
1:Titanite
2:Epidote
3:Epidote
4:Andesite
5:Quartz +
6:Epidote
7:Quartz
8:Epidote
9:Epidote
10:Chlorite
11:Quartz
12:Quartz +

Figure 1-4A.34: Sample 216.1L site 12.2. Similar to previous site with a large chorite crystal (10) that seems to fill a pore.



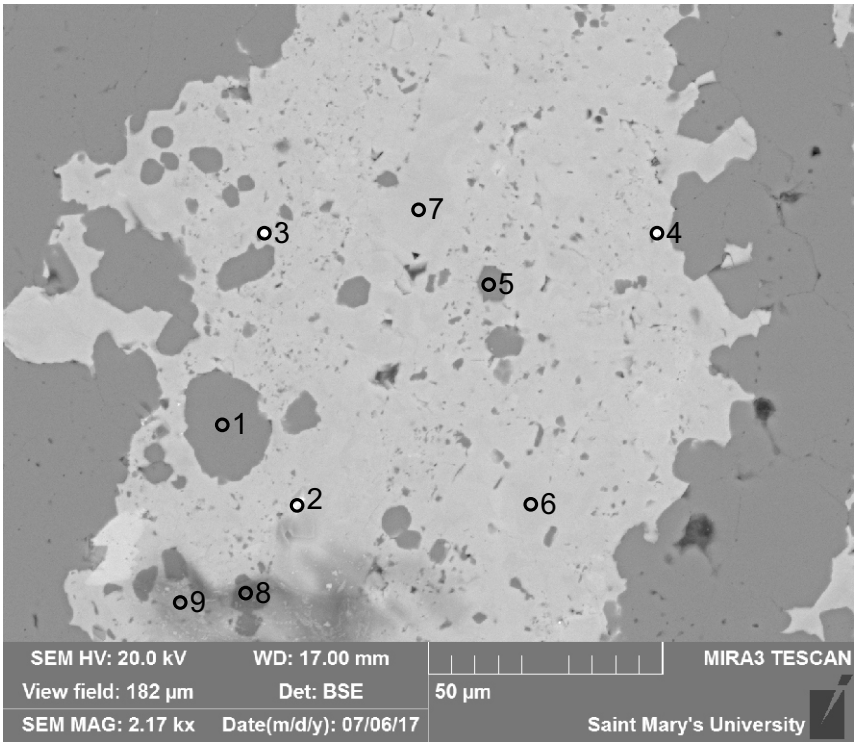
1:Epidote
2:Quartz + Epidote
3:Epidote
4:Epidote
5:Quartz
6:Quartz
7:Titanite +
8:Titanite +
9:Chlorite
10:Titanite +
11:Chlorite

Figure 1-4A.35: Sample 216.1L site 12.3. Similar to site (12.2) but with more titanite (7, 8, 10) associated with chlorite (9, 11).



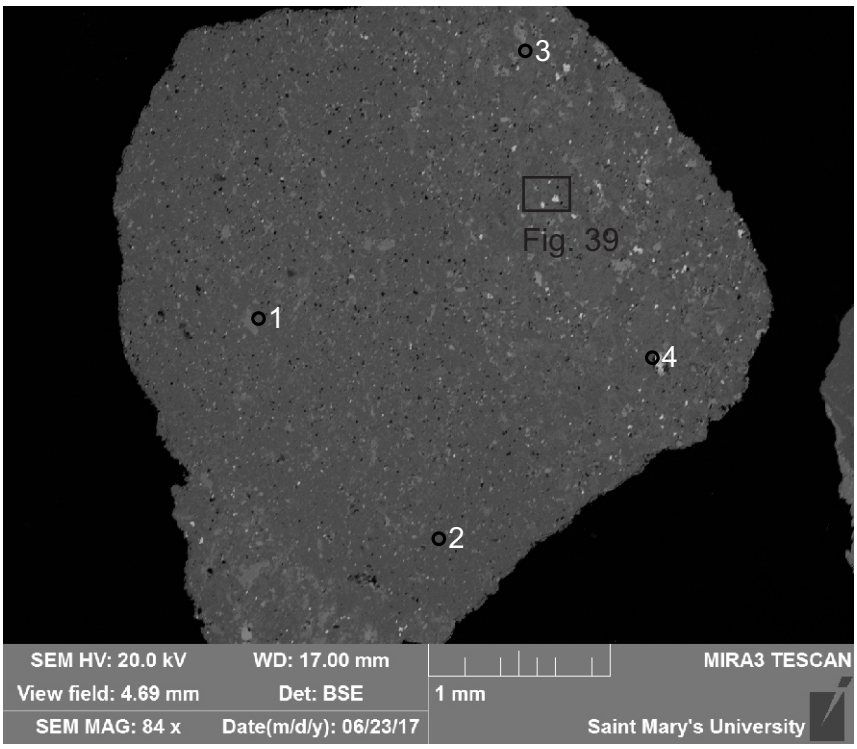
1:Calcite
2:Epidote
3:Epidote
4:Quartz
5:Albite
6:Quartz
7:Quartz +
8:Quartz
9:Quartz +
10:Quartz
11:Epidote
12:Epidote
13:Epidote

Figure 1-4A.36: Sample 216.1L site 12.4. Large epidote vein cutting quartz vein (10) and with some calcite (1) and albite (5).



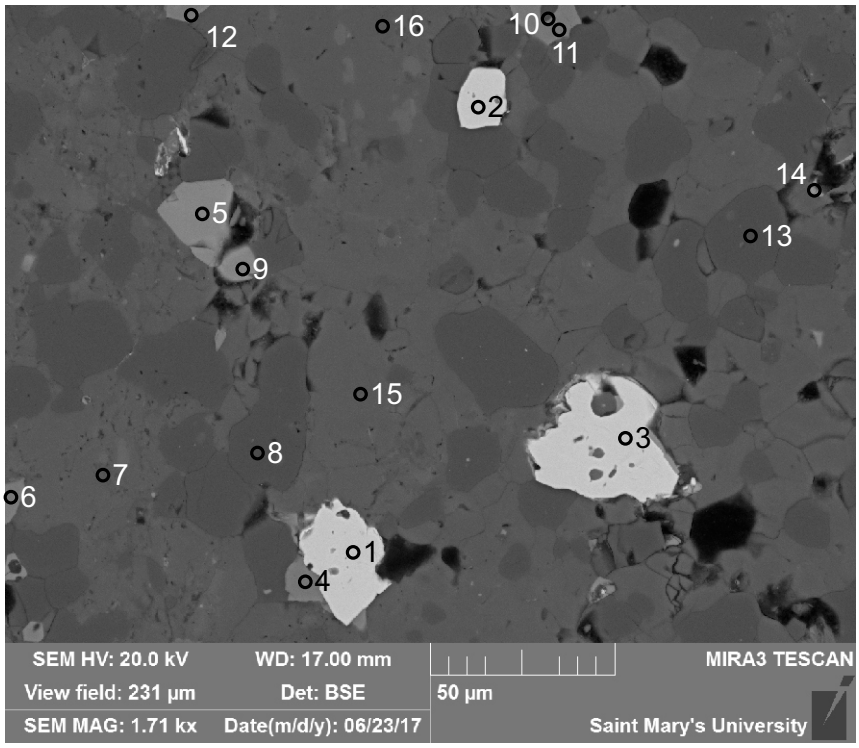
1:Quartz
2:Epidote +
3:Pyrite +
4:Epidote
5:Quartz
6:Epidote
7:Epidote
8:Quartz +
9:Epidote + Albite

Figure 1-4A.37: Sample 216.1L site 12.5. Continuation of the large epidote vein.



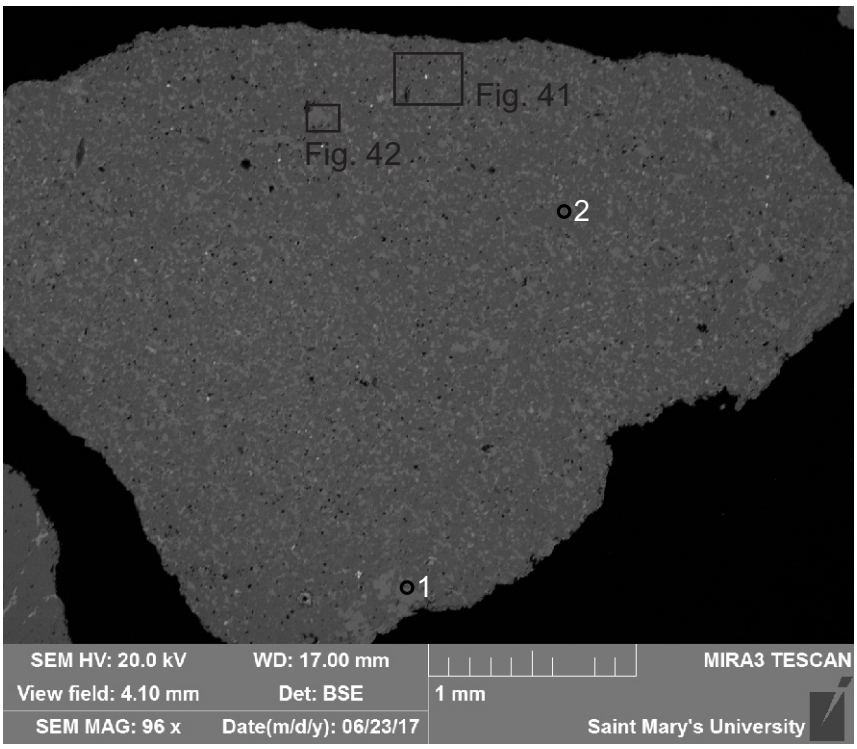
1:K-Feldspar
2:Mix
3:Mix
4:Ti-Magnetite +

Figure 1-4A.38: Sample 216.1L site 13. ?Granodiorite.



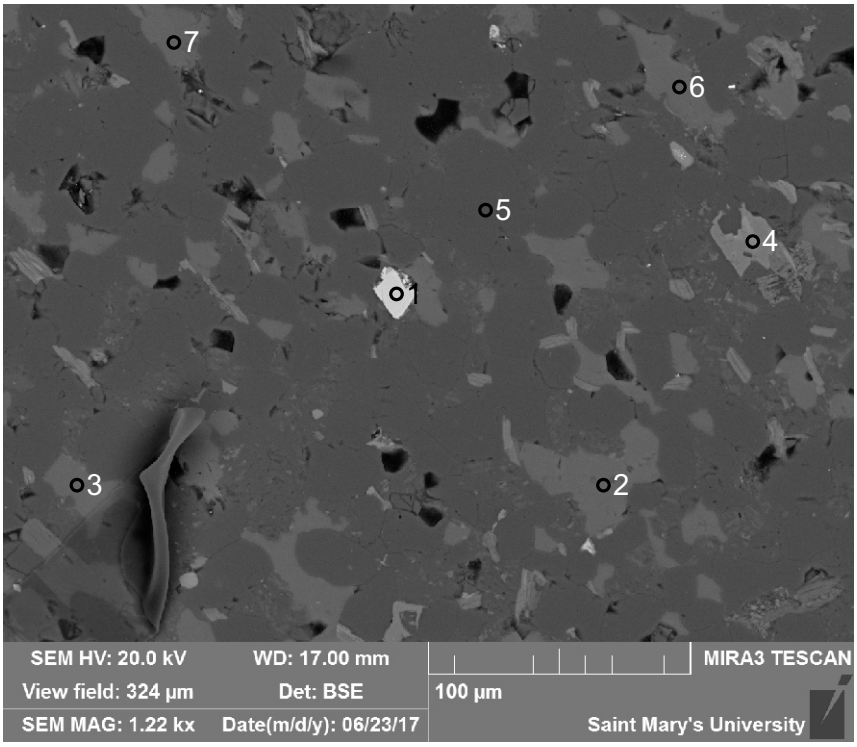
1:Ti-Magnetite
2:Ti-Magnetite +
3:Ti-Magnetite
4:Epidote
5:Apatite
6:Epidote
7:Andesine
8:Quartz
9:Apatite
10:Quartz
11:Epidote
12:Epidote
13:Quartz
14:TiO_2 ?
15:Andesine
16:Andesine

Figure 1-4A.39: Sample 216.1L site 13.1. Fine grained igneous rock (granodiorite?) made up of quartz (8, 10, & 13), andesine (7, 15, 16), Ti-magnetite (1-3), apatite (5, 9), and small grains of epidote (4, 6, 11, 12).



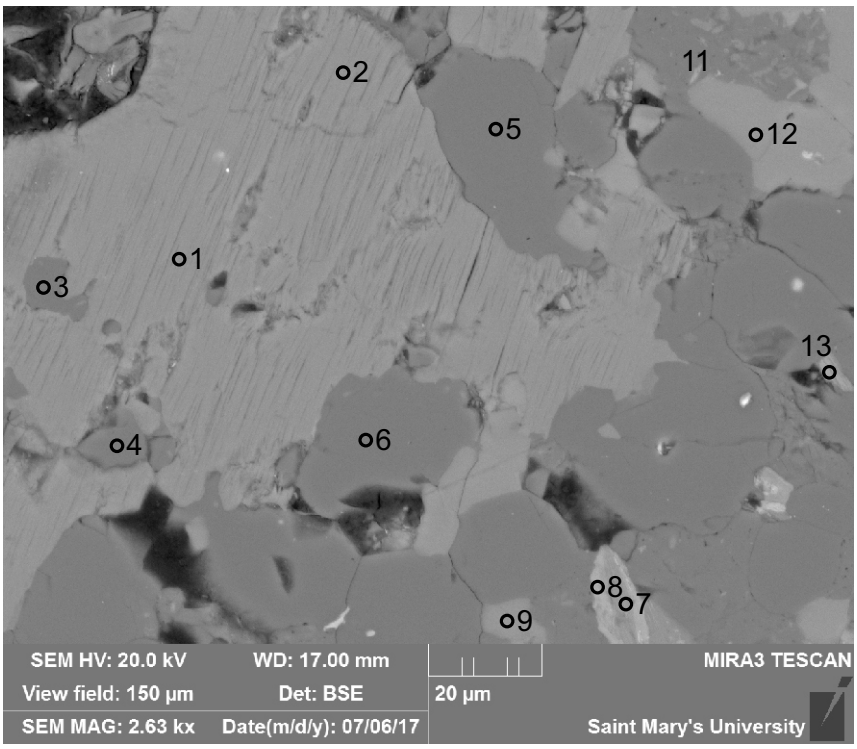
1:Muscovite
2:Quartz

Figure 1-4A.40: Sample 216.1L site 14. ?Granodiorite.



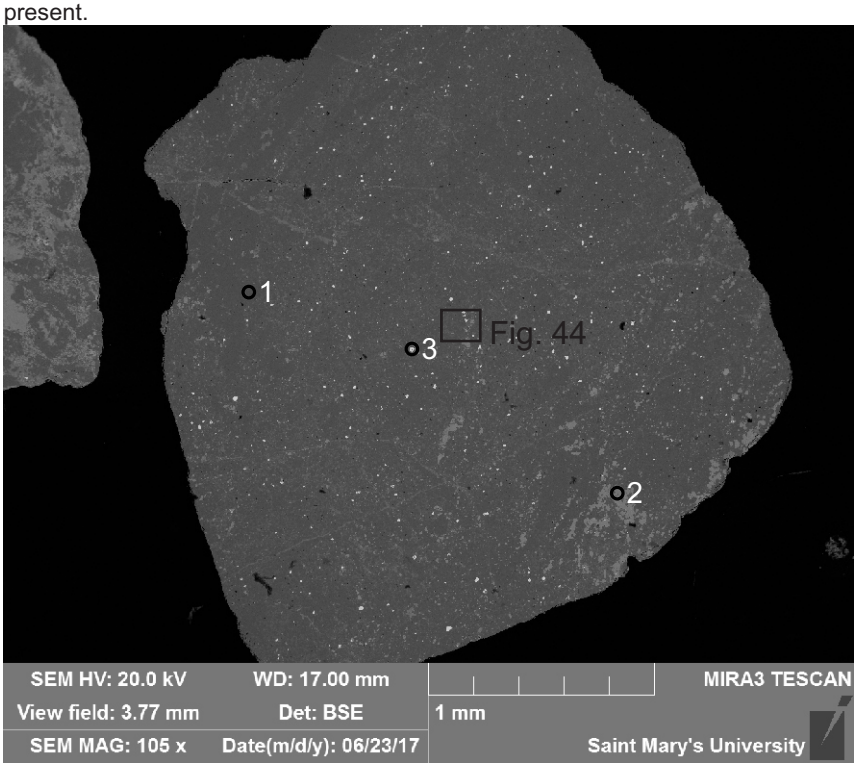
1:Magnetite
2:K-Feldspar
3:K-Feldspar
4:Epidote
5:Quartz
6:K-Feldspar
7:K-Feldspar

Figure 1-4A.41: Sample 216.1L site 14.1. This site consists of quartz (5), K-feldspar (2-3, 6-7), rare magnetite (1), epidote (4) and several voids. It is similar to Granule 13.



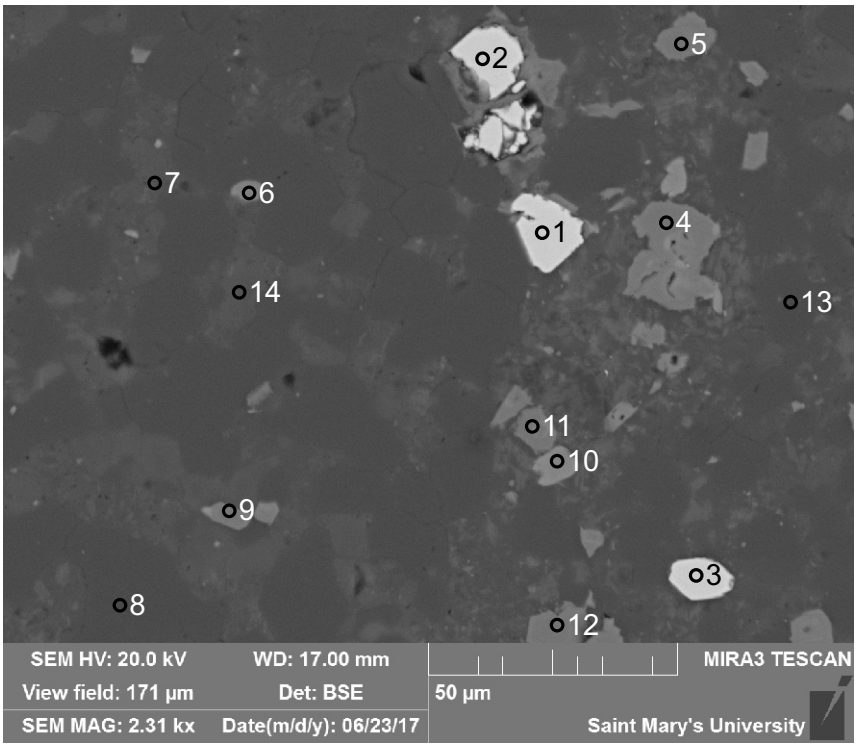
1:Muscovite
2:Muscovite
3:Quartz +
4:Quartz
5:Quartz
6:Quartz
7:Biotite + Chlorite
8:Chlorite
9:K-Feldspar
10:K-feldspar + Albite
11:Albite
12:K-Feldspar
13:Biotite + Chlorite

Figure 1-4A.42: Sample 216.1L site 14.2. This site contains a large crystal of muscovite (1-2) that may be a xenocryst surrounded by quartz (3-6) grains. Albite (11), K-feldspar (9, 12), and partially altered chlorite (8) and biotite (7) are also present.



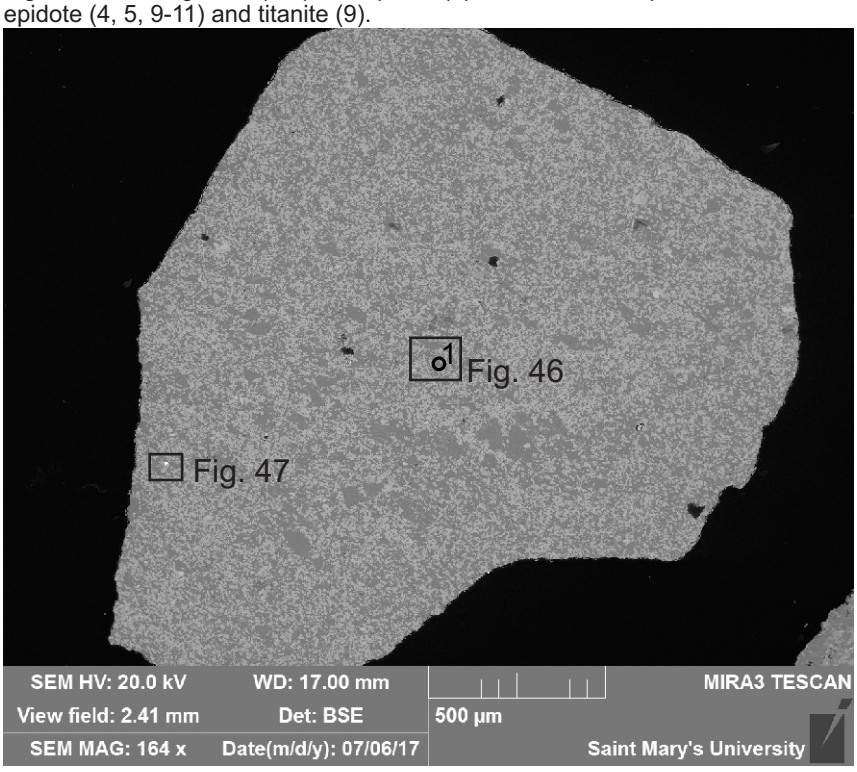
1:Quartz
2:Mix
3:Magnetite

Figure 1-4A.43: Sample 216.1L site 15. ?Granodiorite. Common magnetite (3) throughout Granule.



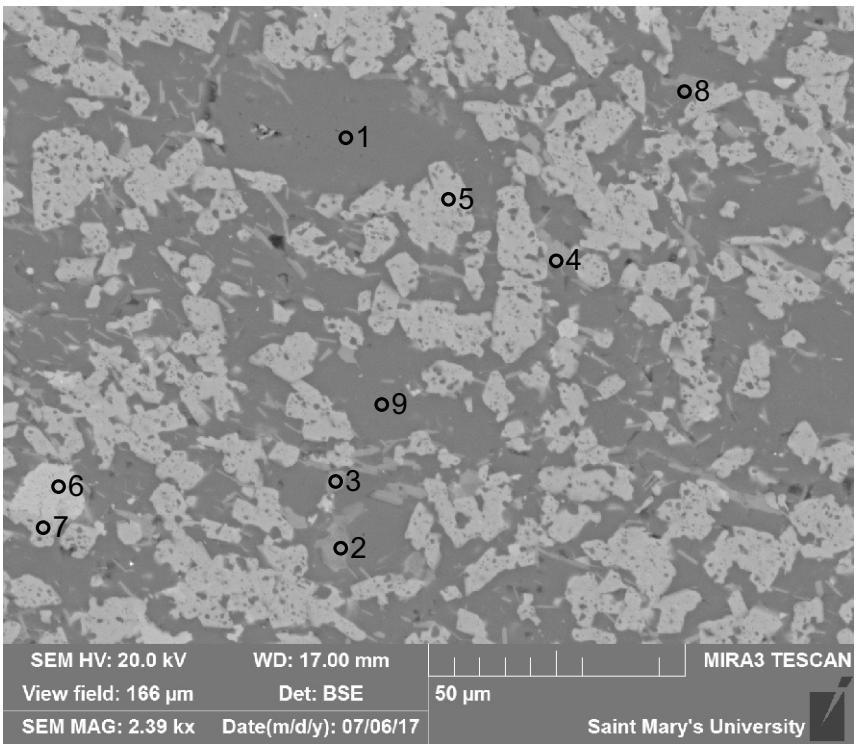
1:Magnetite
2:Magnetite
3:Magnetite
4:Epidote
5:Epidote
6:Apatite
7:K-feldspar + Albite
8:Quartz
9:Epidote
10:Titanite
11:Epidote
12:Epidote
13:Quartz
14:Oligoclase

Figure 1-4A.44: Sample 216.1L site 15.1. This site consists of quartz grains (8 & 13), K-feldspar (7), and oligoclase (14) that makes up most of the Granule together with magnetite (1-3) and apatite (6). Other minerals present include epidote (4, 5, 9-11) and titanite (9).



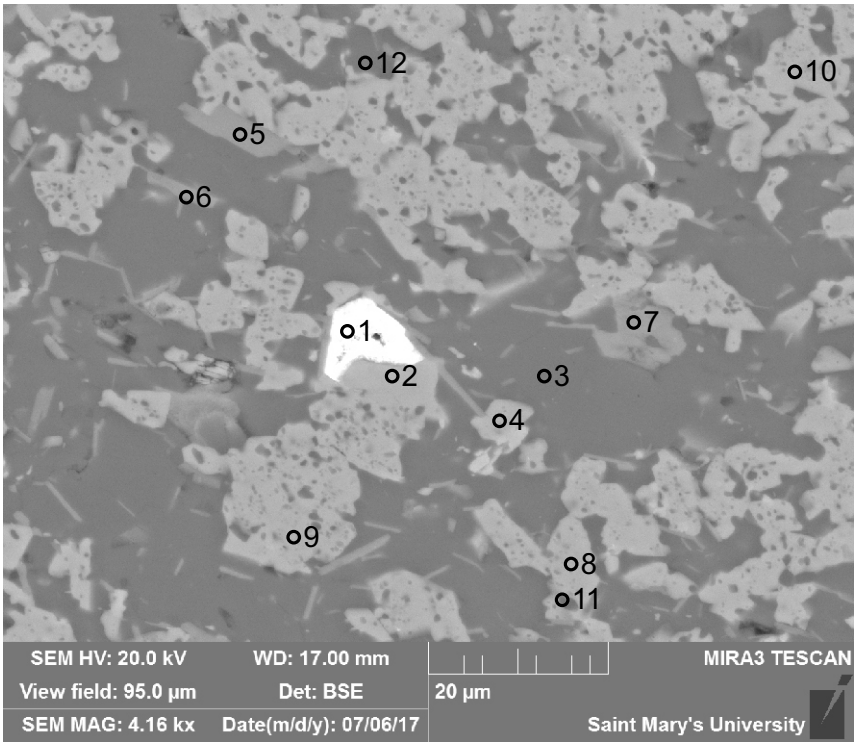
1:Albite +

Figure 1-4A.45: Sample 216.1L site 16. Fine grained rock composed of quartz, epidote, and albite (1), likely to be epidosite.



1:Albite
2:Chlorite
3:Chlorite
4:Chlorite
5:Epidote
6:Titanite +
7:Epidote
8:Muscovite
9:Albite

Figure 1-4A.46: Sample 216.1L site 16.1. This site consists of epidote (5), albite (1, 9), probably quartz, and some chlorite (2, 3).



1:Chalcopyrite
2:Epidote
3:Quartz
4:Epidote +
5:Chlorite +
6:Mix
7:Chlorite
8:Epidote
9:Epidote +
10:Epidote + Quartz
11:Quartz +
12:Quartz +

Figure 1-4A.47: Sample 216.1L site 16.2. Minerals identified in this site include epidote (2, 4, 8-10), quartz (3, 11, 12), chlorite (5), and chalcopyrite (1). Chalcopyrite (1)has been analyzed in this Granule but none is found in the previous epidosite Granules.

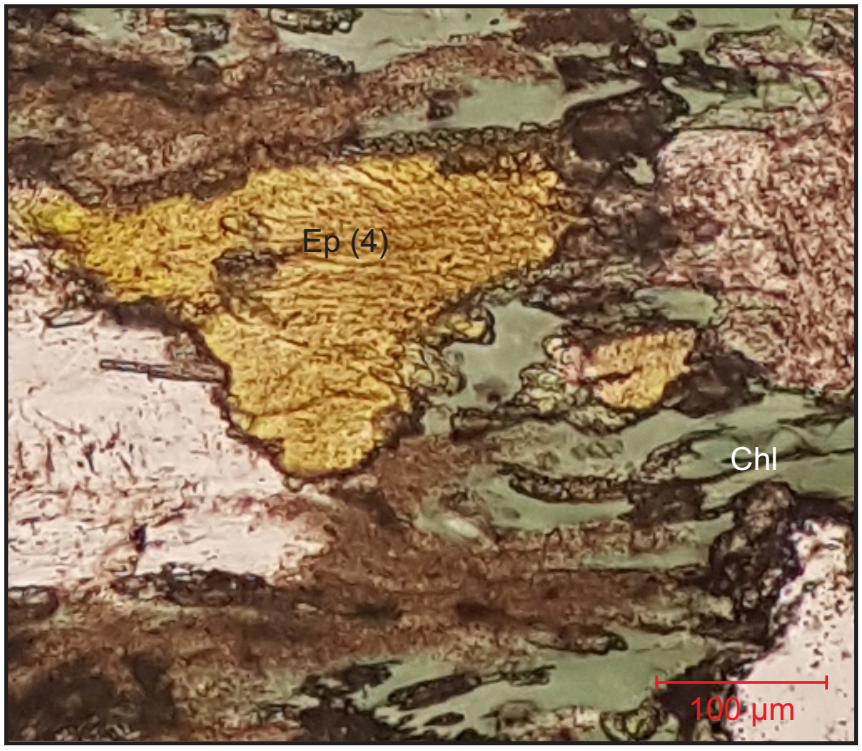


Figure 1-4A.48: Microphotograph. Sample 216.1L. Granule 2. Transmitted light, ppl, 10x. Site checked for presence of garnet but presence of epidote was confirmed.

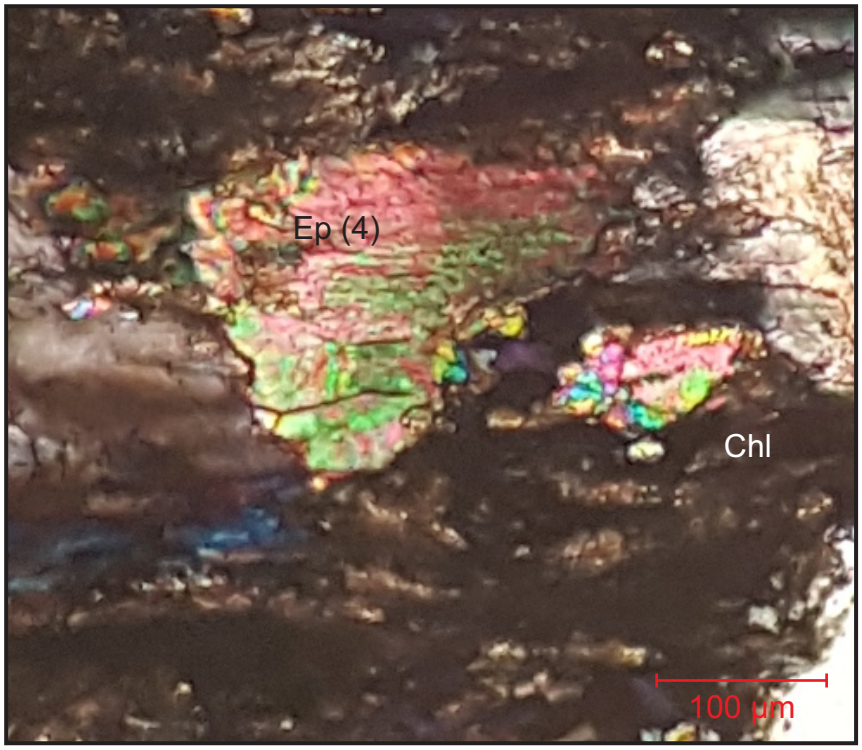


Figure 1-4A.49: Microphotograph. Sample 216.1L. Granule Site 2,Position 4. Transmitted light, xpl, 10x. Site checked for presence of garnet but presence of epidote was confirmed as seen with 2nd order birefringence. Granitoid rock with epidote.

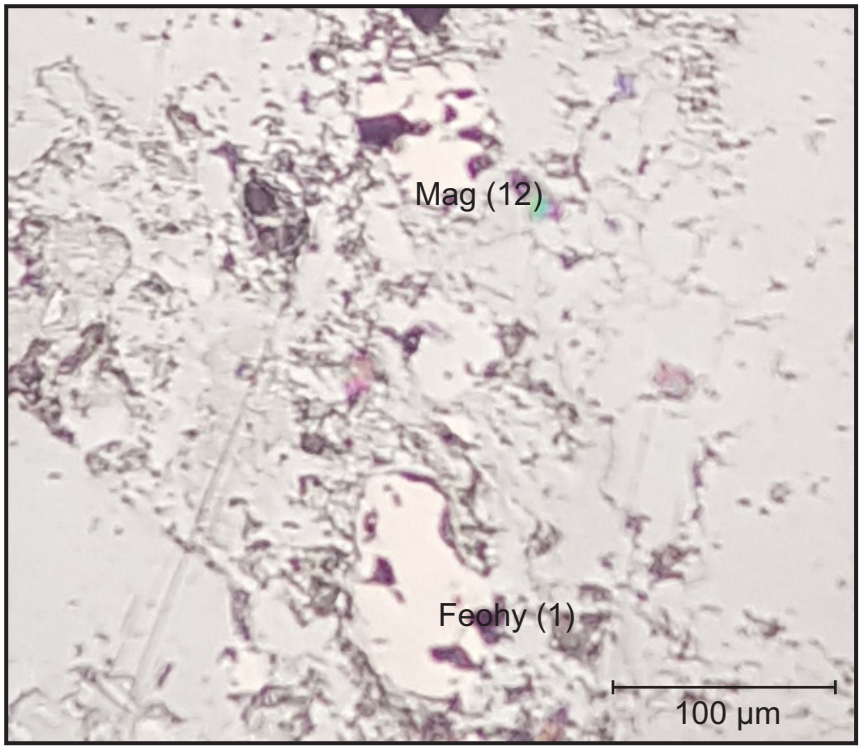


Figure 1-4A.50: Microphotograph. Sample 216.1L. Granule Site 2.1,Position 1 & 12. Reflected light, ppl, 40x. High iron minerals were checked for internal reflections, no internal reflections observed.

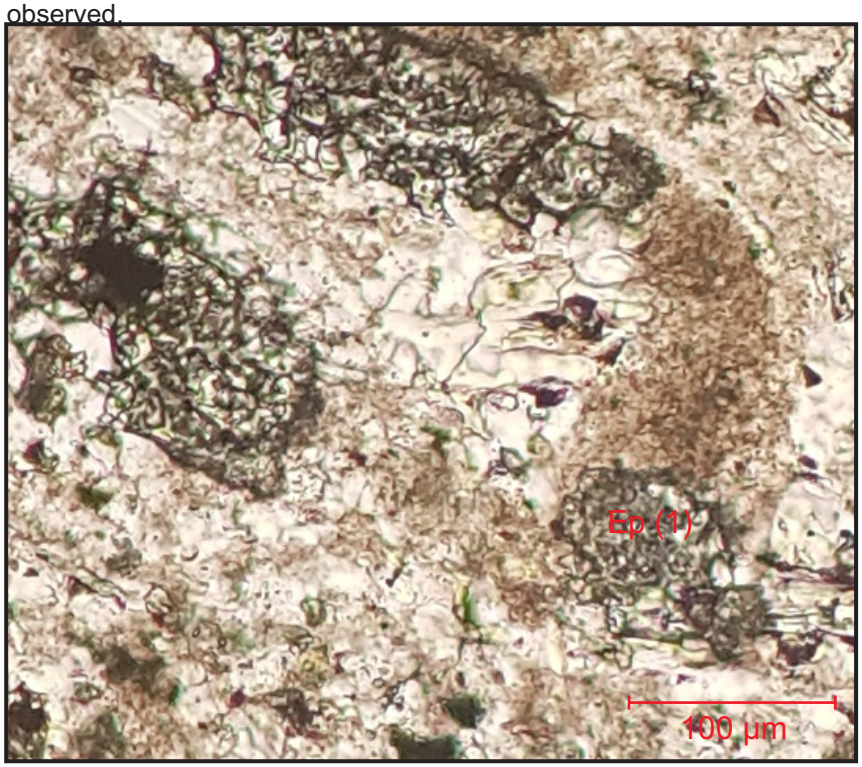


Figure 1-4A.51: Microphotograph. Sample 216.1L. Granule Site 8,Position 1. Transmitted light, ppl, 10x. Position 1 was checked to confirm the presence of epidote.

Figure 1-4A.52: Microphotograph. Sample 216.1L. Granule Site 8, Position 1. Transmitted light, ppl, 10x. The epidote analysed displays second order birefringence. Altered granitoid rock.

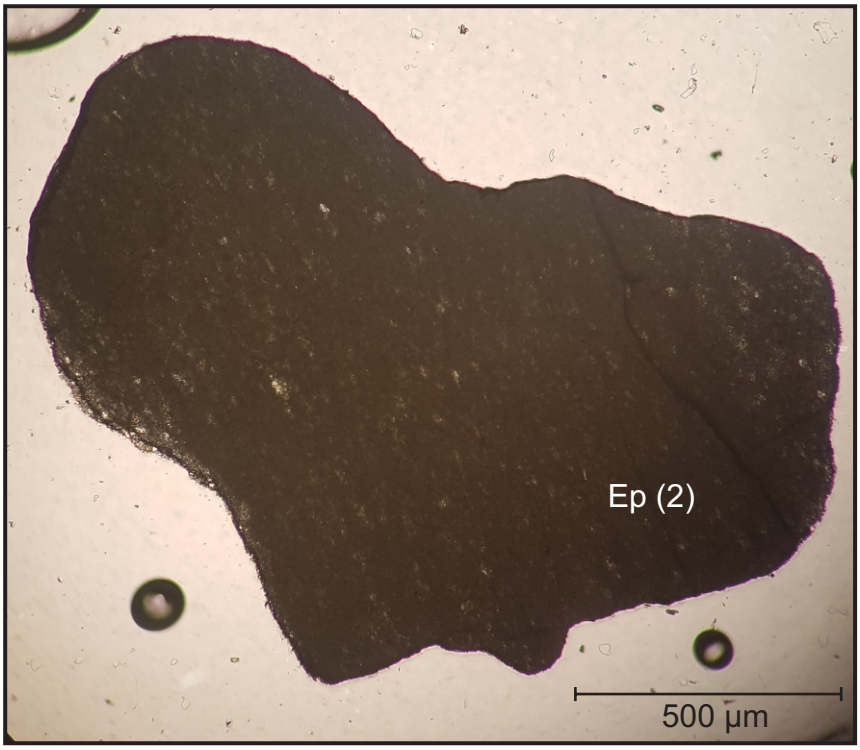


Figure 1-4A.53: Microphotograph. Sample 216.1L. Granule Site 11, Position 2. Transmitted light, ppl, 10x. The grain is very fine grained and composed of mainly quartz and epidote. Epidosite.

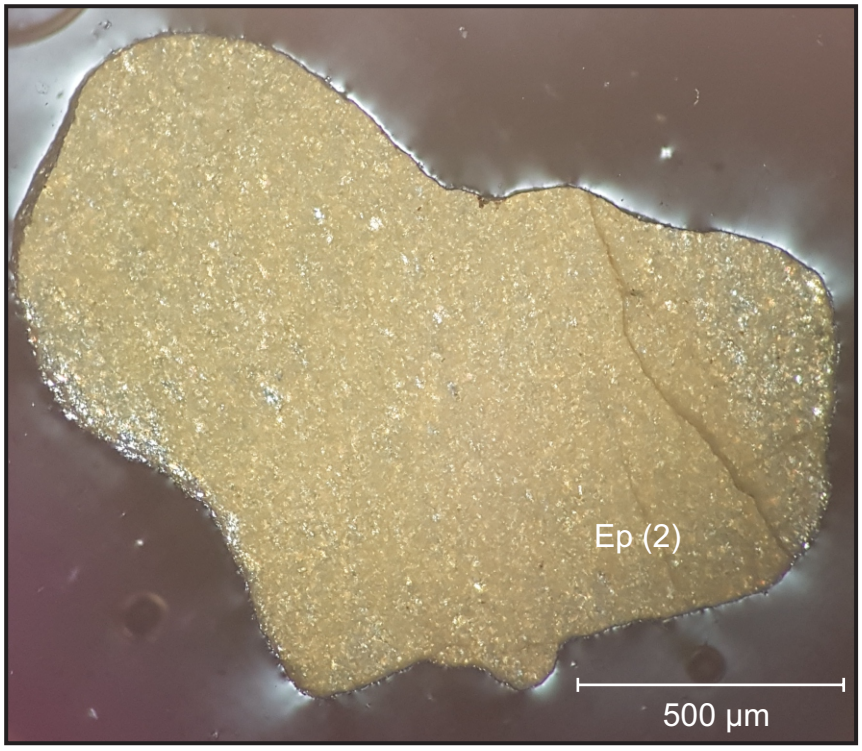


Figure 1-4A.54: Microphotograph. Sample 216.1L. Granule Site 11, Position 2. Transmitted light, xpl, 10x. The Granule is very fine grained composed of mainly quartz and epidote. Epidosite.

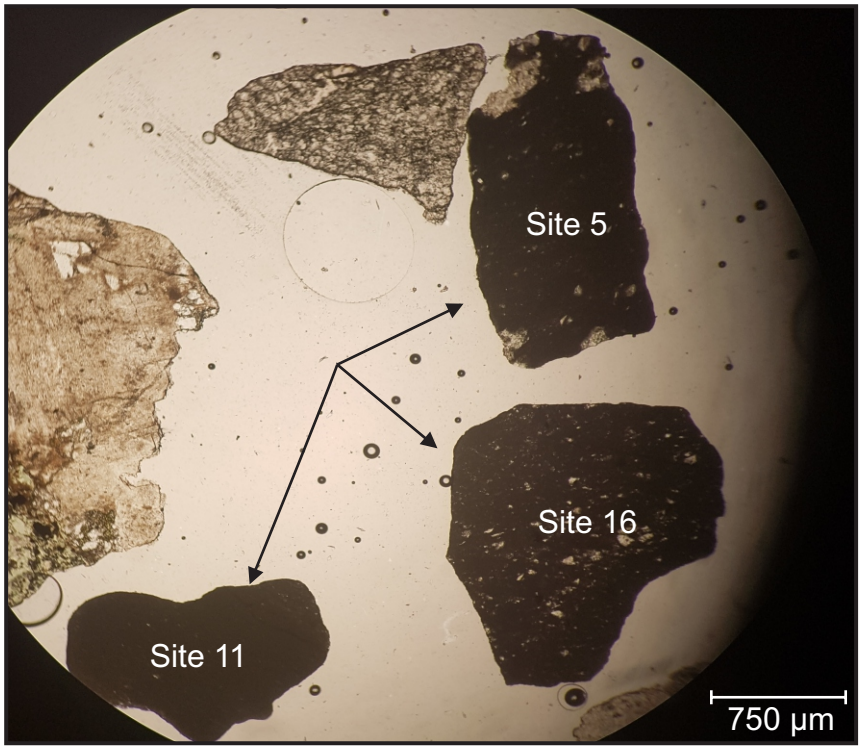


Figure 1-4A.55: Microphotograph. Sample 216.1L. Transmitted light, ppl, 4x. Arrows indicate grains of same lithologies.

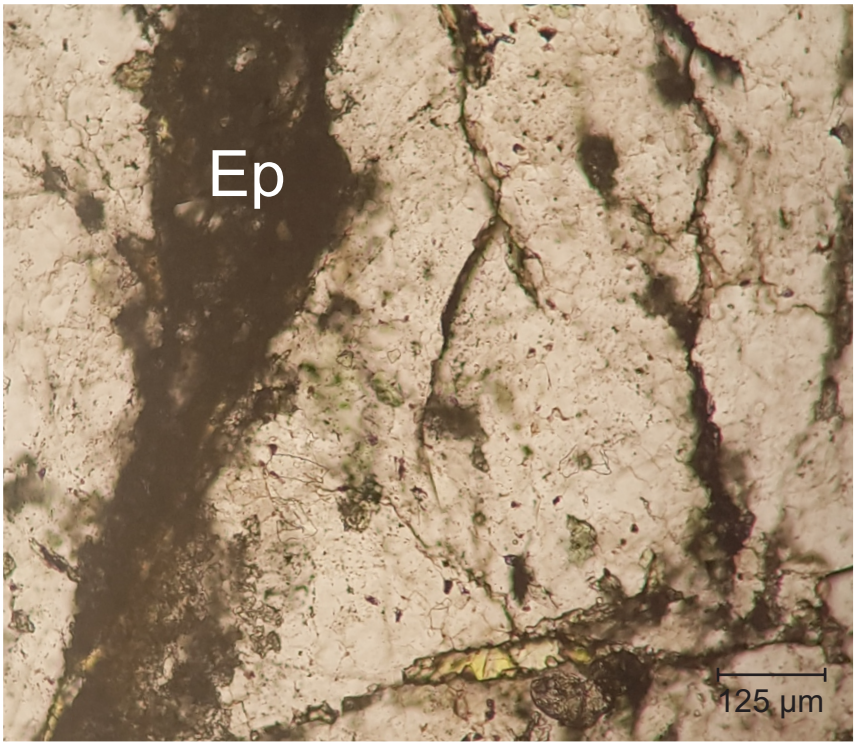


Figure 1-4A.56: Microphotograph. Sample 216.1L. Granule Site 11, Position 2. Transmitted light, xpl, 10x. Epidosite.

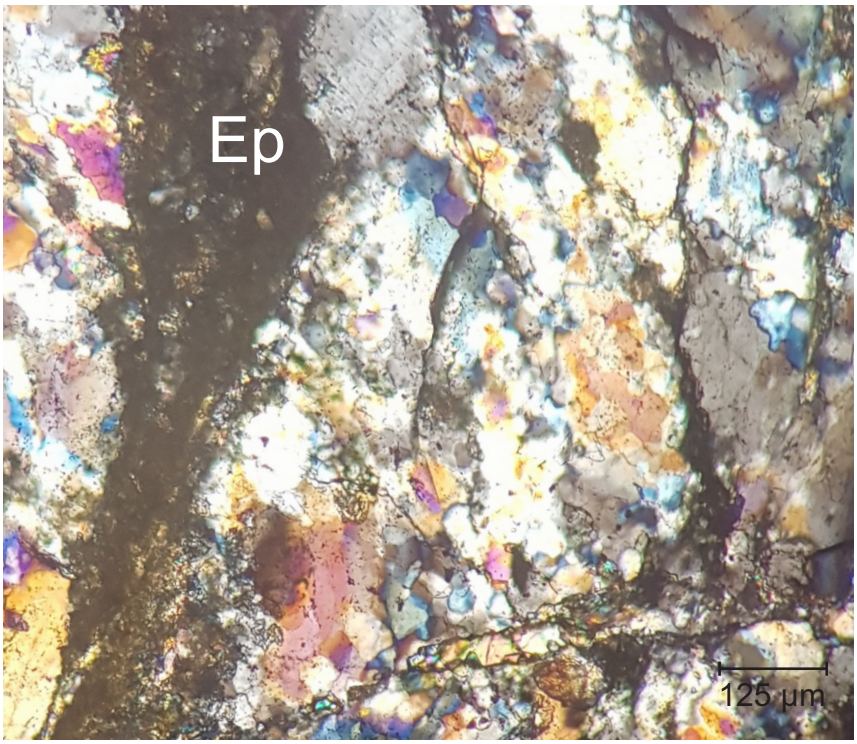


Figure 1-4A.57: Microphotograph. Sample 216.1L. Granule Site 11. Transmitted light, xpl, 10x. Epidosite.

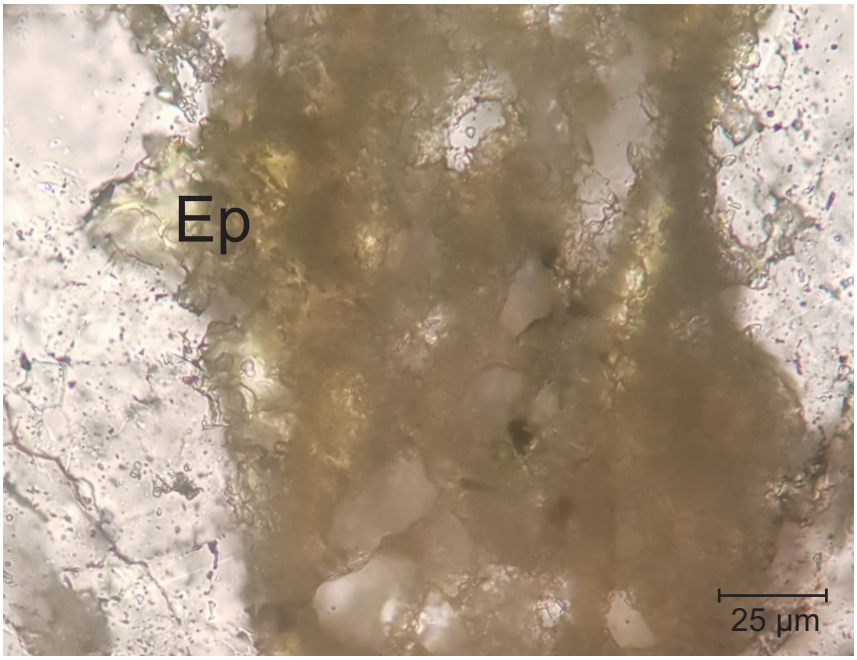


Figure 1-4A.48: Microphotograph. Sample 216.1L. Granule Site 11, Position 2. Transmitted light, ppl, 40x. Epidosite.

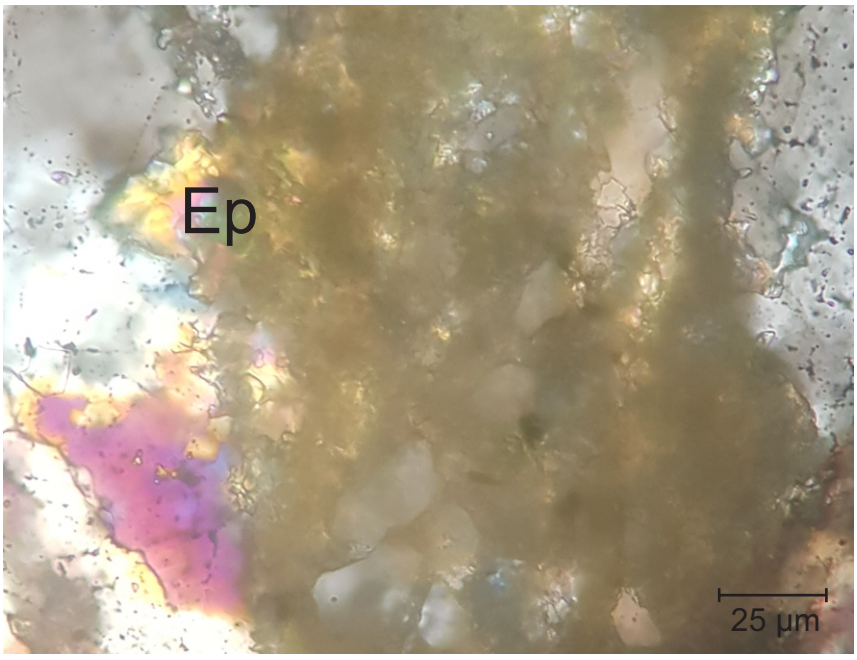


Figure 1-4A.49: Microphotograph. Sample 216.1L. Granule Site 11. Transmitted light, xpl, 40x. Epidosite.

Table 1-4A.1: Scanning electron microscope chemical analyses of Granules from Flemish Cap. (Sample 216.1L)

Sample	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	V2O5	Cr2O3	NiO	CuO	ZnO	SrO	ZrO2	BaO	La2O3	Ce2O3	Nd2O3	HfO2	WO3	Total	Actual Total
39.153.1L	1	1	Kfs	66.11		17.91					1.25	14.10												0.63						100	127
39.153.1L	1	2	Kfs	67.08		17.69					2.40	12.83																		100	110
39.153.1L	1	3	Chl + TiO_2	32.26	13.70	13.12	15.56	0.42	21.07	0.58				3.29																100	103
39.153.1L	1	4	Chl	28.03		18.17	21.69	1.01	16.09																					85	89
39.153.1L	1	5	Kfs	66.39		17.80					0.97	14.84																		100	116
39.153.1L	1	6	Qz	100.00																										100	130
39.153.1L	1	7	Mag				99.54										0.46													100	108
39.153.1L	1	8	Kfs	66.20		17.80					0.85	15.15																		100	118
39.153.1L	1	9	Qz	100.00																										100	104
39.153.1L	1	10	Ab	67.85		19.70				1.13	11.16	0.16																		100	98
39.153.1L	1	11	Kfs	65.76		17.89					0.98	14.58												0.79						100	127
39.153.1L	1	12	Qz	100.00																										100	114
39.153.1L	1	13	Ab	66.67		21.29				0.85	9.73	1.46																		100	122
39.153.1L	1	14	Qz	100.00																										100	106
39.153.1L	1	15	Chl	30.12		17.51	19.12	0.71	17.36	0.18																				85	87
39.153.1L	1.1	1	Mag				100.00																							100	95
39.153.1L	1.1	2	Ap				0.52			48.57			44.50		4.77														1.64	100	128
39.153.1L	1.1	3	Chl	28.77	0.26	17.83	22.28	0.78	14.63			0.44																		85	105
39.153.1L	1.1	4	Qz	99.74			0.26																							100	125
39.153.1L	1.1	5	Qz	99.53			0.47																							100	127
39.153.1L	1.1	6	Ap	0.54			0.41			48.57			44.34		4.50														1.63	100	125
39.153.1L	1.1	7	TiO_2	3.47	91.34	0.87	2.95		0.98	0.39																				100	108
39.153.1L	1.2	1	Qz	99.68			0.32																							100	124
39.153.1L	1.2	2	Qz	99.45			0.55																							100	123
39.153.1L	1.2	3	Chl + TiO_2	29.97	6.24	21.16	24.48	1.09	17.06																					100	102
39.153.1L	1.2	4	Ab	67.40		20.01	0.20			1.40	10.78	0.22																		100	119
39.153.1L	1.2	5	Kfs	67.35		18.43					1.11	13.11																		100	115
39.153.1L	1.2	6	Ilm +	16.60	50.73	2.66	14.88	2.67	1.19	11.27																				100	102
39.153.1L	1.2	7	Qz	98.93		0.36	0.71																							100	118
39.153.1L	1.2	8	Kfs	66.14		17.62					0.48	15.76																		100	119
39.153.1L	2	1	Ep +	47.95		21.30	5.19		0.66	24.90																				100	98
39.153.1L	2	2	Ab	69.16		18.96				0.34	11.53																			100	110
39.153.1L	2	3	Ab	68.72		19.02				0.45	11.81																			100	96
39.153.1L	2	4	Ep	39.92		21.13	13.92			22.04																				97	99
39.153.1L	2	5	Ab	68.78		19.02				1.02	11.19																			100	131
39.153.1L	2	6	Kfs	66.25		17.22	0.56			1.10		14.87																		100	107
39.153.1L	2.1	1	Mag				99.14										0.47	0.39												100	98
39.153.1L	2.1	2	Ttn	34.45	32.22	3.77	1.73			27.84																				100	111
39.153.1L	2.1	3	Qz	100.00																										100	123
39.153.1L	2.1	4	Ab	68.63		19.33				0.69	11.34																			100	120
39.153.1L	2.1	5	Ep	46.58		17.59	8.18		1.50	22.79		0.36																		97	107
39.153.1L	2.1	6	Ab	68.70		19.15	0.25			0.50	11.40																			100	120
39.153.1L	2.1	7	Ab	68.88		18.89	0.24			0.47	11.52																			100	117
39.153.1L	2.1	8	Ep	45.56		17.59	8.53		0.34	24.99																				97	109
39.153.1L	2.1	9	Chl	29.41		15.77	22.22	0.68	16.92																					85	94
39.153.1L	2.1	10	Act	56.57		1.09	16.54	0.78	12.53	11.94	0.37	0.18																		100	113
39.153.1L	2.1	11	Ttn	33.14	35.47	2.35	1.24			27.80																				100	111
39.153.1L	2.1	12	Mag				99.63											0.37												100	96
39.153.1L	2.2	1	Zr	31.34																			68.66							100	124
39.153.1L	2.2	2	Chl	29.56		15.90	21.71	0.74	16.83	0.26																				85	103

Table 1-4A.1: Scanning electron microscope chemical analyses of Granules from Flemish Cap. (Sample 216.1L)

Sample	Site	Position	Mineral	SiO_2	TiO_2	Al_2O_3	FeO	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5	SO_3	F	Cl	V_2O_5	Cr_2O_3	NiO	CuO	ZnO	SrO	ZrO_2	BaO	La_2O_3	Ce_2O_3	Nd_2O_3	HfO_2	WO_3	Total	Actual Total
39.153.1L	2.2	3	Ttn	33.37	35.36	2.06	1.42			27.79																				100	111
39.153.1L	2.2	4	Ttn	33.44	34.37	2.30	1.21			27.77					0.91															100	114
39.153.1L	2.2	5	Ab	69.80		18.78	0.33			0.32	10.76																			100	122
39.153.1L	2.2	6	Chl	29.28		16.56	20.96	0.76	17.44																					85	102
39.153.1L	2.2	7	Chl	29.25	0.26	15.77	21.99	0.69	16.81	0.22																				85	102
39.153.1L	2.2	8	Ttn	33.75	34.47	2.23	2.02			27.53																				100	111
39.153.1L	2.2	9	Ep	41.05		14.30	18.38		2.08	20.57		0.63																		97	110
39.153.1L	2.2	10	Kfs	65.58	0.24	17.65	1.18					15.35																		100	118
39.153.1L	2.2	11	Ab	69.10		19.16				0.49	11.25																			100	122
39.153.1L	2.3	1	Ttn +	32.92	33.01	3.54	1.34			27.83					1.36															100	113
39.153.1L	2.3	2	Qz	100.00																										100	121
39.153.1L	2.3	3	Ttn +	33.13	32.99	3.28	1.60			27.53					1.46															100	112
39.153.1L	2.3	4	Mag				99.67											0.33												100	96
39.153.1L	2.3	5	Ttn	34.44	33.29	2.68	1.97			27.62																				100	108
39.153.1L	2.3	6	Kfs	61.87		17.90	2.60		2.33	3.13		12.18																		100	111
39.153.1L	2.3	7	Ep	45.18		16.94	9.44			25.44																				97	106
39.153.1L	2.3	8	Ep	43.25		18.84	12.39	0.32	9.90	12.30																				97	103
39.153.1L	2.3	9	Mag				98.04			0.39							0.74	0.83												100	96
39.153.1L	2.3	10	Ttn +	33.20	35.75	1.95	1.49			27.61																				100	111
39.153.1L	2.3	11	Ttn +	33.11	34.43	2.65	2.58		1.09	26.14																				100	108
39.153.1L	2.3	12	Ep	46.74		21.30	3.14	0.23		25.58																				97	109
39.153.1L	2.3	13	Qz	99.77			0.23																							100	121
39.153.1L	3	1	Ab	69.02		19.09				0.42	11.46																			100	113
39.153.1L	3	2	Chl	29.84	0.27	17.30	22.25	0.72	13.04	0.53		1.05																		85	102
39.153.1L	3	3	Ap	0.63						48.32			43.95		5.56														1.54	100	119
39.153.1L	3	4	Qz	100.00																										100	108
39.153.1L	3.1	1	TiO_2	0.68	98.66		0.66																							100	110
39.153.1L	3.1	2	Ti-Mag	3.30	3.58	1.96	87.20			3.64		0.32																		100	93
39.153.1L	3.1	3	Ap	1.53	1.09		0.60			47.44			42.47		5.41														1.46	100	126
39.153.1L	3.1	4	Chl	28.14	0.31	17.21	24.50	0.93	13.91																					85	103
39.153.1L	3.1	5	TiO_2 +	2.58	93.90	1.17	1.99					0.36																		100	109
39.153.1L	3.1	6	Chl	28.21	0.44	16.69	24.66	1.03	13.97																					85	102
39.153.1L	3.1	7	Ab	67.65		19.96	0.25			1.28	10.87																			100	122
39.153.1L	3.1	8	Chl	28.96	0.29	17.67	23.26	0.53	13.88			0.41																		85	102
39.153.1L	3.1	9	Ms	49.76	0.49	26.84	5.02		1.95		0.41	10.54																		95	109
39.153.1L	3.1	10	Chl	30.65	0.28	18.16	21.91	0.60	12.72			0.70																		85	106
39.153.1L	3.1	11	Ms	49.40	0.45	27.13	5.28		2.40			10.33																		95	112
39.153.1L	4	1	Kfs	63.60		17.77	2.41		1.21			15.01																		100	108
39.153.1L	4	2	Kfs	66.16		17.59						16.25																		100	125
39.153.1L	4	3	Kfs	66.17		17.76						16.07																		100	114
39.153.1L	4	4	Ab	68.91		19.18				0.43	11.32	0.16																		100	123
39.153.1L	4.1	1	Ap	0.96				0.23		48.32			43.72		4.54											0.72			1.51	100	123
39.153.1L	4.1	2	Ap	0.93						48.49			43.65		4.76											0.79			1.40	100	122
39.153.1L	4.1	3	Ms	51.40	0.32	26.08	4.87		1.85			10.47																		95	111
39.153.1L	4.1	4	Chl	29.75		17.64	24.50	0.28	11.70			1.13																		85	105
39.153.1L	4.1	5	Ms	50.94	0.44	26.36	5.07		1.72		0.29	10.17																		95	113
39.153.1L	4.1	6	Ms	50.09	0.69	24.88	6.81		2.86			9.66																		95	109
39.153.1L	4.1	7	Ab	69.26		18.95				0.34	11.45																			100	120
39.153.1L	4.1	8	TiO_2	9.23	81.74	3.39	3.59		0.52	0.52		1.01																		100	106
39.153.1L	4.1	9	Kfs	65.35		18.22	0.43				0.24	15.76																		100	116

Table 1-4A.1: Scanning electron microscope chemical analyses of Granules from Flemish Cap. (Sample 216.1L)

Sample	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	V2O5	Cr2O3	NiO	CuO	ZnO	SrO	ZrO2	BaO	La2O3	Ce2O3	Nd2O3	HfO2	WO3	Total	Actual Total
39.153.1L	4.1	10	TiO_2	18.15	68.40	6.65	3.07		1.16			2.57																		100	103
39.153.1L	4.1	11	Ms	58.05	0.33	21.94	4.67		1.49		0.27	8.26																		95	109
39.153.1L	4.1	12	Ms	50.62	0.96	26.21	5.30		1.43			10.48																		95	112
39.153.1L	4.1	13	Ms	50.81	0.48	26.44	5.02		1.67			10.58																		95	111
39.153.1L	4.1	14	Ms	53.23		23.66	5.23		2.64			10.25																		95	113
39.153.1L	4.1	15	TiO_2 +	5.73	90.27	2.20	0.85					0.95																		100	107
39.153.1L	4.2	1	Ab	69.66		18.57					11.57	0.20																		100	119
39.153.1L	4.2	2	Qz +	78.38		13.11				1.21	7.29																			100	128
39.153.1L	4.2	3	Ab	69.49		18.89					11.62																			100	119
39.153.1L	4.2	4	Kfs	66.08		17.94					0.43	15.55																		100	118
39.153.1L	4.2	5	Kfs	66.15		17.86						15.99																		100	116
39.153.1L	5	1	Ab	69.06		18.84	0.21			0.28	11.61																			100	114
39.153.1L	5	2	Ep +	64.98		12.95	7.94			14.13																				100	115
39.153.1L	5	3	Ab	68.60		19.22				1.00	11.18																			100	118
39.153.1L	5	4	Cal +	17.50		12.72	12.68	0.91	11.58	44.60																				100	69
39.153.1L	5.1	1	Chl	30.30		19.18	17.28	0.36	16.81		1.08																			85	104
39.153.1L	5.1	2	Ep	40.02		22.73	11.84			22.42																				97	112
39.153.1L	5.1	3	Chl	27.21		20.16	19.36	0.38	17.89																					85	100
39.153.1L	5.1	4	Chl	27.63		20.03	18.90	0.37	18.07																					85	100
39.153.1L	5.1	5	Ep	39.68		20.32	14.75			22.25																				97	113
39.153.1L	5.1	6	Ep	40.13	0.51	21.67	12.45	0.38		21.85																				97	113
39.153.1L	5.1	7	Ep	39.55	0.44	21.39	13.22		0.50	21.90																				97	112
39.153.1L	5.1	8	Ep	40.08		21.58	12.90			22.44																				97	112
39.153.1L	5.1	9	Chl	28.50		18.38	18.23	0.37	19.33	0.20																				85	101
39.153.1L	5.1	10	Ab	69.24		19.23				0.49	11.03																			100	122
39.153.1L	5.1	11	Ab	68.70		18.97	0.30			0.52	11.31	0.20																		100	122
39.153.1L	5.1	12	Ab	69.38		18.97				0.40	11.26																			100	121
39.153.1L	5.1	13	Ab	67.51		19.18	1.13		0.62	0.45	11.11																			100	123
39.153.1L	5.1	14	Chl	28.33		18.22	20.79	0.53	16.18	0.77		0.19																		85	101
39.153.1L	5.1	15	Chl	27.89		20.22	18.59	0.39	17.91																					85	104
39.153.1L	5.1	16	Ab	68.44		19.19	0.55			0.84	10.97																			100	120
39.153.1L	5.1	17	Ep	40.17		21.48	13.07			22.29																				97	113
39.153.1L	5.2	1	Ab	69.31		18.85				0.68	11.16																			100	123
39.153.1L	5.2	2	Cal + Chl	9.08		6.44	6.96	1.12	5.61	70.78																				100	66
39.153.1L	5.2	3	Cal + Chl	14.03		8.71	8.16	1.07	7.74	59.72	0.58																			100	74
39.153.1L	5.2	4	Ab	68.65		18.78				1.16	11.40																			100	123
39.153.1L	5.2	5	Ab	69.35		18.62				0.44	11.60																			100	126
39.153.1L	5.2	6	Ab	69.16		18.98				0.50	11.22	0.14																		100	124
39.153.1L	5.2	7	Kfs	65.43		17.55	0.48			1.09		15.46																		100	123
39.153.1L	5.2	8	Kfs	63.86		18.51	1.93		1.57		0.41	13.72																		100	121
39.153.1L	5.2	9	Ab	69.52		18.82				0.23	11.11	0.32																		100	124
39.153.1L	6	1	Qz	99.30		0.53						0.16																		100	124
39.153.1L	6	2	Chl	29.73	0.68	15.02	21.91	0.69	16.50	0.47																				85	110
39.153.1L	6	3	Qz	100.00																										100	116
39.153.1L	6	4	Kfs	66.29		17.53					0.28	15.90																		100	114
39.153.1L	6	5	Kfs	66.13		17.76					0.68	15.43																		100	124
39.153.1L	6	6	Chl	30.89	1.11	14.97	21.73	0.67	15.07			0.57																		85	90
39.153.1L	6	7	Chl	29.90	1.39	15.60	20.81	0.63	15.02	0.35		1.31																		85	112
39.153.1L	6.1	1	Ab	69.13		18.70	0.46			0.15	11.57																			100	124
39.153.1L	6.1	2	?	47.28		12.44	7.59	0.26	31.08	1.06		0.30																		100	109

Table 1-4A.1: Scanning electron microscope chemical analyses of Granules from Flemish Cap. (Sample 216.1L)

Sample	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	V2O5	Cr2O3	NiO	CuO	ZnO	SrO	ZrO2	BaO	La2O3	Ce2O3	Nd2O3	HfO2	WO3	Total	Actual Total
39.153.1L	6.1	3	Py +	18.41	0.23	5.36	21.42	0.22	14.04	0.97	0.42	0.30	0.47	38.17																100	141
39.153.1L	6.1	4	Chl +	30.40	1.89	15.33	20.71	0.71	15.20			0.77																		85	104
39.153.1L	6.1	5	Ttn +	34.61	31.33	3.95	4.00		2.19	23.91																				100	113
39.153.1L	6.1	6	Ttn + Chl	35.21	21.51	8.43	8.96	0.29	5.98	19.44		0.18																		100	107
39.153.1L	6.1	7	Ap				0.26			49.16			44.33		4.43	0.16													1.67	100	124
39.153.1L	6.1	8	?	47.70		11.16	10.01	0.28	28.80	0.90	0.32	0.82																		100	107
39.153.1L	6.1	9	?	47.17		12.26	7.94	0.27	31.04	1.03		0.27																		100	102
39.153.1L	6.1	10	Py + other	11.95		3.55	23.69		10.80	0.55	0.47			48.99																100	178
39.153.1L	6.1	11	Ab	68.16		18.94	0.54			1.10	11.26																			100	122
39.153.1L	6.1	12	Chl	30.35	2.54	14.82	20.20	0.63	15.15	0.47		0.85																		85	104
39.153.1L	6.2	1	Zr	31.38																			68.62							100	124
39.153.1L	6.2	2	Kfs	61.41		15.53	0.35					14.10											8.61							100	115
39.153.1L	6.2	3	Kfs +	65.54		17.40	2.54				0.60	13.92																		100	117
39.153.1L	6.2	4	Ab + Mag	26.34	0.30	5.36	48.54				3.95						0.51													85	122
39.153.1L	6.2	5	Kfs	64.09		20.27	0.43				0.81	14.40																		100	115
39.153.1L	6.2	6	Qz	100.00																										100	124
39.153.1L	7	1	Kfs	66.17		17.64					0.30	15.89																		100	115
39.153.1L	7	2	Qz + Ab	75.79		13.82	0.53			0.24	9.62																			100	121
39.153.1L	7	3	Ab	68.74		19.15				0.65	11.25	0.21																		100	112
39.153.1L	7.1	1	Kfs	66.27		17.67					0.27	15.79																		100	120
39.153.1L	7.1	2	Qz	99.06		0.58	0.19					0.16																		100	124
39.153.1L	7.1	3	Qz	97.42		1.41	0.31					0.86																		100	126
39.153.1L	7.1	4	Qz	100.00																										100	127
39.153.1L	7.1	5	Ap	0.80						49.34	0.36		43.31	0.64	3.93														1.62	100	121
39.153.1L	7.1	6	Chl + Kfs	37.38		21.38	25.60	0.55	12.81			2.27																		100	96
39.153.1L	7.1	7	Kfs	65.14		17.84					0.26	15.37												1.38						100	121
39.153.1L	7.1	8	Ab	69.54		18.97	0.53			0.64	9.75	0.56																		100	118
39.153.1L	7.1	9	Ab	68.91	0.43	18.66	0.32			0.65	10.74	0.29																		100	123
39.153.1L	7.1	10	Kfs	65.73		17.79					0.30	15.40												0.79						100	121
39.153.1L	7.1	11	Chl	32.82		16.90	21.57	0.33	12.27		0.69	0.42																		85	111
39.153.1L	7.1	12	Chl	31.86		16.72	20.43	0.48	12.76			2.75																		85	104
39.153.1L	7.1	13	Ab	69.09		19.14				0.41	11.37																			100	122
39.153.1L	8	1	Ep	42.70		22.36	10.26	0.77		20.91																				97	118
39.153.1L	8	2	Qz + Ab	81.69		11.38				1.19	5.19	0.55																		100	122
39.153.1L	8	3	Kfs + Ab	66.40		22.22	1.28		0.51	0.36	4.94	4.29																		100	104
39.153.1L	8.1	1	Ttn	33.21	36.93	1.76	0.31			27.79																				100	112
39.153.1L	8.1	2	Ms	47.53	0.79	29.83	4.77		1.43			10.65																		95	111
39.153.1L	8.1	3	Ep	40.10		23.30	10.98	0.54		22.08																				97	111
39.153.1L	8.1	4	Ms	47.80	0.75	29.59	4.31		1.64		0.34	10.57																		95	110
39.153.1L	8.1	5	Ep	39.91		23.34	11.55	0.66		21.54																				97	108
39.153.1L	8.1	6	Ab +	65.34		22.39	0.20			0.71	9.43	1.92																		100	119
39.153.1L	8.1	7	Qz	100.00																										100	123
39.153.1L	8.1	8	Qz	100.00																										100	121
39.153.1L	8.1	9	Ms	51.28		32.23	1.11		1.05		0.36	8.96																		95	112
39.153.1L	8.1	10	Ms	49.69		33.06	1.16		0.90		0.40	9.79																		95	111
39.153.1L	8.1	11	Ms	55.42		29.47	0.86		0.39		0.75	8.10																		95	113
39.153.1L	8.1	12	Qz	100.00																										100	121
39.153.1L	8.1	13	Ms	51.24		32.34	1.28		1.12		0.54	8.47																		95	113
39.153.1L	9	1	Ap				0.27			47.92			44.68		5.05						0.39								1.70	100	119
39.153.1L	9	2	Qz +	95.32		2.91	0.47					1.01									0.29									100	123
39.153.1L	9	3	Chl	29.06	0.60	17.60	21.35	0.48	14.38	0.55		0.52									0.45									85	103

Table 1-4A.1: Scanning electron microscope chemical analyses of Granules from Flemish Cap. (Sample 216.1L)

Sample	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	V2O5	Cr2O3	NiO	CuO	ZnO	SrO	ZrO2	BaO	La2O3	Ce2O3	Nd2O3	HfO2	WO3	Total	Actual Total
39.153.1L	9	4	Qz	96.93		1.93	0.43					0.71																		100	106
39.153.1L	9.1	1	Feohy	1.61	0.52	1.56	96.07														0.23									100	95
39.153.1L	9.1	2	Feohy	3.19		1.04	95.24		0.53																					100	96
39.153.1L	9.1	3	Ab	69.55		18.89				0.22	11.34																			100	122
39.153.1L	9.1	4	Kfs	67.91		16.70					0.32	14.10												0.97						100	121
39.153.1L	9.1	5	Kfs	62.66		19.96	1.62		0.60		0.38	13.91												0.85						100	121
39.153.1L	9.1	6	Qz	99.47		0.38						0.15																		100	123
39.153.1L	9.1	7	Ttn	33.55	29.64	5.34	1.43			27.16					2.88															100	115
39.153.1L	9.2	1	TiO_2	0.87	97.52		0.68			0.57											0.36									100	112
39.153.1L	9.2	2	"Ilm" +	14.78	48.69	1.97	26.07	0.30		7.79											0.39									100	114
39.153.1L	9.2	3	Ccp +	11.76		0.44	19.63					0.13		46.12						21.92										100	199
39.153.1L	9.2	4	Ttn	34.10	29.35	4.96	2.02		0.34	25.90					3.24						0.10									100	119
39.153.1L	9.2	5	Qz	100.00																										100	126
39.153.1L	9.2	6	Kfs	65.68	0.30	19.71	3.97		1.91		0.26	7.78									0.39									100	116
39.153.1L	9.2	7	Ms	51.37	0.39	25.99	4.20		2.53		0.42	10.11																		95	115
39.153.1L	9.2	8	Ms +	53.21		22.95	5.12		3.32		0.77	9.63																		95	113
39.153.1L	9.2	9	Ep	42.84		22.63	12.52	0.43	0.61	20.48		0.24									0.26									100	117
39.153.1L	9.2	10	Kfs	64.89		17.59					0.31	15.30									0.37			1.54						100	123
39.153.1L	9.2	11	Ab	69.19		18.92				0.29	11.60																			100	123
39.153.1L	10	1	Chl	28.50		17.33	22.81	0.82	15.55																					85	102
39.153.1L	10	2	Ab	67.81		19.40	0.50			0.23	10.26	1.80																		100	127
39.153.1L	10	3	Ab + Kfs	64.74		22.17	1.04		0.49	0.42	7.48	3.66																		100	125
39.153.1L	10	4	Ab	68.15		19.82				0.49	11.04	0.49																		100	107
39.153.1L	10	5	Qz	100.00																										100	118
39.153.1L	10	6	Mag				99.43										0.57													100	95
39.153.1L	10.1	1	Mag				99.32										0.68													100	97
39.153.1L	10.1	2	Chl	28.03		17.47	23.36	0.79	15.34																					85	97
39.153.1L	10.1	3	Mag				99.39										0.61													100	96
39.153.1L	10.1	4	TiO_2 +	8.56	81.01	0.66	2.54			7.23																				100	108
39.153.1L	10.1	5	Ap +	1.92		0.62				47.02		0.47	42.93		4.19	1.17													1.68	100	123
39.153.1L	10.1	6	Kfs	65.38		18.02					0.60	15.38												0.62						100	118
39.153.1L	10.1	7	Qz	100.00																										100	121
39.153.1L	10.1	8	Mag +	6.19		4.13	83.57		5.69								0.42													100	106
39.153.1L	10.1	9	Ap				0.78			47.31			44.76		3.88	1.72													1.55	100	127
39.153.1L	10.1	10	Mag	0.80			98.68										0.53													100	91
39.153.1L	10.1	11	Chl	29.81	0.37	16.41	21.66	0.68	16.08																					85	104
39.153.1L	10.1	12	Ttn	34.78	21.57	9.36	8.00	0.28	5.90	19.57							0.55													100	112
39.153.1L	10.1	13	Ap				0.70			48.52			44.44		3.00	1.65													1.69	100	122
39.153.1L	10.1	14	Chl	28.59		17.77	22.08	0.82	15.73																					85	97
39.153.1L	10.1	15	Ttn	34.35	26.91	7.68	4.47		2.12	24.48																				100	108
39.153.1L	10.1	16	Qz	99.67			0.33																							100	123
39.153.1L	10.1	17	Kfs	65.41		17.89	0.34				0.78	14.82												0.75						100	120
39.153.1L	10.1	18	Kfs	65.97	0.25	17.80					0.72	15.26																		100	118
39.153.1L	10.1	19	Qz	99.69		0.31																								100	123
39.153.1L	10.2	1	Zr	31.03			0.59																68.37							100	126
39.153.1L	10.2	2	Chl	29.08	0.26	17.34	21.59	0.71	15.80	0.22																				85	107
39.153.1L	10.2	3	Qz	99.58			0.42																							100	125
39.153.1L	10.2	4	Mix	32.45	13.17	12.24	15.22	0.41	10.86	12.52		0.21		2.92																100	110
39.153.1L	10.2	5	Kfs	65.44		17.88	0.29				0.67	14.95												0.77						100	121
39.153.1L	10.2	6	Ab	69.13		18.66	0.40			0.84	10.81	0.16																		100	122

Table 1-4A.1: Scanning electron microscope chemical analyses of Granules from Flemish Cap. (Sample 216.1L)

Sample	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	V2O5	Cr2O3	NiO	CuO	ZnO	SrO	ZrO2	BaO	La2O3	Ce2O3	Nd2O3	HfO2	WO3	Total	Actual Total
39.153.1L	10.2	7	Kfs	65.38		18.18					1.29	14.39												0.76						100	123
39.153.1L	10.2	8	Chl +	34.85	2.67	17.46	24.11	0.71	18.17	1.58		0.45																		100	104
39.153.1L	10.2	9	Ap +	13.33	4.54	5.07	6.31		4.57	32.72			27.76	1.31	4.13	0.27														100	119
39.153.1L	10.2	10	Ttn	35.40	26.75	7.40	3.28		1.40	25.76																				100	115
39.153.1L	10.2	11	Chl	32.58		17.23	20.51	0.64	12.23		0.30	1.52																		85	110
39.153.1L	11	1	Qz	99.00		0.56	0.26					0.18																		100	124
39.153.1L	11	2	Ep	42.96	0.49	21.34	10.81	0.25		21.15																				97	118
39.153.1L	11.1	1	Zr	31.21		0.84	0.83		0.31	0.77													64.68					1.36		100	129
39.153.1L	11.1	2	Chl	27.95		18.90	20.49	0.49	17.17																					85	104
39.153.1L	11.1	3	Ab	68.31		19.29	0.31			0.90	11.18																			100	124
39.153.1L	11.1	4	Chl +	43.79	0.74	16.88	19.91	0.48	16.15	2.04																				100	108
39.153.1L	11.1	5	Ep	41.60		21.64	11.92	0.29		21.54																				97	114
39.153.1L	11.1	6	Qz	99.79			0.21																							100	125
39.153.1L	11.1	7	Chl + Cal	34.06		22.51	21.64	0.52	15.00	5.41	0.87																			100	107
39.153.1L	11.1	8	Ep	40.59		22.09	12.21			22.10																				97	114
39.153.1L	11.1	9	Ep	41.53		22.16	11.71	0.25		21.35																				97	113
39.153.1L	11.1	10	Ep	40.45		21.72	12.56			22.27																				97	113
39.153.1L	11.1	11	Qz	99.51			0.29			0.20																				100	124
39.153.1L	12	1	Ep	40.97		22.99	11.02			21.65	0.37																			97	114
39.153.1L	12	2	Ep	40.23		22.59	11.78			22.41																				97	114
39.153.1L	12	3	Ep	40.48		23.65	10.30			22.57																				97	118
39.153.1L	12	4	Qz	100.00																										100	118
39.153.1L	12	5	Qz	100.00																										100	133
39.153.1L	12.1	1	Ep	39.99		22.07	12.64			22.31																				97	109
39.153.1L	12.1	2	Cal	0.40				0.89		54.71																				56	55
39.153.1L	12.1	3	Qz	99.82			0.18																							100	120
39.153.1L	12.1	4	Qz	100.00																										100	120
39.153.1L	12.1	5	Chl	32.65		17.52	21.47	0.40	12.96																					85	97
39.153.1L	12.1	6	Ttn	35.05	27.07	8.15	8.03		2.73	17.34					1.62															100	101
39.153.1L	12.1	7	Ep	43.52		21.71	10.50	0.40		20.87																				97	113
39.153.1L	12.1	8	Qz	100.00																										100	120
39.153.1L	12.1	9	Qz	100.00																										100	120
39.153.1L	12.1	10	Qz	100.00																										100	119
39.153.1L	12.1	11	Ep	40.04		22.43	12.11			22.43																				97	107
39.153.1L	12.2	1	Ttn	32.93	37.14	1.22	0.77			27.94																				100	110
39.153.1L	12.2	2	Ep	41.09		21.40	11.56	0.53		19.52												2.90								97	112
39.153.1L	12.2	3	Ep	40.33		23.92	10.93	0.56		21.26																				97	107
39.153.1L	12.2	4	And	58.50		19.91	4.20			9.21	8.18																			100	112
39.153.1L	12.2	5	Qz +	94.30		2.07	1.10			2.53																				100	118
39.153.1L	12.2	6	Ep	40.87		22.97	11.17	0.40		21.59																				97	110
39.153.1L	12.2	7	Qz	100.00																										100	119
39.153.1L	12.2	8	Ep	40.20		22.43	12.11			22.27																				97	108
39.153.1L	12.2	9	Ep	40.21		22.80	11.69	0.36		21.94																				97	108
39.153.1L	12.2	10	Chl	27.38		19.46	23.09	0.49	14.58																					85	101
39.153.1L	12.2	11	Qz	100.00																										100	119
39.153.1L	12.2	12	Qz +	97.06		1.34	0.55			1.05																				100	108
39.153.1L	12.3	1	Ep	40.05		23.17	11.57			22.22																				97	110
39.153.1L	12.3	2	Qz + Ep	83.60		6.21	2.92			7.28																				100	115
39.153.1L	12.3	3	Ep	40.13		22.52	12.39	0.32		21.64																				97	109
39.153.1L	12.3	4	Ep	42.62		21.83	10.83	0.44		21.27																				97	111
39.153.1L	12.3	5	Qz	100.00																										100	118

Table 1-4A.1: Scanning electron microscope chemical analyses of Granules from Flemish Cap. (Sample 216.1L)

Sample	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	V2O5	Cr2O3	NiO	CuO	ZnO	SrO	ZrO2	BaO	La2O3	Ce2O3	Nd2O3	HfO2	WO3	Total	Actual Total
39.153.1L	12.3	6	Qz	100.00																										100	120
39.153.1L	12.3	7	Ttn +	34.32	25.44	8.60	5.82		3.27	22.56																				100	108
39.153.1L	12.3	8	Ttn +	29.99	39.13	4.47	3.15		1.34	21.93																				100	108
39.153.1L	12.3	9	Chl	28.00		18.34	24.92	0.33	13.40																					85	99
39.153.1L	12.3	10	Ttn +	34.56	29.02	5.50	2.03		0.34	26.76					1.79															100	113
39.153.1L	12.3	11	Chl	27.22		19.01	26.05	0.27	12.45																					85	97
39.153.1L	12.4	1	Cal	0.76			0.24	0.30		54.71																				56	57
39.153.1L	12.4	2	Ep	40.09		21.55	13.06	0.33		21.97																				97	105
39.153.1L	12.4	3	Ep	40.14		22.58	12.25			22.03																				97	107
39.153.1L	12.4	4	Qz	99.06		0.32	0.35			0.27																				100	119
39.153.1L	12.4	5	Ab	69.01		18.66	0.37			0.74	11.22																			100	113
39.153.1L	12.4	6	Qz	99.45			0.29			0.26																				100	119
39.153.1L	12.4	7	Qz +	94.40		1.80	1.25			2.55																				100	116
39.153.1L	12.4	8	Qz	99.81			0.19																							100	120
39.153.1L	12.4	9	Qz +	96.33		1.21	0.82			1.64																				100	120
39.153.1L	12.4	10	Qz	100.00																										100	118
39.153.1L	12.4	11	Ep	39.80		22.16	12.49			22.55																				97	107
39.153.1L	12.4	12	Ep	40.02		23.74	11.07			22.17																				97	108
39.153.1L	12.4	13	Ep	39.86		23.08	11.65	0.99		21.43																				97	106
39.153.1L	12.5	1	Qz	99.82			0.18																							100	120
39.153.1L	12.5	2	Ep +	40.47		20.32	15.88		0.97	18.53																2.84	0.98			100	102
39.153.1L	12.5	3	Py +	9.22		2.29	27.07			1.63				59.42					0.37											100	201
39.153.1L	12.5	4	Ep	38.92		17.40	9.21			17.09													14.39							97	111
39.153.1L	12.5	5	Qz	99.49			0.30			0.21																				100	120
39.153.1L	12.5	6	Ep	39.98		22.95	11.52			22.55																				97	110
39.153.1L	12.5	7	Ep	39.95		23.22	11.13			22.70																				97	109
39.153.1L	12.5	8	Qz +	91.79			0.30			0.38	3.45	0.73		0.94		2.40														100	107
39.153.1L	12.5	9	Ep + Ab	41.18		22.51	11.27	0.26		22.75	1.41	0.23				0.39														100	98
39.153.1L	13	1	Kfs	65.40		18.05					0.97	14.24												1.34					100	119
39.153.1L	13	2	Mix	52.62	0.50	16.93	12.37	0.60	8.98	6.97				1.04																100	120
39.153.1L	13	3	Mix	56.04		6.35	3.22	0.27	0.28	19.42			14.41																	100	100
39.153.1L	13	4	Ti-Mag +	2.53	17.02	0.98	79.14			0.34																				100	95
39.153.1L	13.1	1	Ti-Mag	0.61	9.78		89.12	0.50																						100	99
39.153.1L	13.1	2	Ti-Mag +	3.27	8.39		88.34																							100	96
39.153.1L	13.1	3	Ti-Mag	0.58	10.67		88.75																							100	99
39.153.1L	13.1	4	Ep	40.01		22.92	11.61	0.72		21.75																				97	115
39.153.1L	13.1	5	Ap	0.50						48.94			43.82		5.13														1.61	100	127
39.153.1L	13.1	6	Ep	40.28		22.96	11.44	0.66		21.66																				97	114
39.153.1L	13.1	7	And	59.11		25.99				8.02	6.88																			100	121
39.153.1L	13.1	8	Qz	100.00																										100	127
39.153.1L	13.1	9	Ap							48.29			44.48		5.39														1.83	100	129
39.153.1L	13.1	10	Qz	97.42		1.13	0.39			1.07																				100	117
39.153.1L	13.1	11	Ep	40.99		23.07	10.95	0.88		21.11																				97	117
39.153.1L	13.1	12	Ep	40.12		22.71	11.62	0.70		21.85																				97	112
39.153.1L	13.1	13	Qz	100.00																										100	126
39.153.1L	13.1	14	TiO_2 ?	27.42	49.46	13.66	4.77		0.65	2.12	1.63	0.30																		100	105
39.153.1L	13.1	15	And	58.58		26.41				8.53	6.47																			100	122
39.153.1L	13.1	16	And	65.81		21.73				4.85	7.61																			100	120
39.153.1L	14	1	Ms	46.79	0.84	30.54	4.71		1.01		0.31	10.80																		95	117
39.153.1L	14	2	Qz	100.00																										100	116
39.153.1L	14.1	1	Mag	0.72			99.28																							100	99

Table 1-4A.1: Scanning electron microscope chemical analyses of Granules from Flemish Cap. (Sample 216.1L)

Sample	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	V2O5	Cr2O3	NiO	CuO	ZnO	SrO	ZrO2	BaO	La2O3	Ce2O3	Nd2O3	HfO2	WO3	Total	Actual Total
39.153.1L	14.1	2	Kfs	65.28		17.99					0.51	15.19												1.04						100	123
39.153.1L	14.1	3	Kfs	65.56		17.96					0.74	14.74												1.00						100	122
39.153.1L	14.1	4	Ep	39.75		22.48	10.46	0.83		19.61															1.09	2.78				97	108
39.153.1L	14.1	5	Qz	100.00																										100	125
39.153.1L	14.1	6	Kfs	65.64		17.91					0.72	14.94												0.78						100	121
39.153.1L	14.1	7	Kfs	65.49		18.07					0.57	14.99												0.87						100	121
39.153.1L	14.2	1	Ms	47.81	0.81	30.10	4.55		1.10		0.26	10.37																		95	104
39.153.1L	14.2	2	Ms	48.64		29.70	4.64		1.41			10.61																		95	107
39.153.1L	14.2	3	Qz +	98.96		0.70						0.34																		100	118
39.153.1L	14.2	4	Qz	100.00																										100	123
39.153.1L	14.2	5	Qz	100.00																										100	121
39.153.1L	14.2	6	Qz	100.00																										100	121
39.153.1L	14.2	7	Bt + Chl	46.94		25.92	12.63	0.36	6.96			7.19																		100	104
39.153.1L	14.2	8	Chl	29.11		18.72	23.55	1.05	11.49		0.82	0.26																		85	100
39.153.1L	14.2	9	Kfs	65.49		17.77					0.73	14.96												1.05						100	117
39.153.1L	14.2	10	Kfs + Ab	63.10		20.36	0.68		1.14	0.88	5.47	8.37																		100	121
39.153.1L	14.2	11	Ab	67.77		20.12				1.56	10.21	0.35																		100	116
39.153.1L	14.2	12	Kfs	65.32		17.93					0.45	15.35												0.95						100	117
39.153.1L	14.2	13	Bt + Chl	45.06		21.22	17.85	0.68	10.11		0.81	4.26																		100	104
39.153.1L	15	1	Qz	100.00																										100	120
39.153.1L	15	2	Mix	29.75		15.22	8.07	0.35		29.70			16.90																	100	129
39.153.1L	15	3	Mag	0.95			98.55										0.50													100	99
39.153.1L	15.1	1	Mag	0.63			98.89										0.49													100	99
39.153.1L	15.1	2	Mag	0.62			98.85										0.53													100	97
39.153.1L	15.1	3	Mag	0.90			98.50										0.60													100	98
39.153.1L	15.1	4	Ep	39.78	0.88	22.77	10.90	0.75		21.92																				97	114
39.153.1L	15.1	5	Ep	40.31		22.33	11.93	0.71		21.72																				97	113
39.153.1L	15.1	6	Ap	1.66		0.40				48.32			42.49		5.47														1.65	100	126
39.153.1L	15.1	7	Kfs + Ab	63.52		23.29	0.33			2.50	7.88	2.49																		100	119
39.153.1L	15.1	8	Qz	100.00																										100	126
39.153.1L	15.1	9	Ep	40.77		22.67	11.50	0.34		21.72																				97	114
39.153.1L	15.1	10	Ttn	34.18	32.92	2.47	2.38			27.03		0.20					0.82													100	113
39.153.1L	15.1	11	Ep	40.52		22.55	12.21	0.27		21.45																				97	110
39.153.1L	15.1	12	Ep	40.09		23.13	11.28	0.76		21.74																				97	114
39.153.1L	15.1	13	Qz	100.00																										100	125
39.153.1L	15.1	14	Olig	62.09		23.93				5.84	7.99	0.15																		100	122
39.153.1L	16	1	Ab +	68.63		19.3	0.32			0.41	10.9	0.5																		100	116
39.153.1L	16.1	1	Ab	69.55		18.9				0.42	11.1																			100	117
39.153.1L	16.1	2	Chl	30.481		17.3	19.338	0.68	16.6		0.55																			85	99.8
39.153.1L	16.1	3	Chl	32.473	0.75	17.3	18.294	0.62	13.9	0.85	0.8																			85	102
39.153.1L	16.1	4	Chl	29.997		17.8	20.281	0.61	15.8	0.21	0.31																			85	99.5
39.153.1L	16.1	5	Ep	42.19		20.7	12.534	0.49		21.1																				97	109
39.153.1L	16.1	6	Ttn +	34.35	30.5	4.86	2.51			27.8																				100	108
39.153.1L	16.1	7	Ep	42.845		20.4	12.387	0.46		20.9																				97	110
39.153.1L	16.1	8	Ms	48.127		20.7	12.723	0.43	8.04	0.48	0.49	4.01																		95	109
39.153.1L	16.1	9	Ab	69.39		18.9	0.24			0.32	11.1																			100	117
39.153.1L	16.2	1	Ccp	1.74		0.28	8.75		0.31	0.45				42.3						46.2										100	148
39.153.1L	16.2	2	Ep	40.071		21.6	13.056			22.3																				97	110
39.153.1L	16.2	3	Qz	99.75			0.25																							100	120
39.153.1L	16.2	4	Ep +	47.71	3.22	17.3	10.97			20.8																				100	108
39.153.1L	16.2	5	Chl +	39.25		20.5	20.62	0.66	17.5		1.5																			100	100

Table 1-4A.1: Scanning electron microscope chemical analyses of Granules from Flemish Cap. (Sample 216.1L)

Sample	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	V2O5	Cr2O3	NiO	CuO	ZnO	SrO	ZrO2	BaO	La2O3	Ce2O3	Nd2O3	HfO2	WO3	Total	Actual Total
39.153.1L	16.2	6	Mix	45.6	0.26	20	16.34	0.5	13	1.21	2.82	0.23																		100	107
39.153.1L	16.2	7	Chl	28.56		18.1	20.315	0.71	16.8	0.25	0.31																			85	100
39.153.1L	16.2	8	Ep	44.261		20.1	11.941	0.26		20.4																				97	110
39.153.1L	16.2	9	Ep +	43.9	1.02	20.8	12.25	0.25		21.8																				100	110
39.153.1L	16.2	10	Ep + Qz	49.15		20	11.18	0.31		19		0.39																		100	108
39.153.1L	16.2	11	Qz +	86.89		5.19	2.62			5.3																				100	109
39.153.1L	16.2	12	Qz +	97.03	0.41		0.79			1.77																				100	119
			Notes																												
			"+" indicates more than one mineral present																												

Appendix 1-4B: SEM-BSE images for Flemish Cap Granules with EDS Mineral Analyses Sample 2008061-216.2L.

Flemish Cap Sample 216.2L Lithology Summary Notes

Granule 1 (Sites 1, 1.2, 1.3) Microphotographs: None.
This granitic Granule appears to be highly chloritized. The most common minerals include quartz, K-feldspar, albite and minor biotite. Accessory minerals include chalcopyrite, and titanite. Epidote and chlorite are late secondary minerals.

Granule 2 (Sites 2, 2.1, 2.2) Microphotographs: None.
This Granule appears to be a chloritized granite, with common magnetite. The main minerals are K-feldspar, quartz, muscovite and biotite. Accessory minerals include apatite and monazite. Chlorite is abundant throughout the Granule.

Granule 3 (Sites 3, 3.1, 3.2) Microphotographs: None
This granitic Granule is composed of mainly K-feldspar, albite, and quartz. Other minerals present include calcite, zircon, apatite, synchysite. Chlorite and epidote appear late.

Granule 4 (Sites 4, 4.1) Microphotographs: None
This granitic Granule is speckled with magnetite. Common minerals include magnetite, altered ilmenite, and quartz. Rare minerals are present such as synchysite. Chlorite is abundant.

Granule 5 (Sites 5, 5.1, 5.2) Microphotographs: None
This Granule is similar to the other Granules except magnetite is uncommon.Granule 6

(Sites 6, 6.1) Microphotographs: None
This granitic Granule is similar to Granule 4. Main minerals include quartz, oligoclase, feldspar, altered ilmenite, magnetite, and rare monazite. Chlorite is very common alteration mineral.

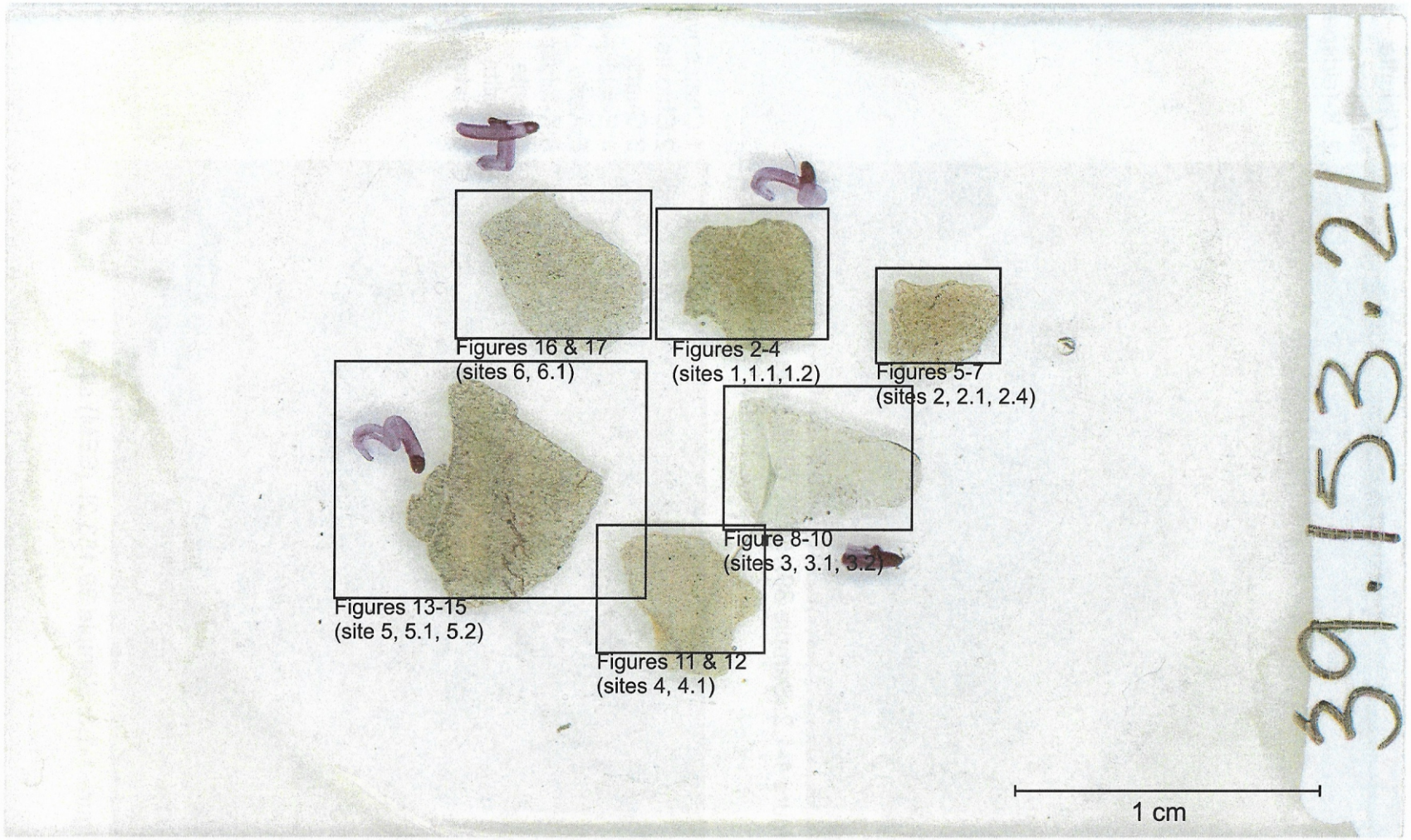
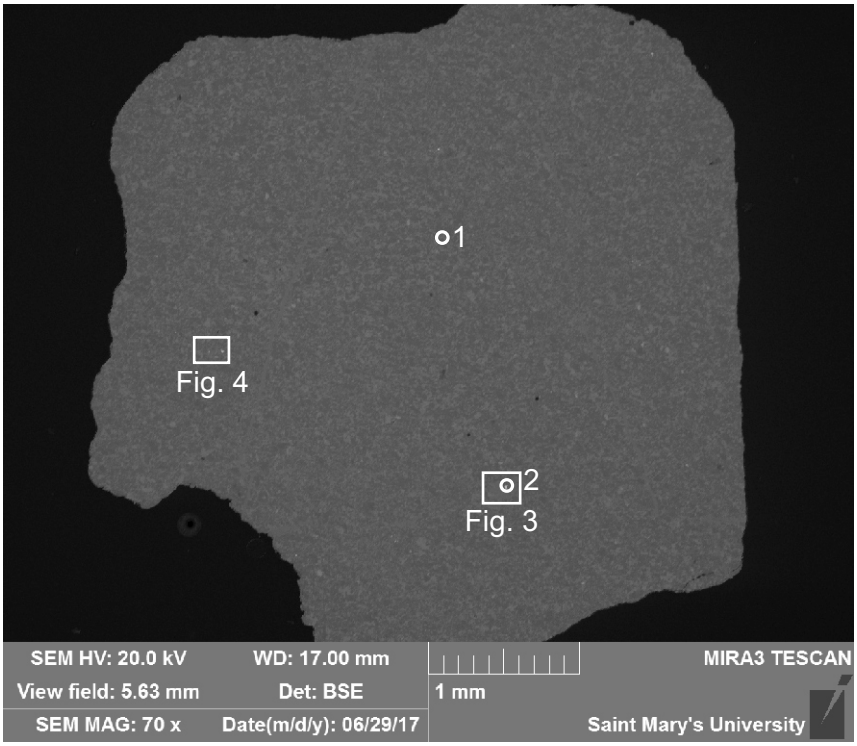
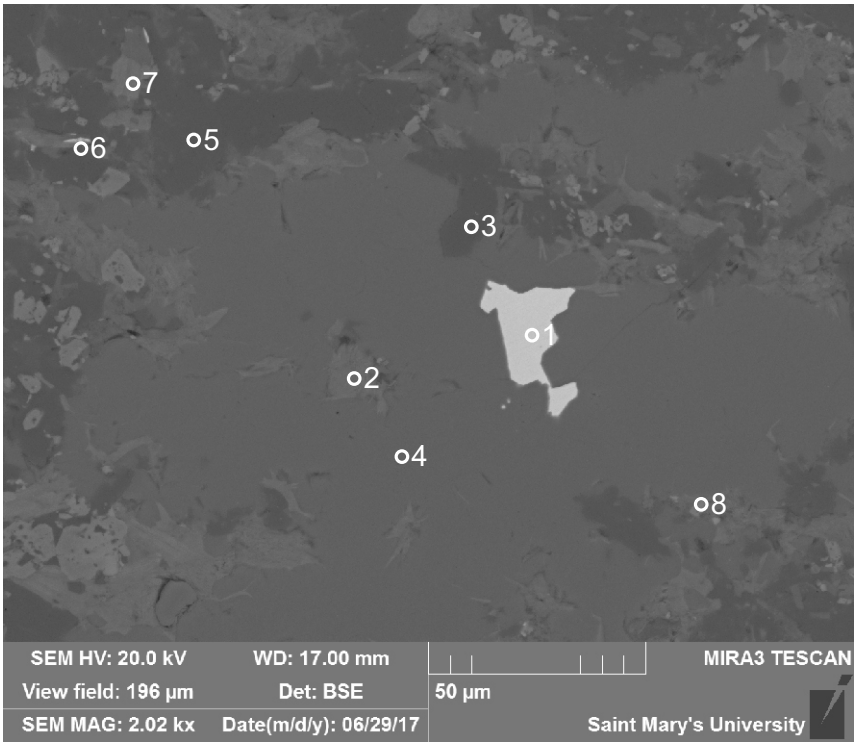


Figure 1-4B.1: Scanned thin section of 216.2L showing the location of analyzed sites.



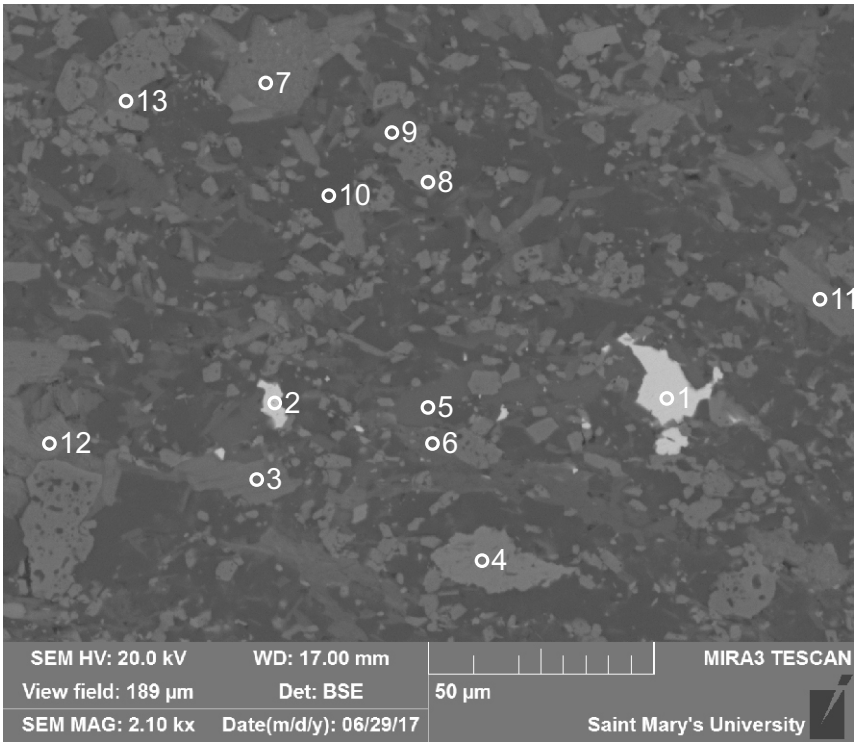
1:Chlorite + K-feldspar
2:K-feldspar + Chalcopyrite

Figure 1-4B.2: Sample 216.2L (SEM) site 1. This Granule consists of quartz, K-feldspar, albite, and abundant secondary chlorite. Most likely an altered granite.



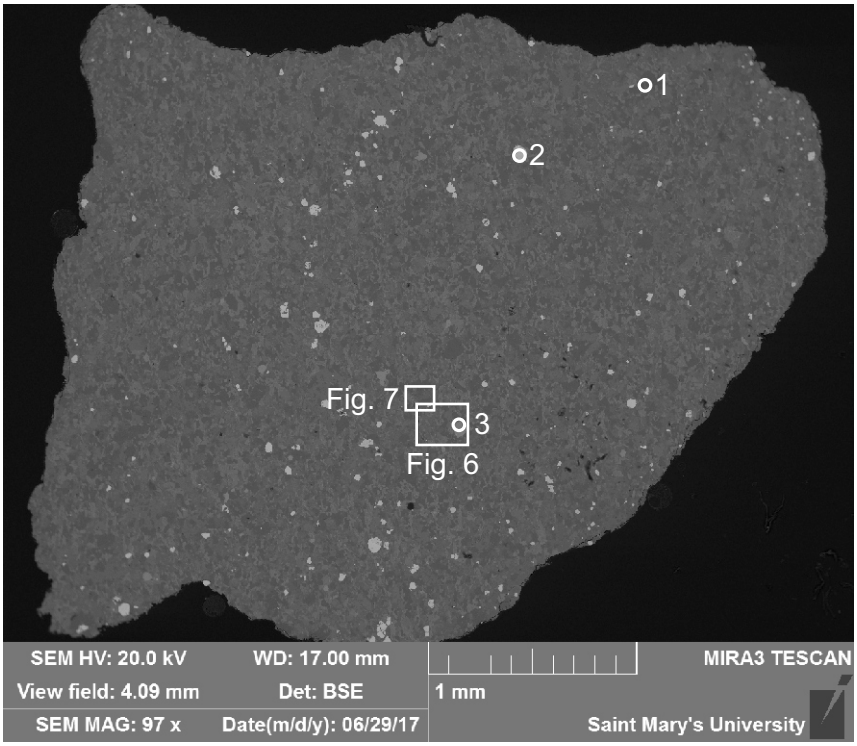
1:Chalcopyrite
2:Chlorite
3:Quartz
4:K-feldspar
5:Albite
6:K-feldspar + Chlorite
7:Biotite
8:Chalcopyrite

Figure 1-4B.3: Sample 216.2L (SEM) site 1.1. This site consists of K-feldspar (4, 6), quartz (3), albite (5) and minor biotite (7). The site appears to have abundant chlorite (2, 6) and late chalcopyrite (1, 8).



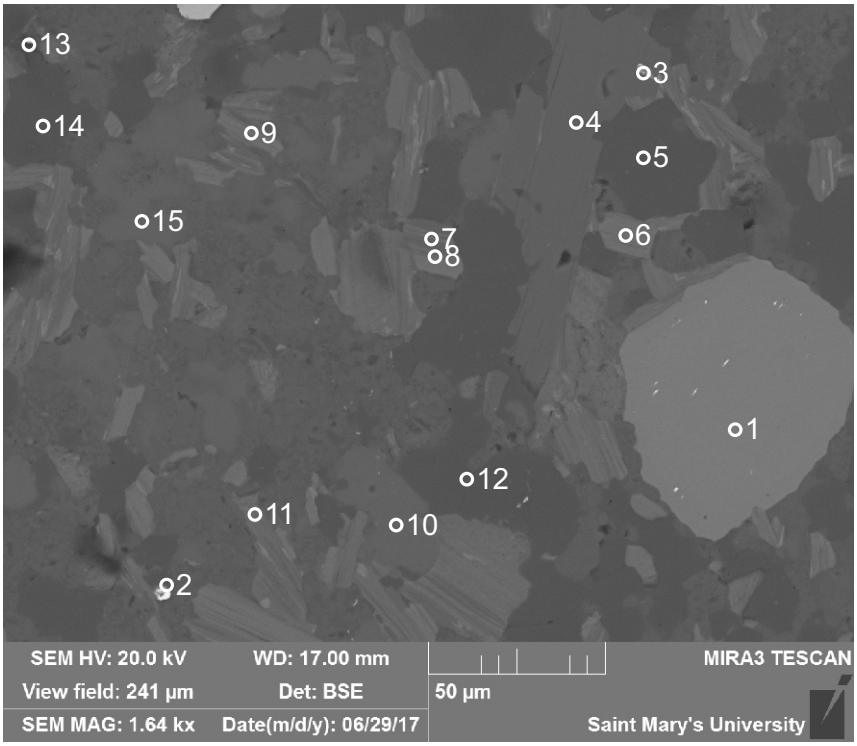
1:Chalcopyrite
2:Chalcopyrite
3:Biotite
4:Titanite
5:K-feldspar
6:Chlorite
7:Biotite
8:Epidote
9:K-feldspar
10:Quartz
11:Biotite
12:Biotite
13:Chlorite + Biotite

Figure 1-4B.4: Sample 216.2L (SEM) site 1.2. This site is similar to site 1.1. Main minerals include K-feldspar (5, 9), quartz, probable albite, and minor biotite (3, 7, 11-13). Secondary minerals include chlorite (6, 13), epidote (8), and chalcopyrite (1-2).



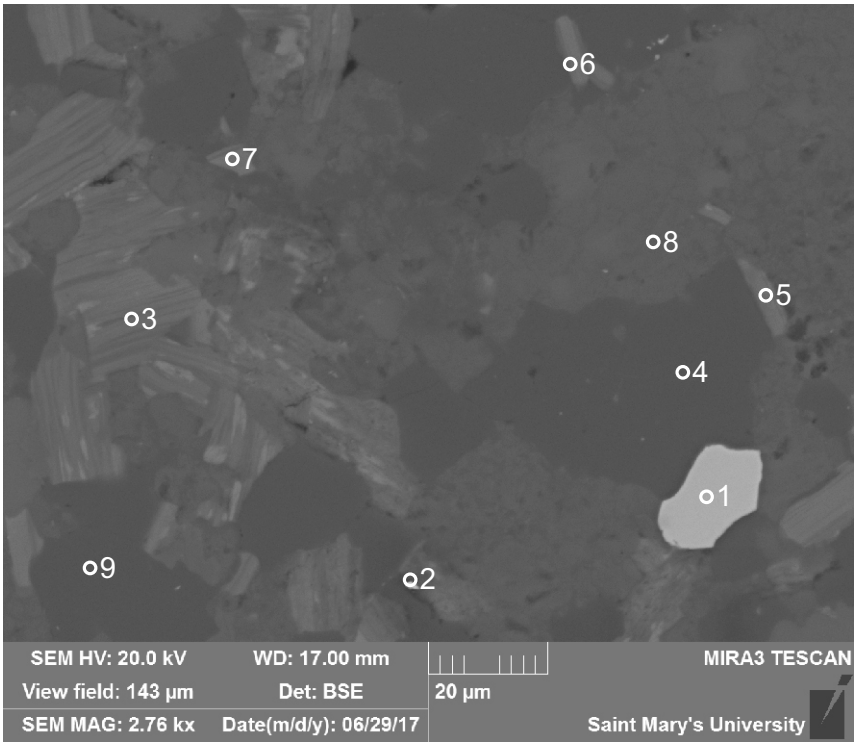
1:Quartz
2:Hematite
3:Apatite

Figure 1-4B.5: Sample 216.2L (SEM) site 2. This Granule appears to be a granite with some chlorite.



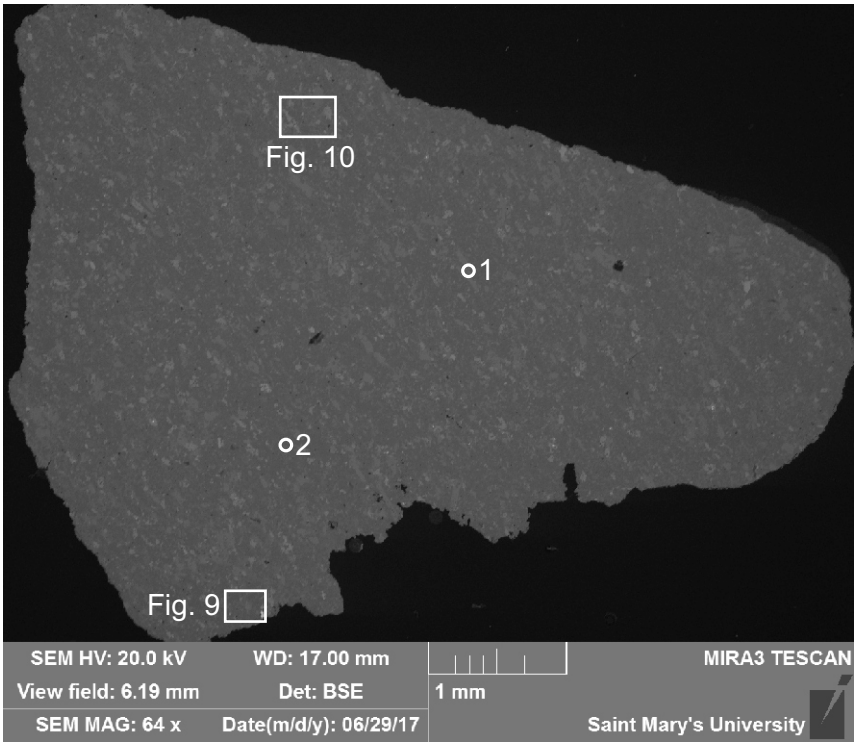
1:Apatite
2:Monazite (Ce) +
3:Muscovite +
Monazite (Ce)
4:Muscovite
5:Quartz
6:Biotite
7:Biotite
8:Chlorite + Biotite
9:Biotite
10:K-feldspar
11:Chlorite
12:Quartz
13:Quartz +
14:Quartz
15:K-feldspar

Figure 1-4B.6: Sample 216.2L (SEM) site 2.1. This site consists of mainly quartz (5, 12-15), K-feldspar (10, 15), muscovite (3, 4), biotite (6-9) and chlorite (8, 11). Minor minerals include apatite (1), and monazite (2, 3).



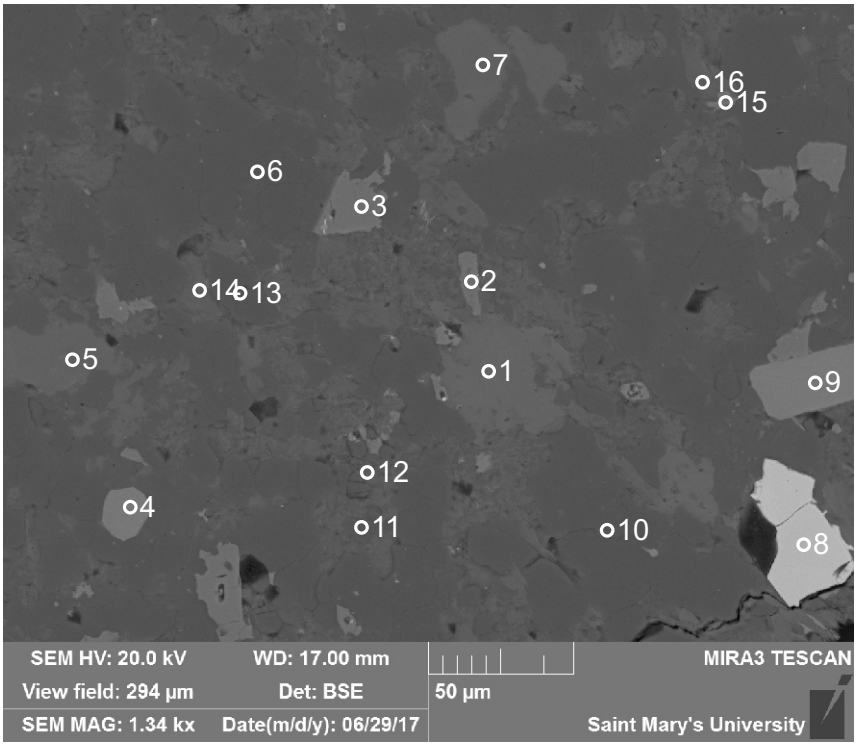
1:Magnetite
2:Chlorite
3:Chlorite
4:Quartz
5:Biotite
6:Biotite
7:Biotite
8:Mixture
9:Quartz

Figure 1-4B.7: Sample 216.2L (SEM) site 2.2. This site is similar to site 2.1 except magnetite (1) is also present.



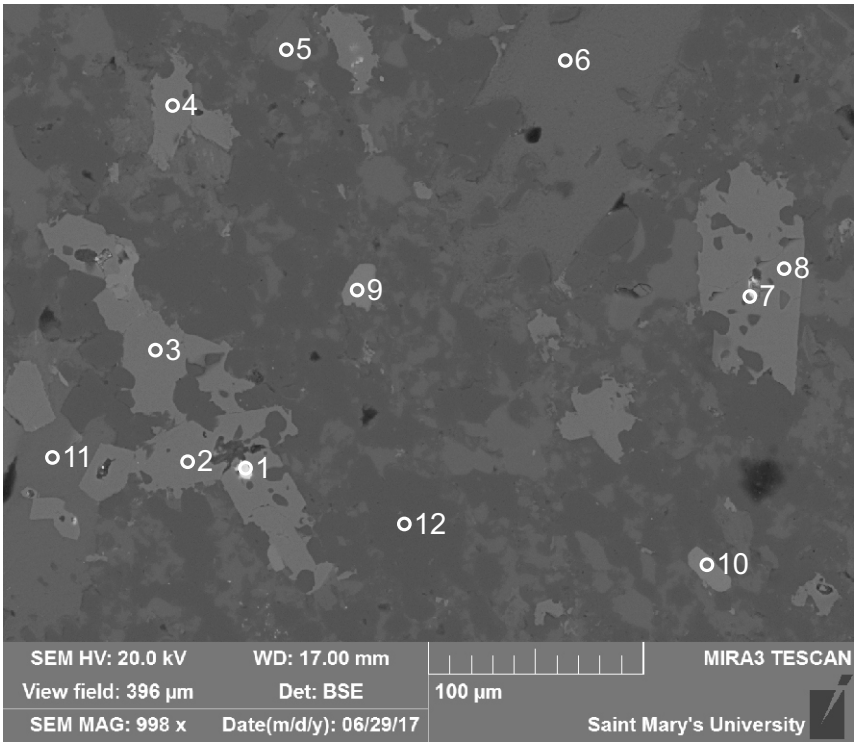
1:K-feldspar +
2:Quartz

Figure 1-4B.8: Sample 216.2L (SEM) site 3. This granitic Granule is mainly composed of K-feldspar, quartz, and albite.



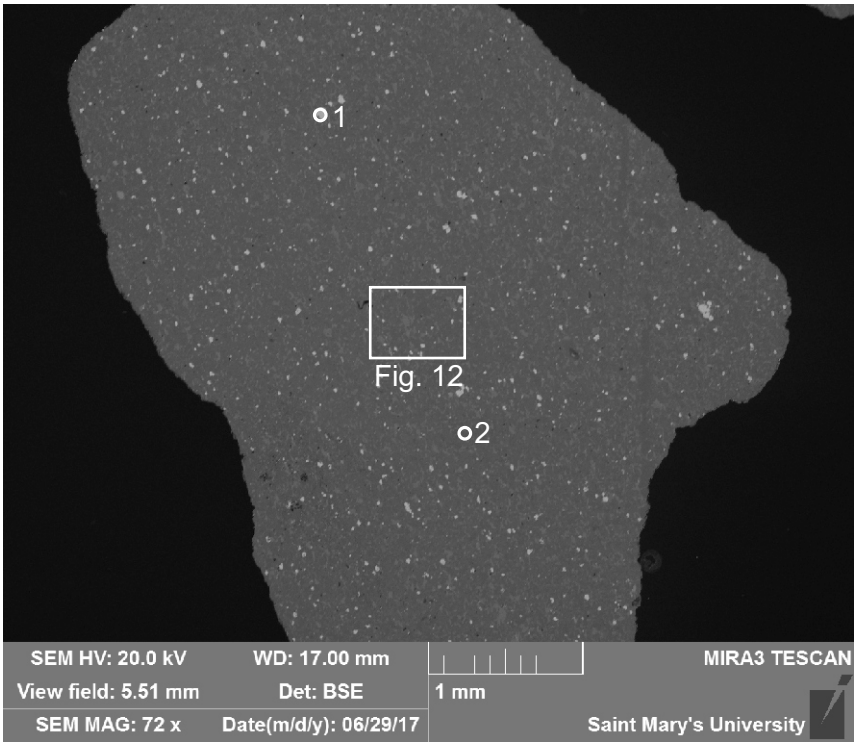
1:Calcite
2:Epidote
3:Epidote
4:Apatite
5:K-feldspar
6:Quartz
7:K-feldspar
8:Zircon
9:Apatite
10:Albite
11:Quartz
12:Muscovite
13:Quartz
14:Muscovite + Chlorite
15:Epidote
16:Muscovite + Chlorite

Figure 1-4B.9: Sample 216.2L (SEM) site 3.1. This site consists of quartz (6, 11, 13), K-feldspar (5, 7), albite (10), muscovite (12, 14, 16). Secondary minerals include epidote (2, 3, 15) and chlorite (14, 16). Rare zircon (8) is also present.



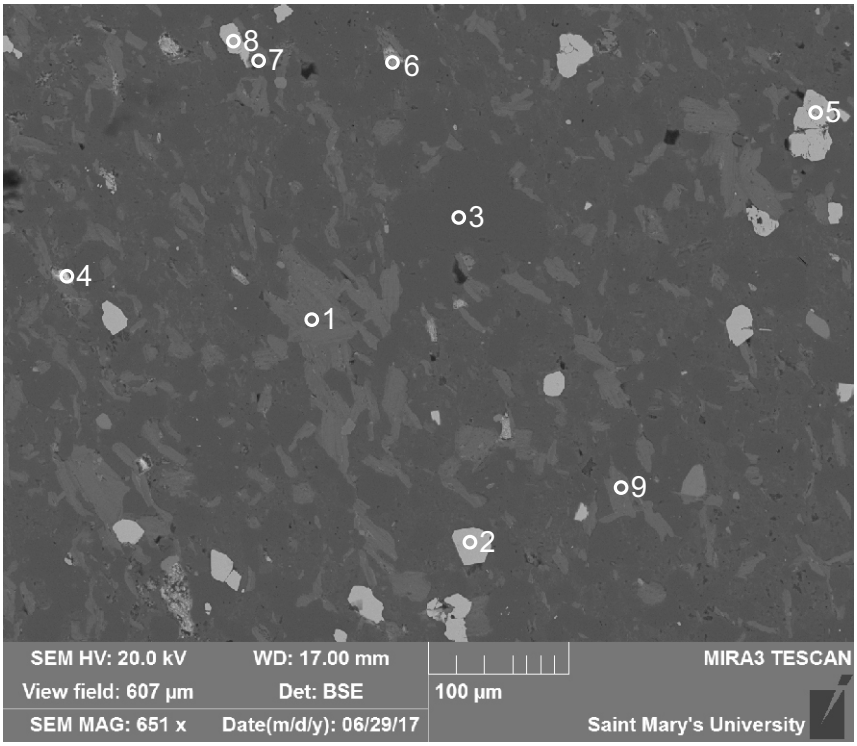
1:Synchysite
2:Epidote
3:Epidote
4:Epidote
5:K-feldspar
6:Muscovite
7:Synchysite +
8:Epidote
9:Apatite
10:Apatite
11:Muscovite
12:Quartz

Figure 1-4B.10: Sample 216.2L (SEM) site 3.2. This site consists of K-feldspar (5), quartz (12), muscovite (6, 11), apatite (9, 10). Epidote (2-4, 8) appears to be late. There is also rare synchysite (1, 7).



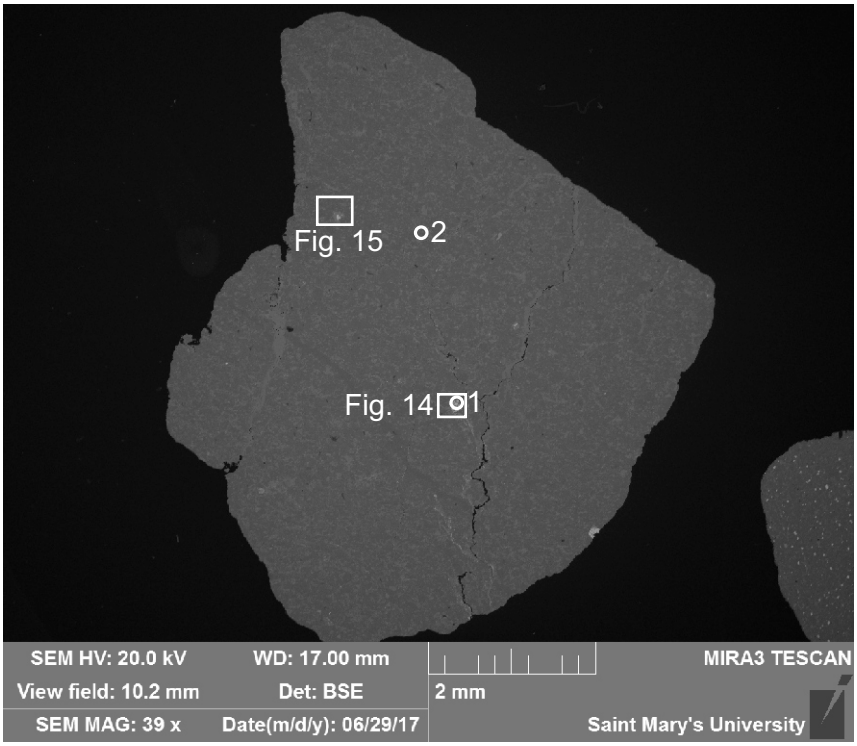
1:Goethite
2:Albite

Figure 1-4B.11: Sample 216.2L (SEM) site 4. This Granule is similar to the previous Granules except there is abundant magnetite. Granite.



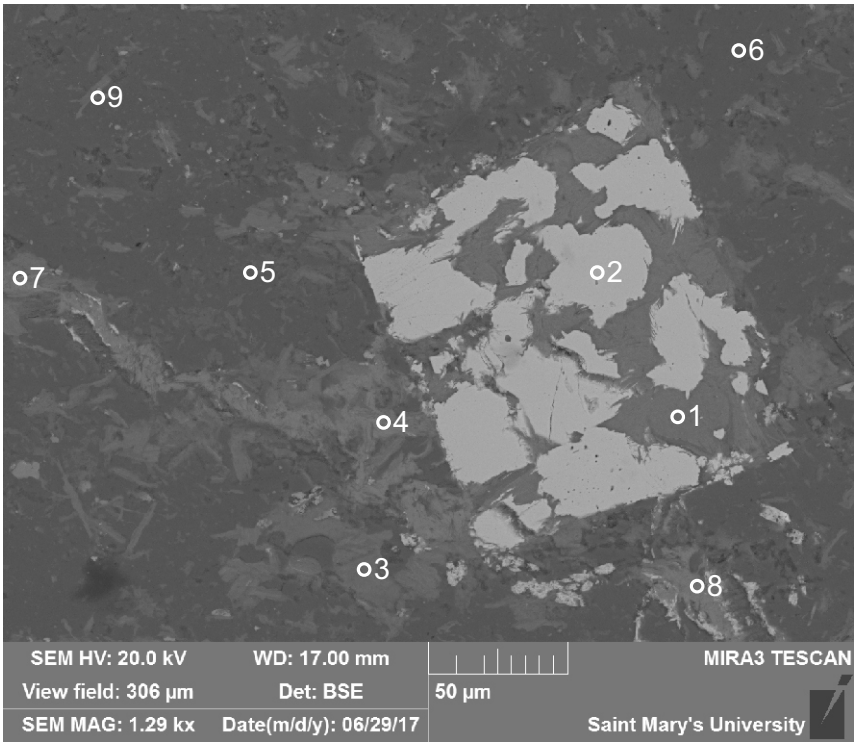
1:Chlorite
2:Magnetite
3:Quartz
4:Synchysite +
5:Magnetite
6:"Ilemenite"
7:Chlorite +
8:Magnetite
9:Chlorite

Figure 1-4B.12: Sample 216.2L (SEM) site 4.1. This site consists of magnetite (2, 5, 8), quartz (3), altered ilmenite (6), chlorite (1, 7), and rare synchysite (4).



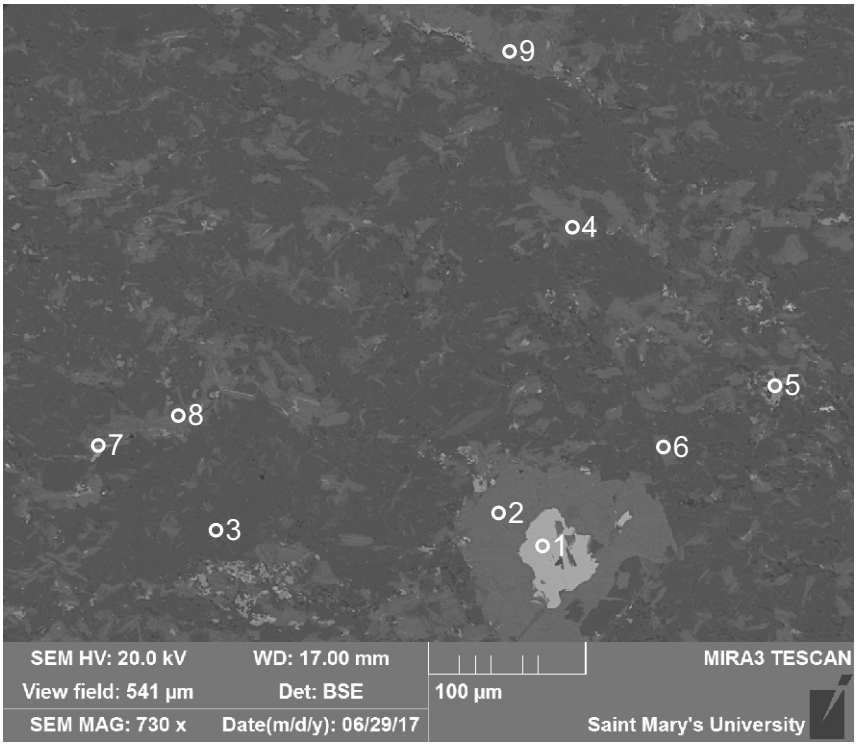
1:Chlorite
2:Quartz +

Figure 1-4B.13: Sample 216.2L (SEM) site 5. This Granule is similar to the other granitic Granules.



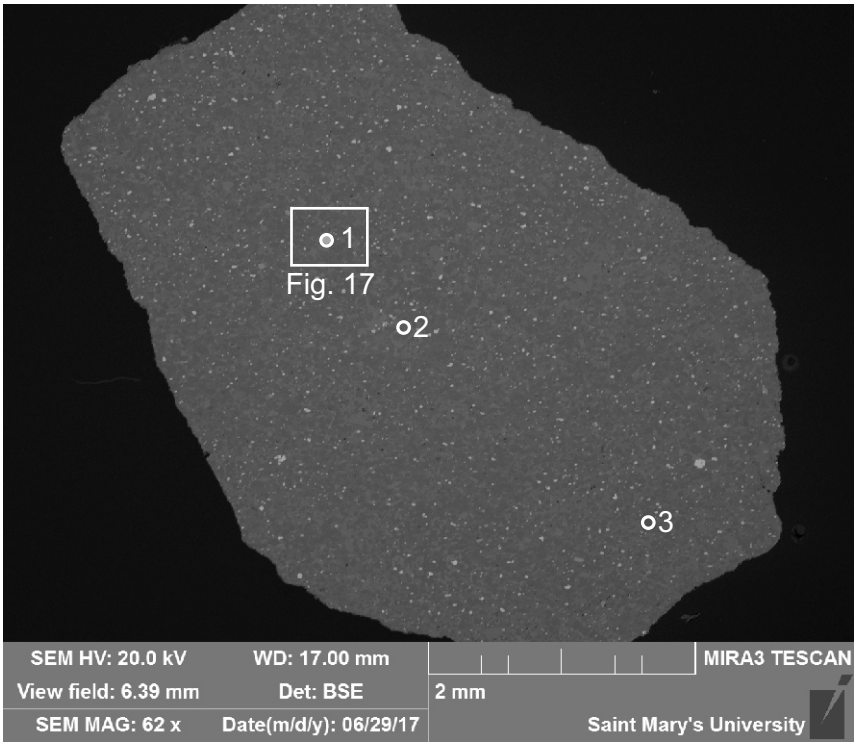
1:Chlorite
2:Magnetite
3:Chlorite + Muscovite
4:Chlorite
5:Mixture
6:Oligoclase
7:Chlorite
8:Chlorite
9:Chlorite + Biotite

Figure 1-4B.14: Sample 216.2L (SEM) site 5.1. This site contains a magmatic clot (1) and abundant chlorite (1,3,4,7,8,9). Other minerals present include: oligoclase (6), muscovite (3) and probable quartz.



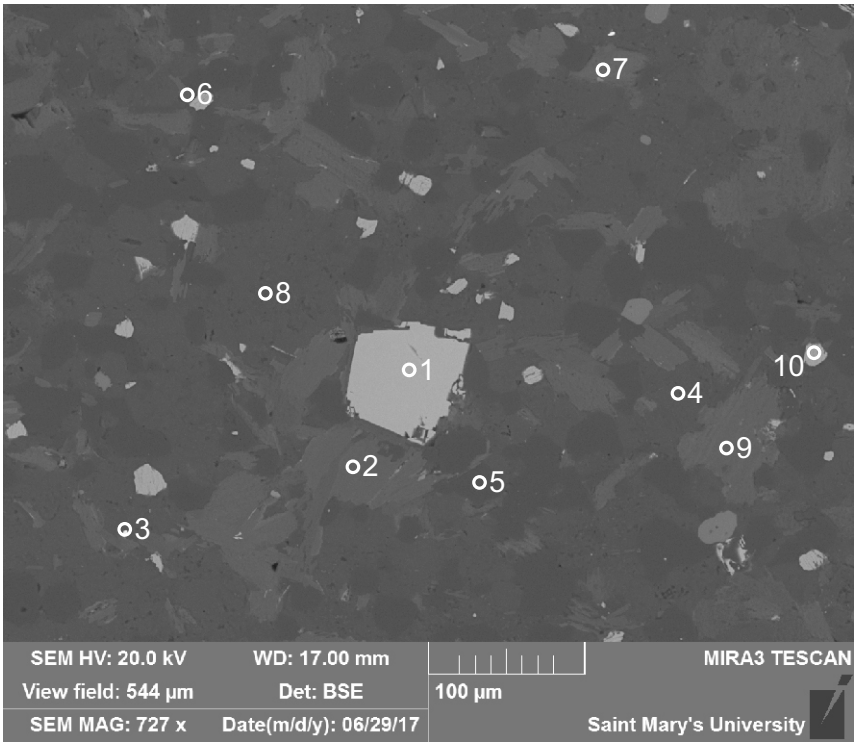
1:Magnetite
2:Chlorite
3:Albite
4:Chlorite + Muscovite
5:TiO_2
6:Chlorite + K-feldspar
7:Ilmenite +
8:Chlorite + Muscovite
9:Chlorite

Figure 1-4B.15: Sample 216.2L (SEM) site 5.2. This site consist of K-feldspar (6), muscovite (4, 8), ilmenite (7), and magnetite (1). Chlorite (2, 4, 6, 8, 9) and titania (5) are late.



1:Hematite
2:K-feldspar + Quartz
3:Feldspar

Figure 1-4B.16: Sample 216.2L (SEM) site 6. This Granule is similar to Granule in site 4. Granite.



1:Magnetite
2:Chlorite
3:Monazite +
4:Feldspar?
5:Quartz
6:Chlorite
7:Chlorite
8:Oligoclase
9:Chlorite
10:"Ilmenite"

Figure 1-4B.17: Sample 216.2L (SEM) site 6.1. This site consists of oligoclase (8), quartz (5), feldspar (4), magnetite (1), altered ilmentite (10) and rare monazite (3). Chlorite (2, 6, 7, 9) is also present.

Table 1-4B.1: EDS geochemical analyses of sample 216.2L.

Sample	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	V2O5	Cr2O3	CuO	ZnO	Y2O3	ZrO2	Ag2O	Cs2O	BaO	La2O3	Ce2O3	Nd2O3	HfO2	WO3	ThO2	Total	Actual Total
39.153.2L	1	1	Chl + Kfs	45.25	0.97	18.35	15.11	0.32	10.92	0.61	3.05	5.41																				100	105
39.153.2L	1	2	Kfs + Ccp	44.52		12.81	8.34		0.82			10.40		15.76					7.34													100	138
39.153.2L	1.1	1	Ccp	0.30			22.09							53.30					24.31													100	196
39.153.2L	1.1	2	Chl	29.48		16.46	21.74	0.51	16.81																							85	98
39.153.2L	1.1	3	Qz	99.16		0.46						0.38																				100	120
39.153.2L	1.1	4	Kfs	66.64		17.53						15.83																				100	116
39.153.2L	1.1	5	Ab	69.19		19.10				0.54	11.03	0.14																				100	117
39.153.2L	1.1	6	Kfs + Chl	48.93	0.45	21.15	19.70		2.78			7.00																				100	112
39.153.2L	1.1	7	Bt	37.75	1.17	17.44	18.31	0.36	14.62			6.36																				96	105
39.153.2L	1.1	8	Ccp	41.48	0.68	20.74	14.63	0.25	5.55	16.34		0.32																				100	107
39.153.2L	1.2	1	Ccp	0.27			22.34							53.23					24.16													100	193
39.153.2L	1.2	2	Ccp	1.10		0.50	21.79			0.23				52.51					23.87													100	192
39.153.2L	1.2	3	Bt	38.75	1.62	17.00	16.50	0.36	12.48			9.28																				96	108
39.153.2L	1.2	4	Ttn	33.98	31.62	4.20	2.18			28.02																						100	110
39.153.2L	1.2	5	Kfs	66.35		17.57						16.08																				100	115
39.153.2L	1.2	6	Chl	29.35		19.11	17.72	0.63	17.61			0.59																				85	103
39.153.2L	1.2	7	Bt	38.71	1.63	16.74	16.87	0.39	11.67			9.98																				96	104
39.153.2L	1.2	8	Ep	40.76		22.75	11.31			22.18																						97	108
39.153.2L	1.2	9	Kfs	66.96		17.80					0.65	14.59																				100	116
39.153.2L	1.2	10	Qz	100.00																												100	119
39.153.2L	1.2	11	Bt	39.29	1.53	16.46	16.36	0.30	12.42			9.64																				96	108
39.153.2L	1.2	12	Bt	39.30	1.29	17.93	16.04	0.28	12.17			8.99																				96	108
39.153.2L	1.2	13	Chl + Bt	37.89	0.69	18.97	20.03	0.30	16.59	0.93		4.60																				100	105
39.153.2L	2	1	Qz	100.00																												100	98
39.153.2L	2	2	Hem	2.44		2.01	95.13										0.42															100	89
39.153.2L	2	3	Ap					0.32		48.85			44.41		4.93															1.50		100	126
39.153.2L	2.1	1	Ap					0.39		48.66			44.37		4.95															1.64		100	123
39.153.2L	2.1	2	Mnz	14.38		5.37				6.66			35.93	1.48									2.27	1.43			21.56	10.94				100	95
39.153.2L	2.1	3	Ms + Mnz	51.65		22.04	6.43		3.05			9.63	2.13										3.54				1.53					100	96
39.153.2L	2.1	4	Ms	46.77	0.73	31.99	3.81		0.82		0.37	10.51																				95	108
39.153.2L	2.1	5	Qz	100.00																												100	120
39.153.2L	2.1	6	Bt	36.75	2.37	18.28	18.11	0.53	12.02			7.94																				96	106
39.153.2L	2.1	7	Bt	41.07	1.46	21.22	14.62	0.46	10.41			6.75																				96	107
39.153.2L	2.1	8	Chl + Bt	37.19	0.62	21.80	21.93	0.80	14.51			3.15																				100	104
39.153.2L	2.1	9	Bt	37.82	2.24	18.81	15.64	0.53	10.91	1.75		8.31																				96	107
39.153.2L	2.1	10	Kfs	65.41		18.01	0.26				0.83	14.61													0.88							100	118
39.153.2L	2.1	11	Chl	30.73	0.80	18.29	19.10	0.64	13.90	0.18		1.36																				85	103
39.153.2L	2.1	12	Qz	99.69			0.31																									100	120
39.153.2L	2.1	13	Qz +	92.53		2.92	1.46		1.11			1.18								0.80												100	100
39.153.2L	2.1	14	Qz	100.00																												100	120
39.153.2L	2.1	15	Kfs	65.48		17.96					0.72	14.94													0.90							100	116
39.153.2L	2.2	1	Mag	0.58			99.42																									100	96
39.153.2L	2.2	2	Chl	29.20	0.61	9.53	4.54		6.26			2.48								32.38												85	128
39.153.2L	2.2	3	Chl	31.73	1.27	18.35	17.68	0.50	12.39			3.08																				85	104
39.153.2L	2.2	4	Qz	99.64			0.36																									100	121
39.153.2L	2.2	5	Bt	41.99	2.17	18.91	14.20	0.47	8.97			9.29																				96	108
39.153.2L	2.2	6	Bt	40.64	2.50	18.31	15.74	0.40	10.19			8.21																				96	110
39.153.2L	2.2	7	Bt	38.04	2.56	19.56	16.89	0.43	10.51		0.36	7.64																				96	110
39.153.2L	2.2	8	Mix	55.29		28.91	0.35			9.70	4.67	1.09																				100	116
39.153.2L	2.2	9	Qz	99.80			0.20																									100	122
39.153.2L	3	1	Kfs +	64.89		18.70	0.73			2.12	1.51	12.05																				100	114
39.153.2L	3	2	Qz	96.84		1.81	0.35		0.25			0.74																				100	111
39.153.2L	3.1	1	Cal					0.50		55.10				0.40																		56	56
39.153.2L	3.1	2	Ep	41.56	1.40	23.45	9.03	0.28		20.59		0.69																				97	110
39.153.2L	3.1	3	Ep	39.96		23.19	10.90	0.86		22.09																						97	108
39.153.2L	3.1	4	Ap	0.47						48.19			43.83		6.24															1.27		100	123
39.153.2L	3.1	5	Kfs	62.76		21.98						14.41													0.84							100	114
39.153.2L	3.1	6	Qz	100.00																												100	118

Table 1-4B.1: EDS geochemical analyses of sample 216.2L.

Sample	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	V2O5	Cr2O3	CuO	ZnO	Y2O3	ZrO2	Ag2O	Cs2O	BaO	La2O3	Ce2O3	Nd2O3	HfO2	WO3	ThO2	Total	Actual Total
39.153.2L	3.1	7	Kfs	66.35		17.74					0.72	15.19																				100	114
39.153.2L	3.1	8	Zrn	30.93																		67.58							1.49			100	121
39.153.2L	3.1	9	Ap							48.20			43.53	0.50	6.15															1.61		100	124
39.153.2L	3.1	10	Ab	68.25		19.37				1.34	9.56	1.49																				100	118
39.153.2L	3.1	11	Qz	98.94		0.67					0.25	0.15																				100	122
39.153.2L	3.1	12	Ms	52.73		26.56	2.77		2.38			9.57		0.99																		95	110
39.153.2L	3.1	13	Qz	100.00																												100	119
39.153.2L	3.1	14	Ms + Chl	50.86		23.44	8.97	0.39	8.66			6.86		0.82																		100	106
39.153.2L	3.1	15	Ep	40.90		25.82	8.12	0.91		21.01		0.23																				97	110
39.153.2L	3.1	16	Ms + Chl	42.06		23.66	12.83	0.74	16.65			4.07																				100	102
39.153.2L	3.2	1	Synchysite	1.63						12.52				1.19	12.33											16.80	32.10	9.10			14.33	100	80
39.153.2L	3.2	2	Ep	39.94		23.23	10.94	0.98		21.90																						97	111
39.153.2L	3.2	3	Ep	39.84		23.11	11.21	0.74		22.11																						97	110
39.153.2L	3.2	4	Ep	39.95		22.81	11.43	0.88		21.93																						97	109
39.153.2L	3.2	5	Kfs	65.78		17.83					0.72	15.03													0.65							100	117
39.153.2L	3.2	6	Ms	48.25	0.78	29.05	4.56		1.44		0.30	10.61																				95	108
39.153.2L	3.2	7	Synchysite +	13.22		6.73	2.57			12.22				1.87	11.79								2.72			14.30	26.80	7.78				100	80
39.153.2L	3.2	8	Ep	39.94		23.15	11.11	0.70		22.10																						97	110
39.153.2L	3.2	9	Ap	0.65						48.85			44.01		5.25															1.24		100	122
39.153.2L	3.2	10	Ap	0.59						49.16		0.13	43.91		4.87															1.34		100	124
39.153.2L	3.2	11	Ms	46.87	0.87	29.52	5.18		1.46		0.25	10.85																				95	108
39.153.2L	3.2	12	Qz	100.00																												100	122
39.153.2L	4	1	Gth				99.10										0.44	0.46														100	82
39.153.2L	4	2	Ab	66.88		20.70	0.53			1.49	9.24	1.16																				100	121
39.153.2L	4.1	1	Chl	29.82	0.84	17.36	19.40	0.60	15.95			1.01																				85	98
39.153.2L	4.1	2	Mag				99.50										0.50															100	96
39.153.2L	4.1	3	Qz	100.00																												100	119
39.153.2L	4.1	4	Synchysite +	3.17						14.88				2.02	15.17	0.46					3.58		2.76			15.46	30.80	11.70				100	78
39.153.2L	4.1	5	Mag				99.59										0.41															100	91
39.153.2L	4.1	6	"Ilm"	3.86	60.27	0.50	33.26	0.58		1.52																						100	101
39.153.2L	4.1	7	Chl +	41.03	0.69	20.68	22.29	0.59	13.93	0.22		0.58																				100	90
39.153.2L	4.1	8	Mag				99.48										0.52															100	93
39.153.2L	4.1	9	Chl	30.40	0.54	17.64	19.06	0.58	15.67			1.12																				85	102
39.153.2L	5	1	Chl	26.42		17.58	28.13	0.48	10.98			1.39																				85	100
39.153.2L	5	2	Qz +	84.43		8.49	2.74		1.55			2.79																				100	102
39.153.2L	5.1	1	Chl	26.88		19.18	24.01	0.59	14.35																							85	99
39.153.2L	5.1	2	Mag				100.00																									100	93
39.153.2L	5.1	3	Chl + Ms	42.53		23.66	17.11	0.38	10.92			4.35		1.04																		100	103
39.153.2L	5.1	4	Chl	30.16		19.38	27.83		7.04			0.60																				85	99
39.153.2L	5.1	5	Mix	61.71		24.00	2.78		1.31	0.90	4.46	4.85																				100	108
39.153.2L	5.1	6	Oligo	66.86		20.33	0.57			1.24	10.18	0.82																				100	116
39.153.2L	5.1	7	Chl	30.80	0.25	19.00	20.21	0.41	10.90			1.71		1.71																		85	100
39.153.2L	5.1	8	Chl	28.78		19.96	28.55		7.22			0.49																				85	100
39.153.2L	5.1	9	Chl + Bt	42.47	2.06	22.98	16.07	0.41	11.79		0.64	3.00		0.58																		100	104
39.153.2L	5.2	1	Mag				100.00																									100	94
39.153.2L	5.2	2	Chl	26.82		19.84	25.16	0.59	12.44			0.15																				85	102
39.153.2L	5.2	3	Ab	65.38		21.61	0.48			1.60	9.66	1.26																				100	118
39.153.2L	5.2	4	Chl + Ms	49.27		24.08	10.87		8.05		0.45	7.27																				100	101
39.153.2L	5.2	5	TiO2	2.02	95.61	0.65	1.08			0.32		0.32																				100	108
39.153.2L	5.2	6	Chl + Kfs	37.77	0.52	22.48	22.01	0.59	14.10			2.54																				100	97
39.153.2L	5.2	7	Ilm +	16.73	40.10	8.82	29.73	0.32	3.17			1.13																				100	96
39.153.2L	5.2	8	Chl + Ms	39.56		22.84	21.44	0.54	12.41			3.20																				100	97
39.153.2L	5.2	9	Chl	28.61		18.56	22.57	0.53	14.33			0.40																				85	99
39.153.2L	6	1	Hem	0.71			99.29																									100	88
39.153.2L	6	2	Kfs + Qz	73.37		17.60	1.95		0.48		0.64	5.19													0.76							100	116
39.153.2L	6	3	Feldspar	60.84		24.98				6.30	7.27	0.61																				100	126
39.153.2L	6.1	1	Mag				100.00																									100	95
39.153.2L	6.1	2	Chl	28.31	0.29	19.22	17.81	0.58	18.43			0.37																				85	98

Table 1-4B.1: EDS geochemical analyses of sample 216.2L.

Sample	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	V2O5	Cr2O3	CuO	ZnO	Y2O3	ZrO2	Ag2O	Cs2O	BaO	La2O3	Ce2O3	Nd2O3	HfO2	WO3	ThO2	Total	Actual Total
39.153.2L	6.1	3	Mnz +	26.07		11.76	1.42			2.90	3.74	0.30	27.16										1.74	1.25			16.05	7.61				100	103
39.153.2L	6.1	4	Feldspar?	62.00		25.18	0.85		0.53	2.76	6.81	1.87																				100	109
39.153.2L	6.1	5	Qz	100.00																												100	120
39.153.2L	6.1	6	Chl	30.55		18.86	17.56	0.63	17.40																							85	98
39.153.2L	6.1	7	Chl	29.50		19.16	19.75	0.64	15.38			0.58																				85	95
39.153.2L	6.1	8	Oligo	63.82		23.16	0.29			3.46	8.74	0.53																				100	114
39.153.2L	6.1	9	Chl	28.66	0.50	19.15	17.73	0.64	18.02			0.30																				85	98
39.153.2L	6.1	10	"Ilm"	0.68	21.00		77.85	0.48																								100	94
			Notes																														
			"+" indicates more than one mineral present																														
			"" indicates altered mineral																														

Appendix 1-4C: SEM-BSE images for Flemish Cap Granules with EDS Mineral Analyses Sample 2008061-216.3L.

Flemish Cap Sample 216.3L Lithology Summary Notes

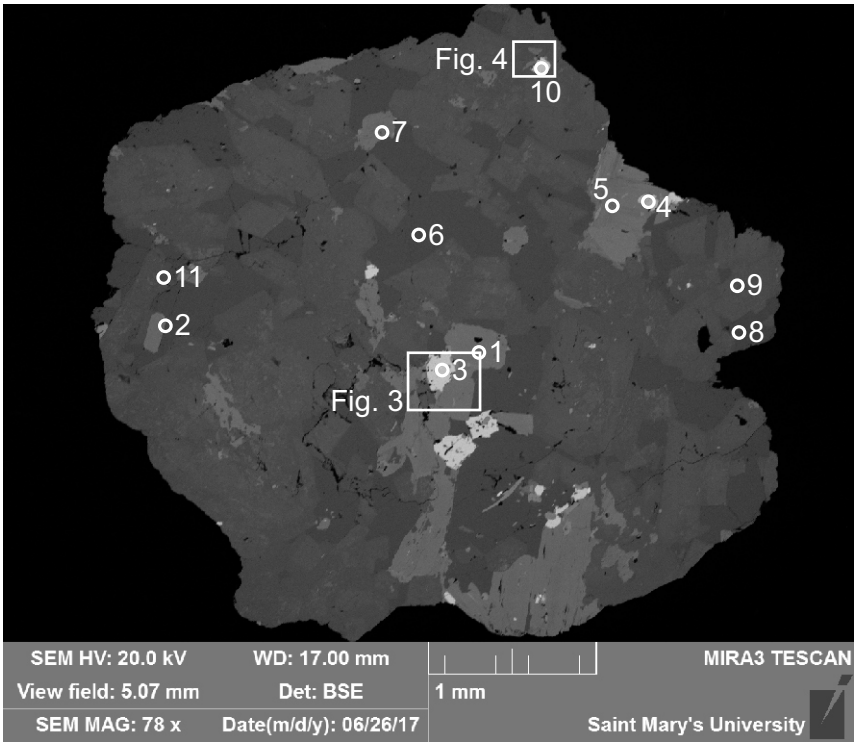
Granule 1 (Sites 1, 1.1, 1.2) Microphotographs: None.
Hornblende granodiorite. This Granule consists of hornblende, magnetite, labradorite, andesine, oligoclase, biotite, and minor apatite and titanite. Epidote is most likely late.

Granule 2 (Sites 2, 2.1, 2.2) Microphotographs: None.
This Granule is similar to Granule 1 except it contains more chlorite. It contains albite, quartz, K-feldspar, oligoclase, biotite, and rare zircon and monazite. Epidote and monazite appear to be late.

Granule 3 (Sites 3, 3.1, 3.2) Microphotographs: None.
This Granule consists of mostly quartz and chlorite + muscovite. It is an altered quartzolite. Rare or secondary minerals include barite, magnetite, and titania.

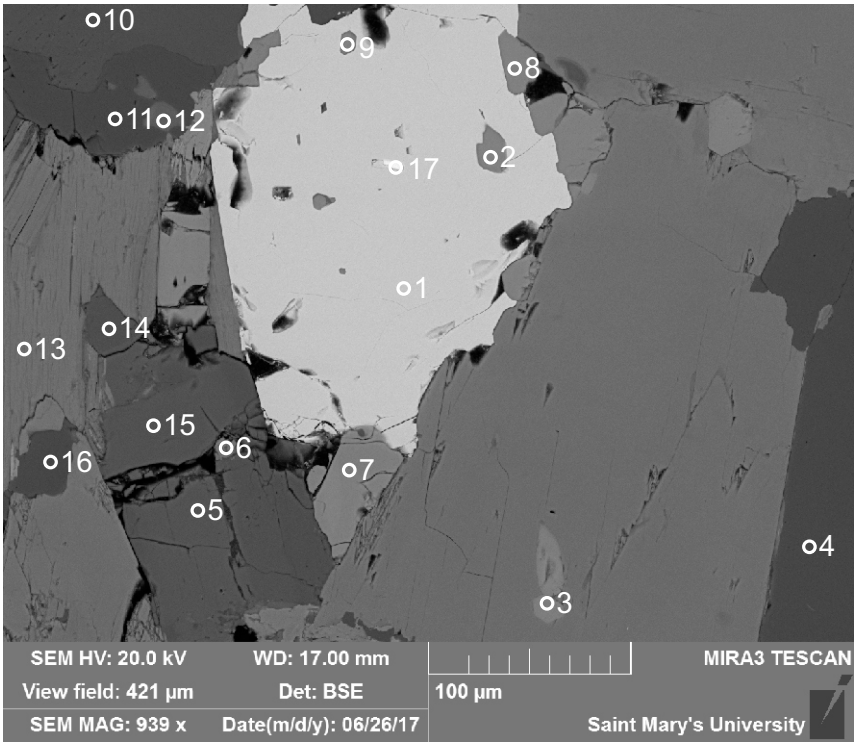
Granule 4 (Sites 4, 4.1) Microphotographs: None.
Altered quartz-rich granitoid. This Granule contains quartz, K-feldspar, and apatite. Chlorite and xenotime may be secondary.

Figure 1-4C.1: Scanned thin section of 216.3L showing the location of analyzed sites.



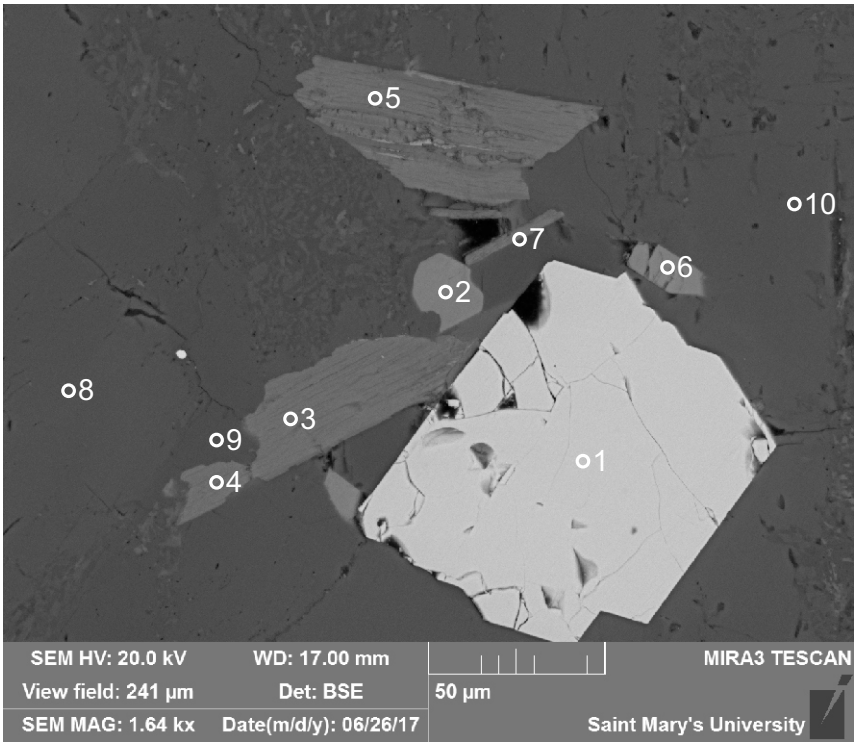
1:Hornblende
2:Hornblende
3:Magnetite
4:Ilmenite
5:Biotite +
6:Quartz
7:Hornblende
8:Quartz
9:Andesine
10:Hematite
11:K-feldspar

Figure 1-4C.2: Sample 216.3L (SEM) site 1. This Granule is a hornblende granodiorite.



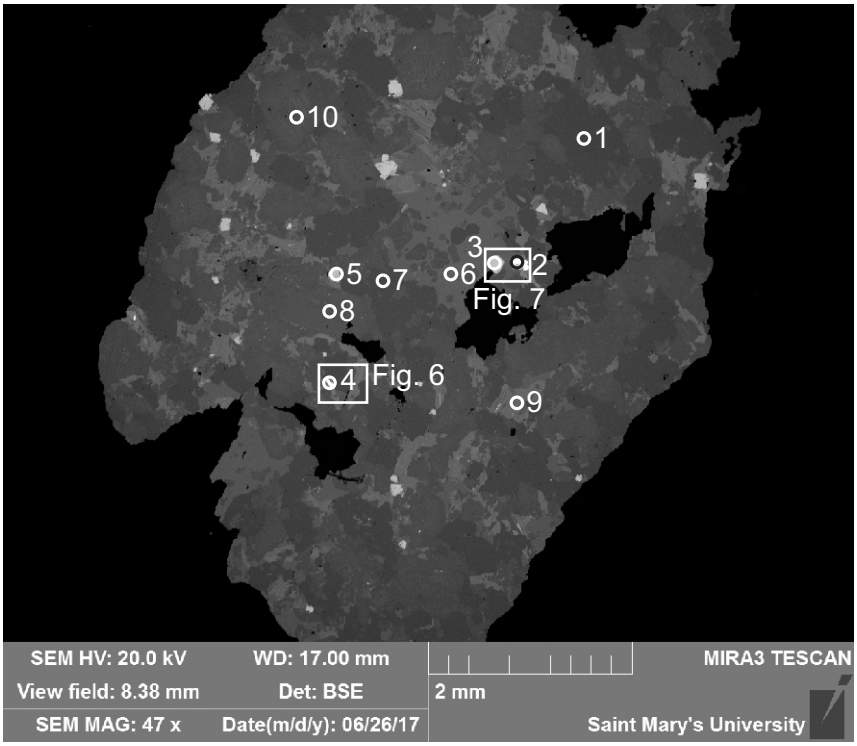
1:Magnetite
2:Apatite
3:Apatite
4:Quartz
5:Labradorite
6:Epidote +
7:Titanite
8:Apatite
9:Apatite
10:Oligoclase
11:Quartz
12:K-feldspar
13:Biotite
14:Oligoclase
15:Andesine
16:Quartz
17:Sphalerite

Figure 1-4C.3: Sample 216.3L (SEM) site 1.1. This site consists of magnetite (1) with sphalerite (17) inclusion, quartz (4, 11, 16), labradorite (5), oligoclase (10, 14), biotite (13), andesine (15), apatite (2, 3, 8, 9) and titanite (7). Epidote (6) is most likely secondary.



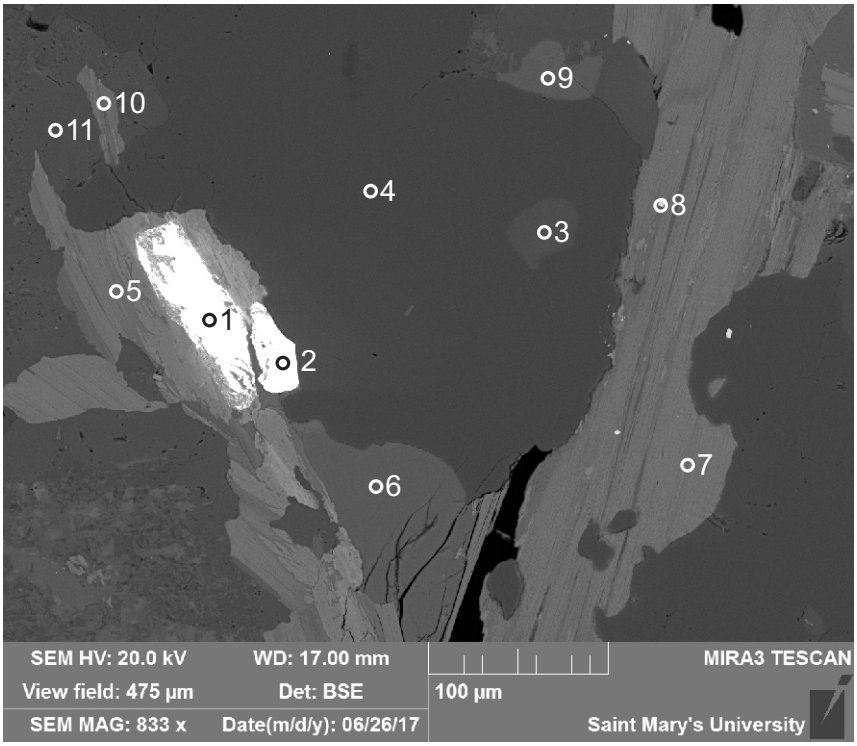
1:Magnetite
2:Apatite
3:Biotite
4:Biotite
5:Biotite
6:Apatite
7:Biotite
8:Andesine
9:Oligoclase
10:Andesine

Figure 1-4C.4: Sample 216.3L (SEM) site 1.2. This site consists of magnetite (1), biotite (3-6, 7), andesine (8, 10), oligoclase (9), and apatite (2, 6).



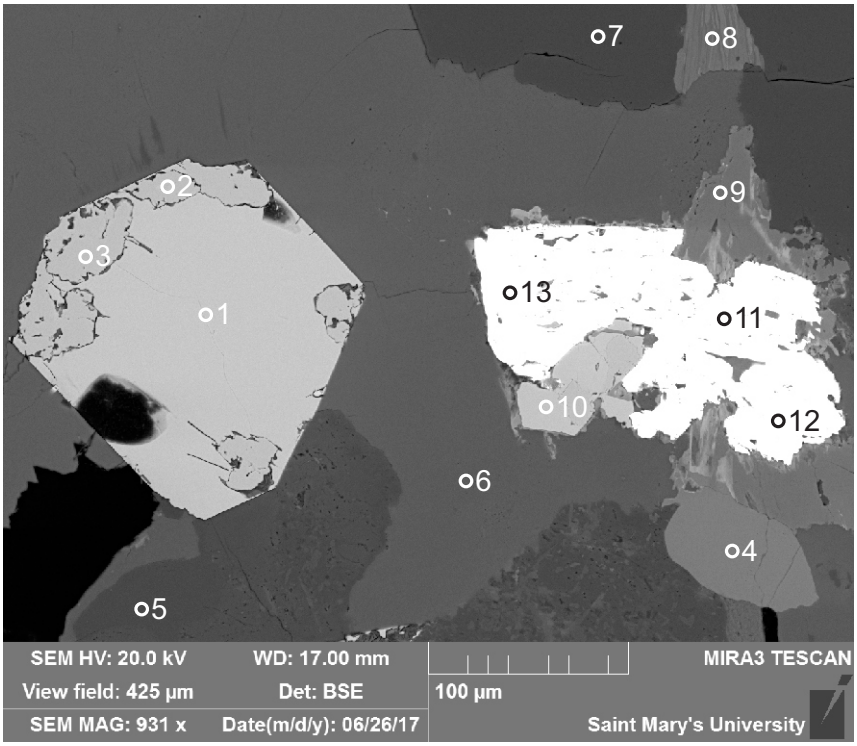
1:Quartz
2:Monazite
3:Magnetite
4:Monazite
5:Magnetite
6:K-feldspar
7:Quartz
8:Andesine
9:Chlorite +
10:K-feldspar

Figure 1-4C.5: Sample 216.3L (SEM) site 2. This Granule is similar to site 1 except there is more chlorite. Granodiorite?



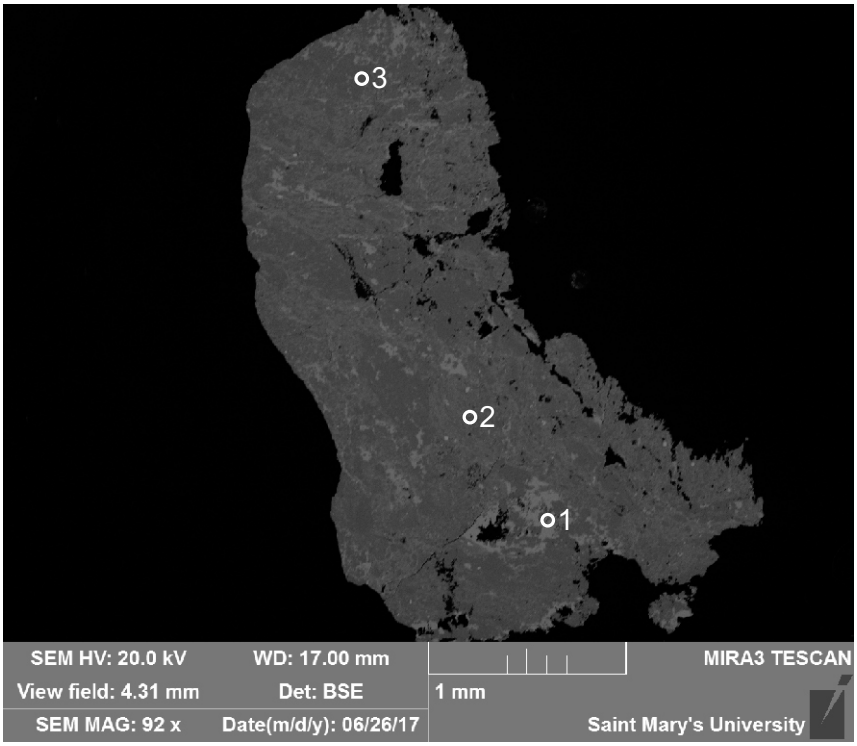
1:Monazite +
2:Monazite +
3:Albite
4:Quartz
5:Biotite
6:K-feldspar
7:Biotite +
8:Zircon
9:K-feldspar
10:Chlorite
11:Oligoclase

Figure 1-4C.6: Sample 216.3L (SEM) site 2.1. This site consists of albite (3), quartz (4), K-feldspar (6, 9), oligoclase (11), biotite (7), and rare zircon (8), and monazite (1, 2).



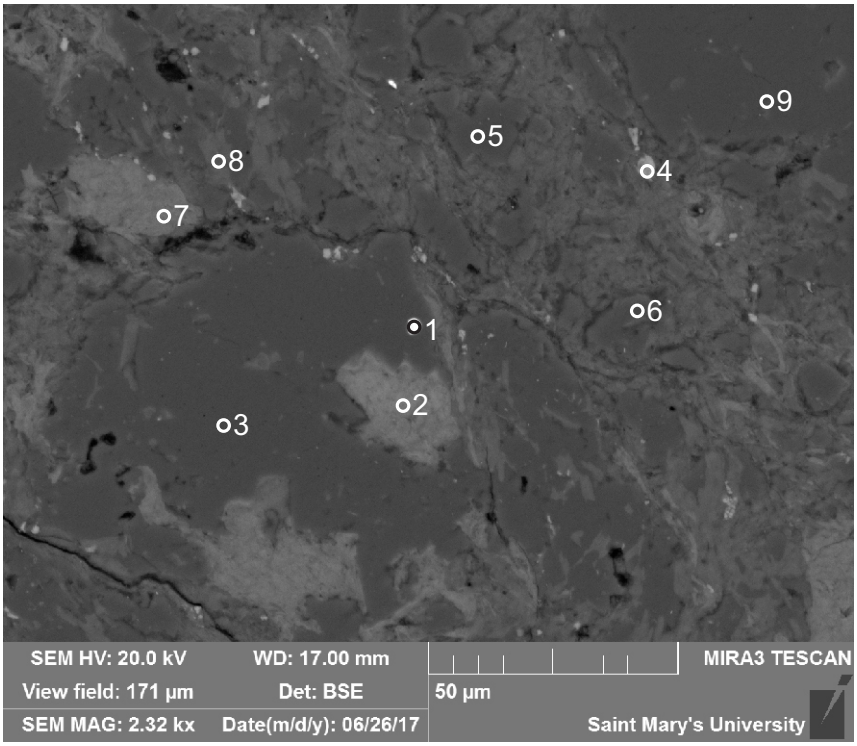
1:Magnetite
2:Magnetite
3:Magnetite
4:Apatite
5:Oligoclase
6:K-feldspar
7:Quartz
8:Biotite +
9:Epidote
10:Magnetite
11:Monazite
12:Monazite
13:Monazite

Figure 1-4C.7: Sample 216.3L (SEM) site 2.2. This site consists of magnetite (1-3, 10), apatite (4), oligoclase (5), K-feldspar (6), quartz (7), biotite (8), and rare monazite (11-13) Epidote (9) and monazite appear to be late.



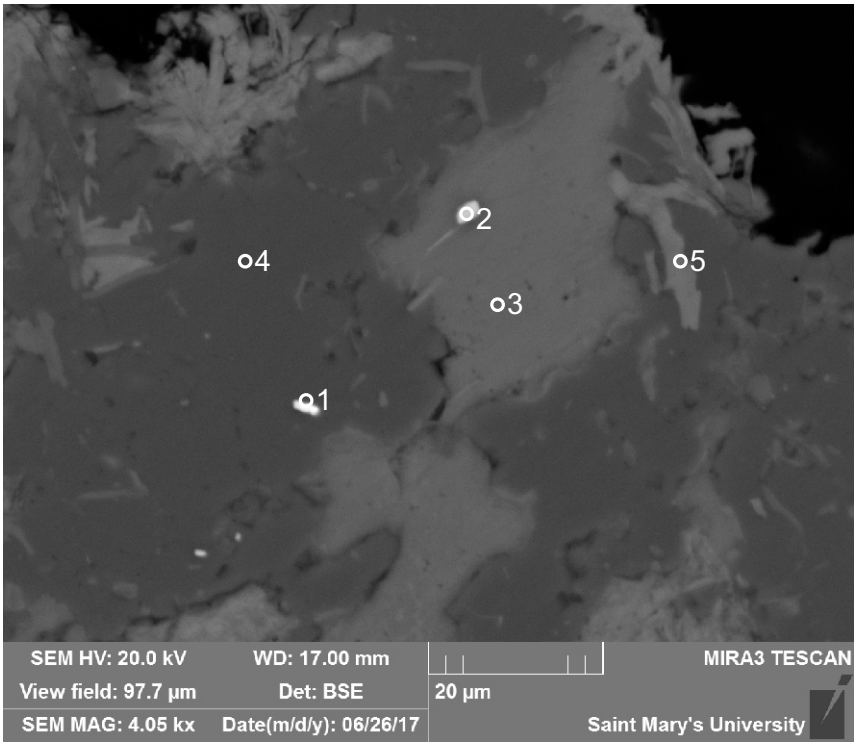
1:Chlorite
2:Quartz +
3:Quartz +

Figure 1-4C.8: Sample 216.3L (SEM) site 3. Altered quartzite.



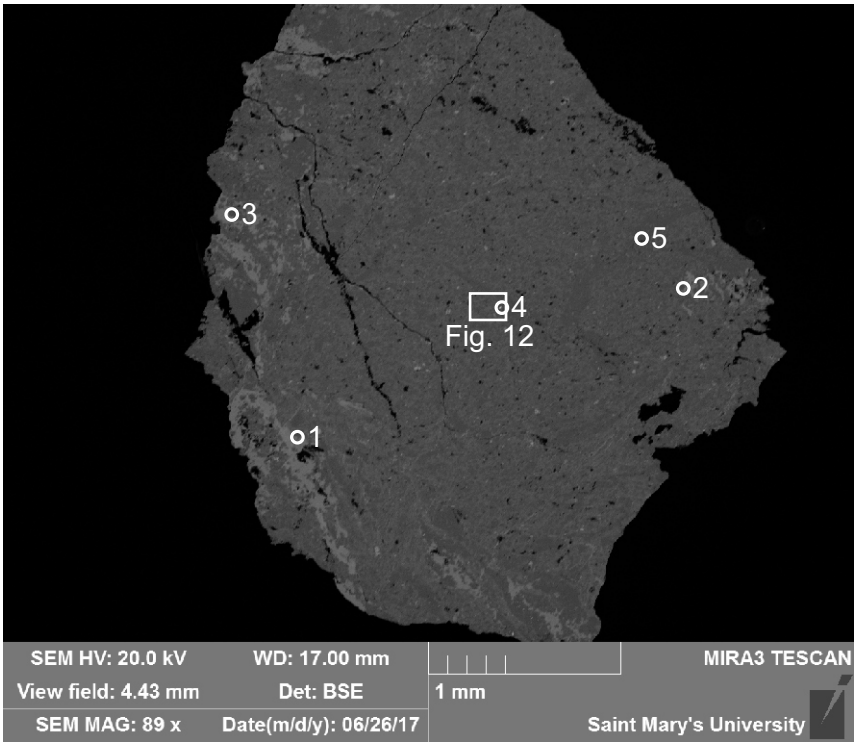
1:Barite +
2:Chlorite
3:Quartz
4:TiO_2 +
5:Quartz
6:Quartz
7:Chlorite
8:Muscovite +
9:Quartz

Figure 1-4C.9: Sample 216.3L (SEM) site 3.1. The main mineral in this site is quartz (3, 5, 6, 9). Secondary minerals include barite (1), chlorite (2, 7), muscovite (8), and titania (4).



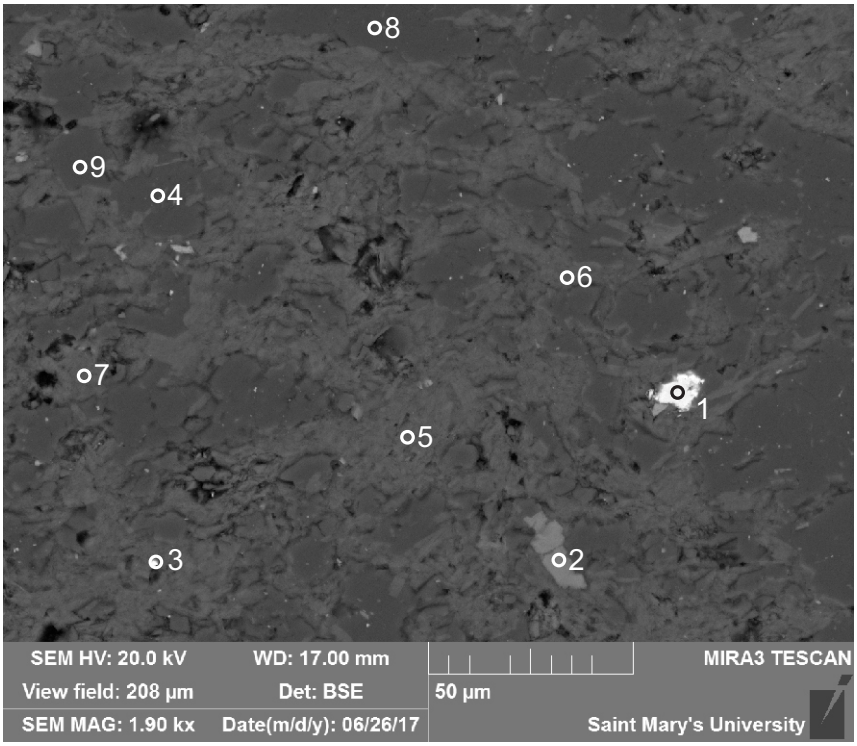
1:Barite +
2:Hematite +
3:Calcite
4:Quartz
5:Chlorite + Quartz

Figure 1-4C.10: Sample 216.3L (SEM) site 3.2. This site contains mostly quartz (4, 5) and calcite (3). Rare minerals include barite (1) and hematite (2).



1:Chlorite
2:Chlorite
3:Chlorite
4:Mixture
5:Quartz +

Figure 1-4C.11: Sample 216.3L (SEM) site 4. Altered quartz-rich granitoid.



1:Xenotime
2:Apatite +
3:Chlorite +
Monazite
4:Quartz +
5:Muscovite
6:Muscovite
7:K-feldspar +
8:Quartz
9:Quartz

Figure 1-4C.12: Sample 216.3L (SEM) site 4.1. This site consists of quartz (4, 8, 9), K-feldspar (7), apatite (2), chlorite (2), muscovite (5, 6), xenotime (1) and monazite (3).

Table 1-4C.1: EDS geochemical analyses of sample 216.3L.

Sample	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	V2O5	CoO	NiO	CuO	ZnO	SrO	Y2O3	ZrO2	Ag2O	BaO	La2O3	Ce2O3	Nd2O3	Gd2O3	Dy2O3	Er2O3	Yb2O3	Ta2O5	WO3	ThO2	IrO2	Total	Actual Total
39.153.3L	1	1	Hbl	47.93	1.12	7.43	14.84	0.90	12.02	10.82	1.23	0.72																									97	113
39.153.3L	1	2	Hbl	48.07	1.05	7.42	14.31	0.72	12.51	10.82	1.46	0.64																									97	97
39.153.3L	1	3	Mag				100.00																														100	97
39.153.3L	1	4	Ilm		49.29		33.56	17.14																													100	90
39.153.3L	1	5	Bt +	40.07	1.20	17.48	17.69	0.36	8.68	11.39		3.13																									100	86
39.153.3L	1	6	Qz	100.00																																	100	114
39.153.3L	1	7	Hbl	48.52	1.11	7.47	12.95	0.93	13.79	10.39	1.42	0.43																									97	98
39.153.3L	1	8	Qz	100.00																																	100	108
39.153.3L	1	9	Andesine	57.14		27.29				9.74	5.66	0.17																									100	99
39.153.3L	1	10	Hem				100.00																														100	75
39.153.3L	1	11	Kfs	61.08		26.60	0.27			0.88	5.24	5.92																									100	98
39.153.3L	1.1	1	Mag				100.00																														100	96
39.153.3L	1.1	2	Ap				1.49			49.13			44.16		3.58																				1.63		100	120
39.153.3L	1.1	3	Ap				0.46			48.97			44.63		4.45																				1.49		100	123
39.153.3L	1.1	4	Qz	100.00																																	100	123
39.153.3L	1.1	5	Labradorite	56.22		27.70	0.38			10.16	5.54																										100	116
39.153.3L	1.1	6	Ep +	40.92	0.36	18.46	12.97		4.42	22.87																											100	98
39.153.3L	1.1	7	Ttn	32.83	35.72	1.94	1.57			27.95																											100	111
39.153.3L	1.1	8	Ap				0.92			49.09			44.53		3.78																				1.69		100	121
39.153.3L	1.1	9	Ap				1.53			48.49			43.98		4.48																				1.52		100	121
39.153.3L	1.1	10	Oligoclase	62.48		23.59				5.59	8.34																										100	115
39.153.3L	1.1	11	Qz	100.00																																	100	119
39.153.3L	1.1	12	Kfs	65.31		17.61	0.34				0.53	15.14													1.07												100	115
39.153.3L	1.1	13	Bt	38.72	1.70	15.50	17.53	0.66	12.15			9.73																									96	107
39.153.3L	1.1	14	Oligoclase	62.99		23.11	0.30			5.03	8.42	0.16																									100	116
39.153.3L	1.1	15	Andesine	59.21		25.58	0.35			8.18	6.68																										100	115
39.153.3L	1.1	16	Qz	99.71			0.29																														100	120
39.153.3L	1.1	17	Sp				5.35							48.33					1.14	45.18																	100	191
39.153.3L	1.2	1	Mag				100.00																														100	95
39.153.3L	1.2	2	Ap				0.33			49.23			44.44		4.28																				1.72		100	120
39.153.3L	1.2	3	Bt	38.34	1.38	15.78	18.28	0.64	12.16			9.42																									96	107
39.153.3L	1.2	4	Bt	38.58	1.12	16.22	17.77	0.63	12.09			9.59																									96	107
39.153.3L	1.2	5	Bt	38.44	1.45	16.20	18.23	0.64	12.57			8.48																									96	106
39.153.3L	1.2	6	Ap				0.45			49.32			44.57		4.00																				1.66		100	120
39.153.3L	1.2	7	Bt	40.42	1.26	16.52	16.57	0.55	11.56		0.65	8.48																									96	115
39.153.3L	1.2	8	Andesine	59.05		25.96	0.21			8.22	6.56																										100	114
39.153.3L	1.2	9	Oligoclase	62.19		23.76	0.34			5.73	7.99																										100	115
39.153.3L	1.2	10	Andesine	59.01		26.04				8.40	6.55																										100	113
39.153.3L	2	1	Qz	98.80		0.90						0.30																									100	76
39.153.3L	2	2	Mnz	1.18						9.90			37.15		0.58									1.80		14.45	26.40	8.54								100	98
39.153.3L	2	3	Mag				100.00																														100	91
39.153.3L	2	4	Mnz	1.06						1.38			34.72		-0.34											16.41	30.73	9.46							6.58	100	99
39.153.3L	2	5	Mag				100.00																														100	91
39.153.3L	2	6	Kfs	65.00		18.07					1.13	14.37													1.43												100	113
39.153.3L	2	7	Qz	100.00																																	100	114
39.153.3L	2	8	Andesine	60.33		25.13				7.30	7.24																										100	111
39.153.3L	2	9	Chl +	34.12	3.89	18.10	25.09	0.74	13.96	3.65		0.44																									100	108
39.153.3L	2	10	Kfs	58.21		29.09	0.35			0.89	5.31	6.16																									100	90
39.153.3L	2.1	1	Mnz +	1.04						1.30			33.71		1.21			-0.04								16.78	30.71	9.16							6.13	100	107
39.153.3L	2.1	2	Mnz +	0.86			0.72			1.90			32.93	1.90	3.07			-0.09						2.31		17.00	30.00	9.40								100	105
39.153.3L	2.1	3	Ab	59.22		25.95				8.03	6.80																										100	115
39.153.3L	2.1	4	Qz	100.00																																	100	119
39.153.3L	2.1	5	Bt	37.73	2.53	16.63	18.68	0.49	11.49			8.45																									96	106
39.153.3L	2.1	6	Kfs	66.16		17.83					0.65	15.37																									100	116
39.153.3L	2.1	7	Bt +	31.65	1.56	17.39	27.07	0.75	12.65	1.38		1.84		5.70																							100	107
39.153.3L	2.1	8	Zrn	31.52			0.95																67.53														100	117
39.153.3L	2.1	9	Kfs	65.69		17.71					0.62	15.25													0.73												100	115
39.153.3L	2.1	10	Chl	31.95	0.47	16.52	20.06	0.73	13.61			1.66																									85	101
39.153.3L	2.1	11	Oligoclase	64.14		22.38				4.41	8.93	0.15																									100	115
39.153.3L	2.2	1	Mag				100.00																														100	96
39.153.3L	2.2	2	Mag				100.00																														100	92
39.153.3L	2.2	3	Mag				99.61									0.39																					100	93
39.153.3L	2.2	4	Ap							48.73			44.32		5.35																				1.59		100	126
39.153.3L	2.2	5	Oligoclase	66.16		21.15				2.81	9.88																										100	117
39.153.3L	2.2	6	Kfs	66.26		17.78					0.69	15.28																									100	117
39.153.3L	2.2	7	Qz	100.00																																	100	120

Table 1-4C.1: EDS geochemical analyses of sample 216.3L.

Sample	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	V2O5	CoO	NiO	CuO	ZnO	SrO	Y2O3	ZrO2	Ag2O	BaO	La2O3	Ce2O3	Nd2O3	Gd2O3	Dy2O3	Er2O3	Yb2O3	Ta2O5	WO3	ThO2	IrO2	Total	Actual Total
39.153.3L	2.2	8	Bt +	42.81	2.22	19.59	15.68	0.38	9.49	5.14		4.69																										100	101
39.153.3L	2.2	9	Ep	39.81		21.70	12.74	0.27		22.47																												97	109
39.153.3L	2.2	10	Mag				100.00																															100	96
39.153.3L	2.2	11	Mnz	0.84						2.04			33.34	2.13	0.38			-0.04								16.70	30.66	10.13							3.81		100	107
39.153.3L	2.2	12	Mnz	1.39						0.72			33.81		-0.48											17.02	31.51	9.90							6.13		100	106
39.153.3L	2.2	13	Mnz	0.82						1.64			34.22	1.02	-0.57											16.69	30.69	9.91							5.59		100	105
39.153.3L	3	1	Chl	26.20		20.21	27.30		11.29																												85	104
39.153.3L	3	2	Qz +	82.32		10.99	1.67		0.67			4.35																									100	120
39.153.3L	3	3	Qz +	83.82		8.90	3.62		1.18			2.48																									100	100
39.153.3L	3.1	1	Brt +	17.69			0.63							30.22			-0.12								46.15									5.44			100	125
39.153.3L	3.1	2	Chl	25.51		19.58	32.89		7.03																												85	98
39.153.3L	3.1	3	Qz	100.00																																	100	119
39.153.3L	3.1	4	TiO2 +	2.56	95.09	1.23	0.75					0.37																									100	107
39.153.3L	3.1	5	Qz	97.67		1.52	0.31					0.50																									100	120
39.153.3L	3.1	6	Qz	96.43		2.44	0.34					0.80																									100	123
39.153.3L	3.1	7	Chl	26.98		19.86	26.49		11.33		0.33																									85	99
39.153.3L	3.1	8	Ms +	47.27	11.07	26.83	4.27		1.42			9.14																									100	110
39.153.3L	3.1	9	Qz	100.00																																	100	118
39.153.3L	3.2	1	Brt +	46.38			0.24							20.84			-0.08				5.07				26.47									1.07			100	131
39.153.3L	3.2	2	Hem +	1.19		0.62	83.43			14.76																											100	85
39.153.3L	3.2	3	Cal				1.43	1.23	0.90	52.44																											56	57
39.153.3L	3.2	4	Qz	99.67			0.19																									0.14					100	120
39.153.3L	3.2	5	Chl + Qz	44.17		19.46	25.68		10.44	0.26																											100	107
39.153.3L	4	1	Chl	26.61		19.72	28.63		10.04																												85	96
39.153.3L	4	2	Chl	27.74		20.65	25.84		10.05			0.72																									85	91
39.153.3L	4	3	Chl	26.45		20.42	28.32		9.81																												85	88
39.153.3L	4	4	Mix	59.14		3.85	2.24		0.56			1.22	14.40									16.22							0.77	1.60							100	112
39.153.3L	4	5	Qz +	89.85		3.26	0.79		0.27	4.48	0.34	1.00																									100	102
39.153.3L	4.1	1	Xenotime																			30.49							2.63	4.99	3.40	2.69	3.66			52.13	100	103
39.153.3L	4.1	2	Ap +	4.86		2.27	0.36			42.59		1.32	40.36		8.23																						100	124
39.153.3L	4.1	3	Chl + Mnz	33.35		21.47	1.64		0.95	0.72		5.84	15.83	1.04													11.01	8.15									100	112
39.153.3L	4.1	4	Qz +	90.77		5.90	0.24				2.88	0.22																									100	118
39.153.3L	4.1	5	Ms	49.57	0.42	29.51	3.81		1.61			10.09																									95	113
39.153.3L	4.1	6	Ms	50.99		28.26	4.31		1.44			9.99																									95	110
39.153.3L	4.1	7	Kfs +	52.13	0.56	29.75	4.67		1.86			11.03																									100	107
39.153.3L	4.1	8	Qz	95.85		2.45	0.46		0.21			1.03																									100	119
39.153.3L	4.1	9	Qz	100.00																																	100	120
			Notes																																				
			"+" indicates other minerals present																																				

Appendix 1-4D: SEM-BSE images for Flemish Cap Granules with EDS Mineral Analyses and Microphotographs.
Sample 2008061-216.4L

Flemish Cap Sample 216.4L Lithology Summary Notes

Granule 1 (Sites 1, 1.1, 1.2, 1.3, 1.4, 1.5, 1.6) Microphotographs: Figures 1-4D.9, 10, 11,12, 13, 14, 15, 16, 17. Mineralized rhyolite

Very fine-grained rock with a greenish ting of colour in thin section. No evident texture seen. The mineral assemblage of this rock includes albite, chlorite, epidote, some K-feldspar, and minor amounts of titanite and chalcopyrite. The epidote is riddled with albite relics (Figs. 1-4D.6, 8). There is relatively little quartz present in the Granule. In thin section, there seems to be mineralization filling a fracture that is red in colour (does not yield a good analysis).

This Granule is probably a fine-grained rhyolite (?intrusive) with strong secondary alteration and some mineralization (chlorite, epidote, chalcopyrite). Fe-oxide/hydroxide vein (Figs. 1-4D.13, 15, microphotographs) may also be hydrothermal.

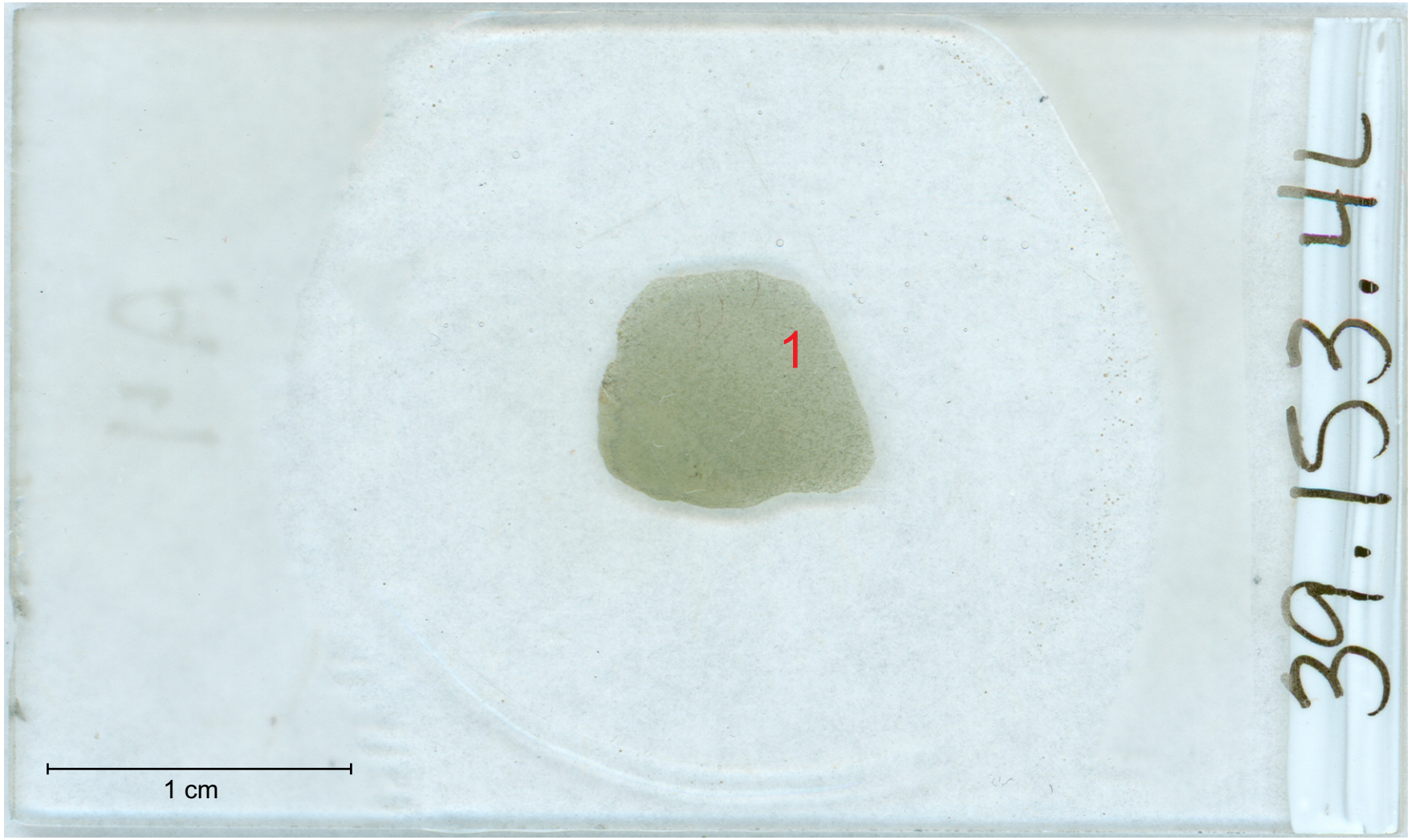
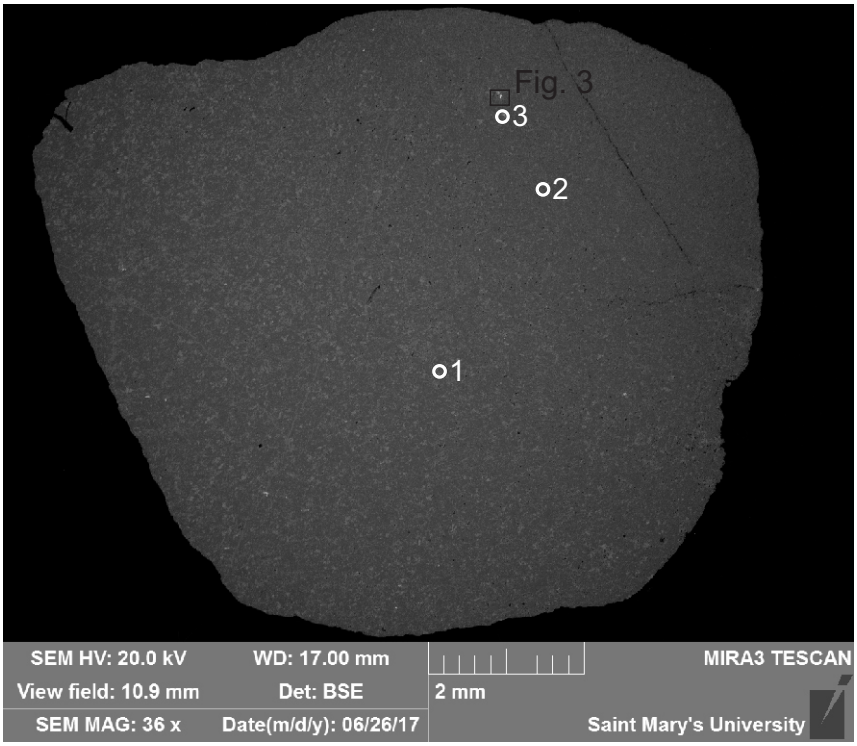
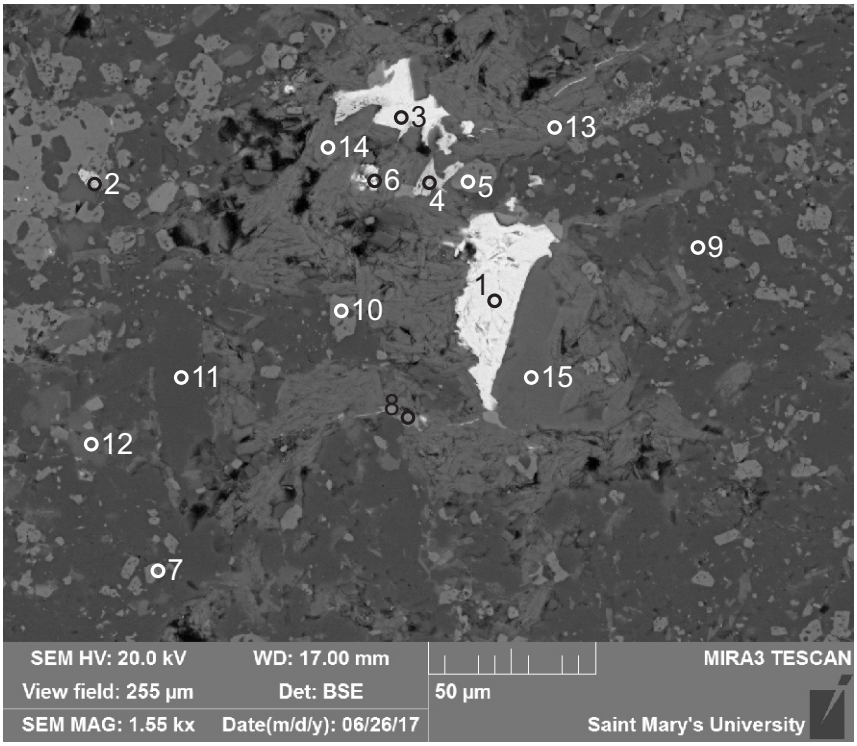


Figure 1-4D.1: Scanned thin section of Flemish Cap sample 216.4L. Granule numbered in red corresponding to analysed sites.



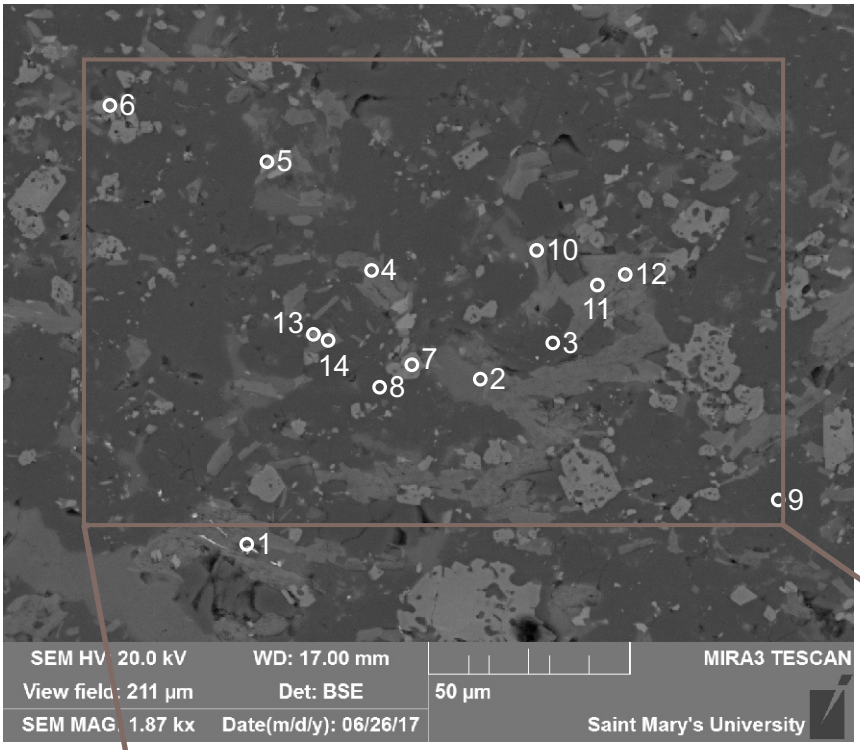
1:Mix
2:Albite +
3:Chl + Kfs

Figure 1-4D.2: Sample 216.4L site 1. Very fine-grained rock. Mineralized rhyolite.



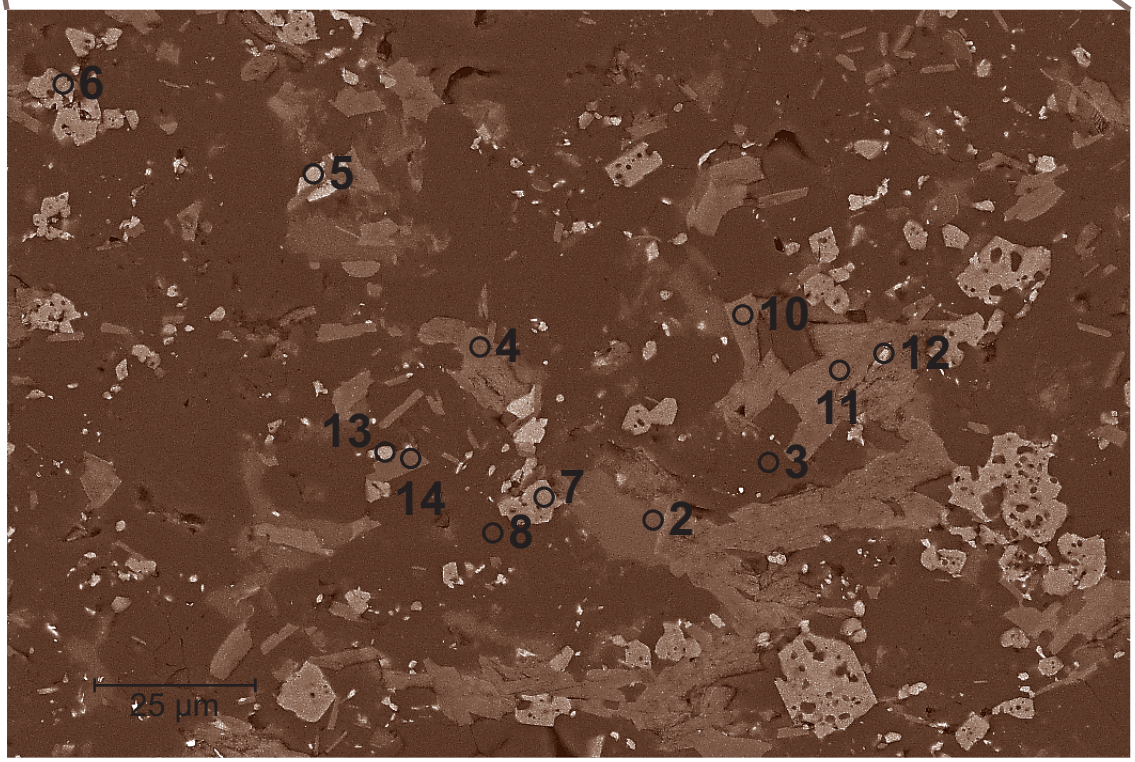
1:Chalcopyrite
2:Feohy + Chalcopyrite
3:Chalcopyrite
4:Feohy + Chalcopyrite
5:Epidote
6:Chalcopyrite +
7:Epidote + Titanite
8:Titanite +
9:Albite
10:Epidote
11:Albite
12:K-Feldspar
13:Chlorite
14:Chlorite
15:K-Feldspar

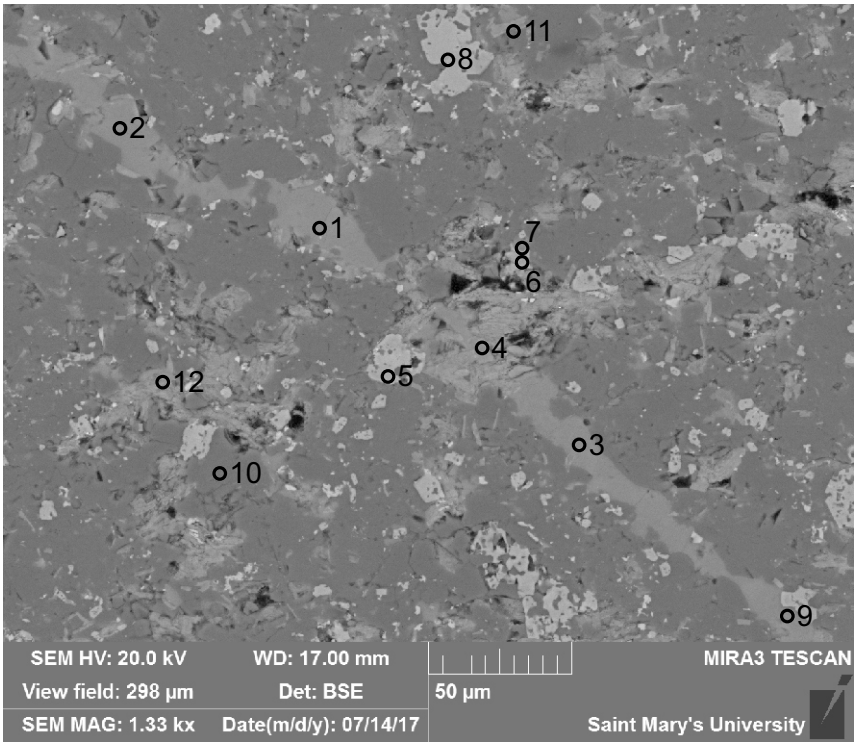
Figure 1-4D.3: Sample 216.4L site 1.1. Chalcopyrite formed later in crystallization possibly from hydrothermal fluids. Epidote (5 &10) and chlorite (13 &14) are secondary minerals.



1:Chlorite + K-Feldspar
2:K-Feldspar
3:Quartz
4:Chlorite
5:Titanite +
6:Mix
7:Epidote
8:Albite
9:Albite
10:Chlorite
11:Chlorite
12:Chlorite +
13:Titanite +
14:Chlorite

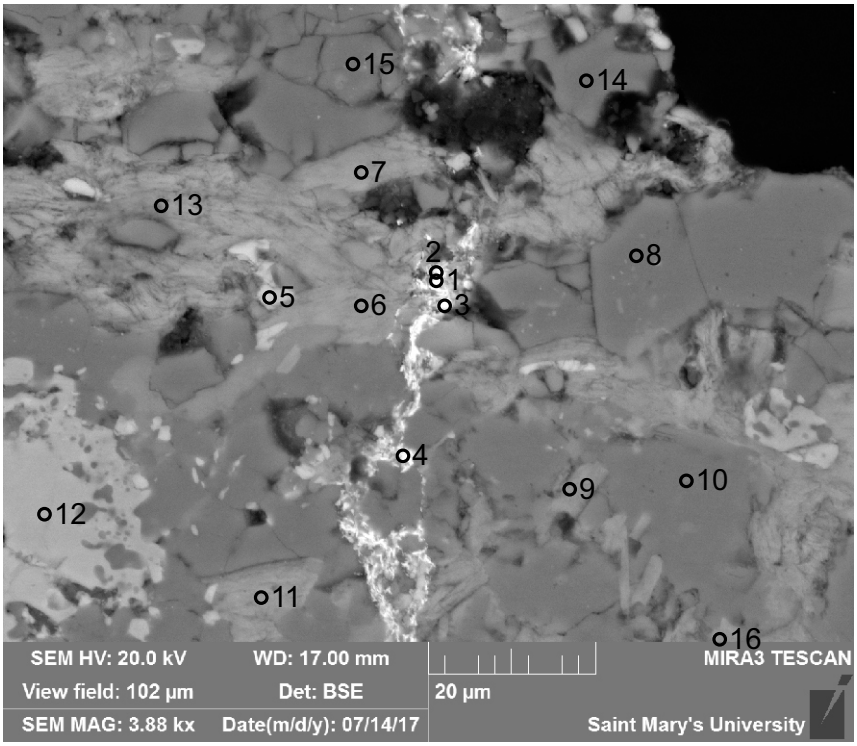
Figure 1-4D.4: Sample 216.4L site 1.2. Different color and contrast allows better differentiation between chlorite (10), epidote (7), and albite (8 & 9).





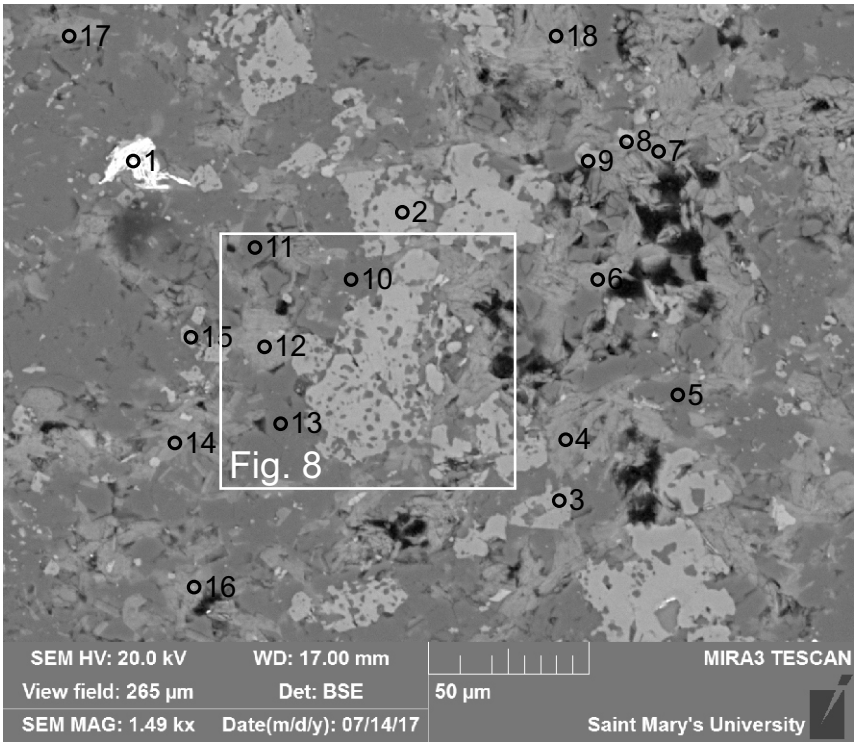
1:K-Feldspar
2:K-Feldspar
3:K-Feldspar
4:K-Feldspar
5:Epidote
6:Epidote
7:K-Feldspar +
8:Epidote
9:K-Feldspar
10:Albite
11:Chlorite
12:Chlorite

Figure 1-4D.5: Sample 216.4L site 1.3. This site contains K-Feldspar (1-4, 9) vein that probably cuts albite (10). Scattered epidote (5, 6, 8) grains with inclusions that may be quartz (too small to analyze).



1:Biotite
2:Feohy + K-Feldspar
3:Feohy + K-Feldspar
4:Feohy + K-Feldspar
5:Titanite
6:Chlorite
7:Chlorite
8:Quartz
9:Chlorite
10:Albite
11:Chlorite
12:Epidote
13:Chlorite
14:Quartz
15:Quartz +
16:Chlorite

Figure 1-4D.6: Sample 216.4L site 1.4. This site contains Epidote (12) with inclusions of identical brightness to albite (10). Quartz (8, 14) and albite (10) are interlocking, and chlorite (6-7, 9, 11, 16) is scattered throughout the sample. Mineralization (bright spots at sites 1-4) appears to be later.



1:Feohy +
2:Epidote
3:Epidote
4:Chlorite
5:Quartz
6:Chlorite
7:Chlorite
8:Titanite
9:Epidote
10:Albite
11:Quartz
12:Chlorite
13:Quartz
14:Chlorite
15:Epidote + Quartz
16:Chlorite
17:Chlorite
18:Chlorite

Figure 1-4D.7: Sample 216.4L site 1.5. Similar to previous sites. Contrast has been changed to produce a more representative image of the epidote with quartz inclusions (Fig. 8).

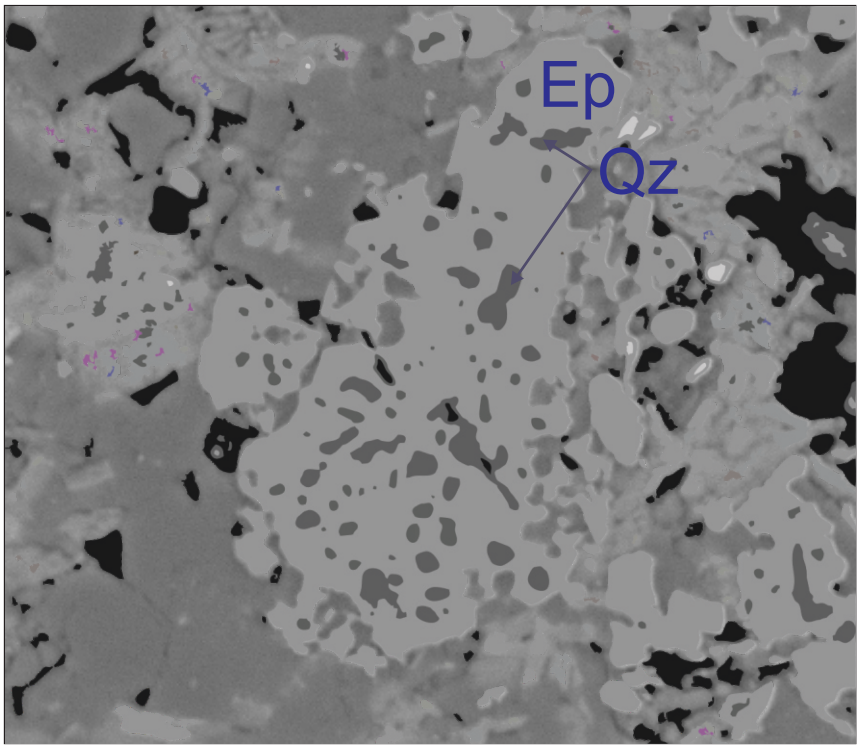


Figure 1-4D.8: Sample 216.4L site 1.6. Epidote with quartz inclusions labelled.

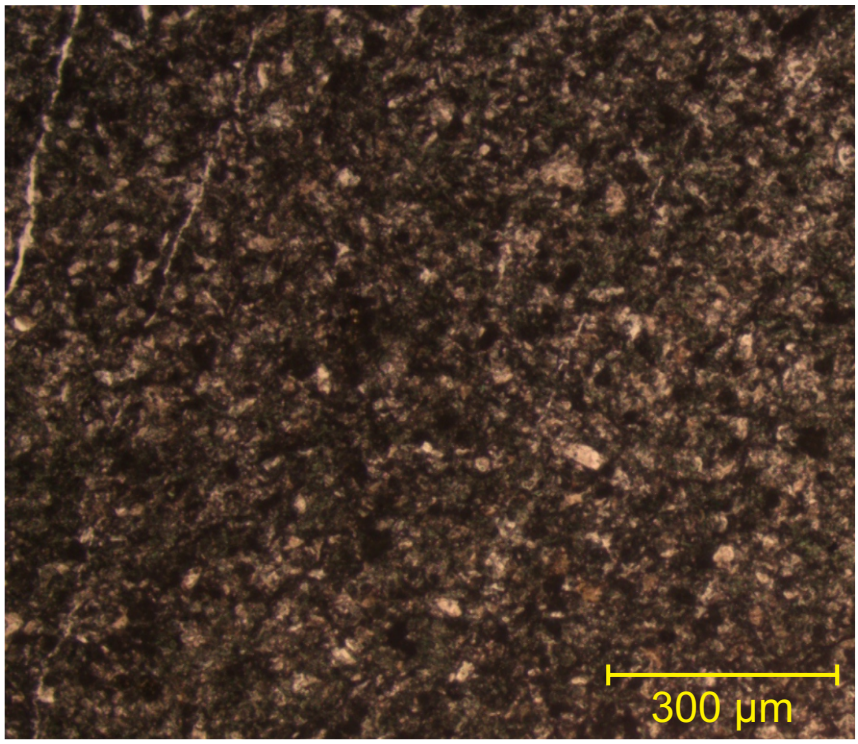


Figure 1-4D.9: Microphotograph. Sample 216.4L. Transmitted light, ppl, 4x. Very fine grained. Rhyolite.

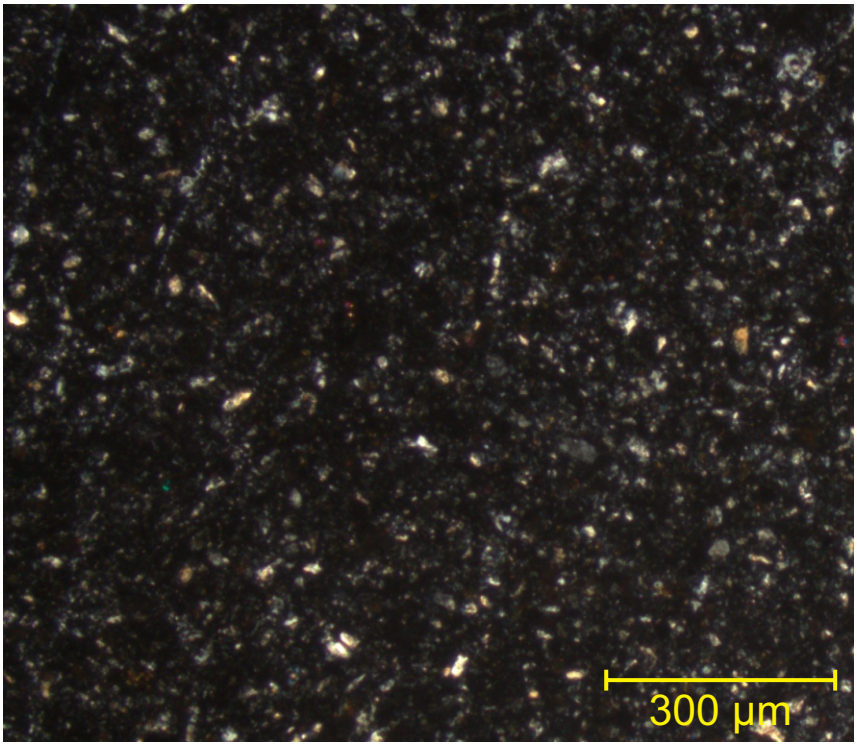


Figure 1-4D.10: Microphotograph. Sample 216.4L. Transmitted light, xpl, 4x. Very fine grained. Rhyolite.

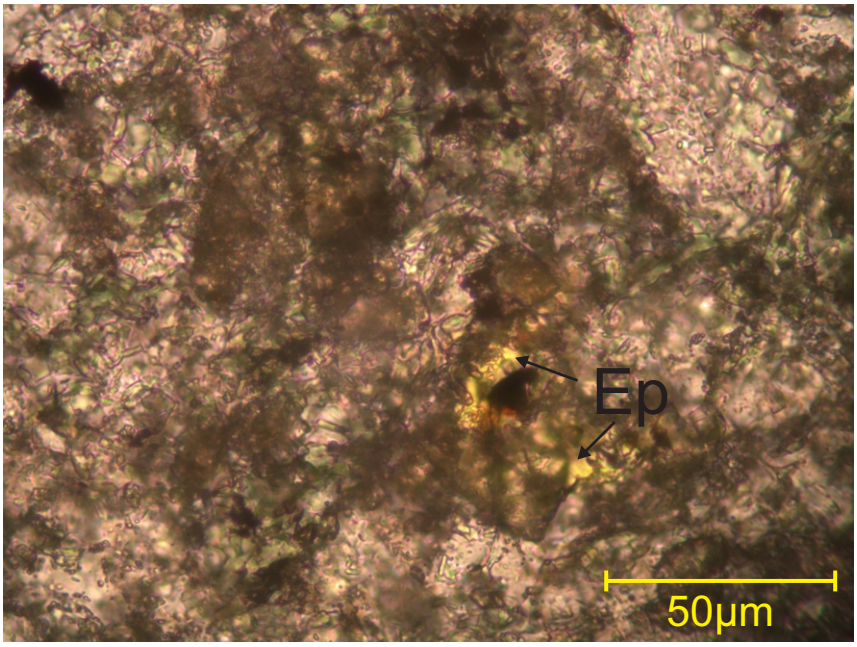


Figure 1-4D.11: Microphotograph. Sample 216.4L. Transmitted light, ppl, 40x. Bright yellow epidote and green color may be chlorite.

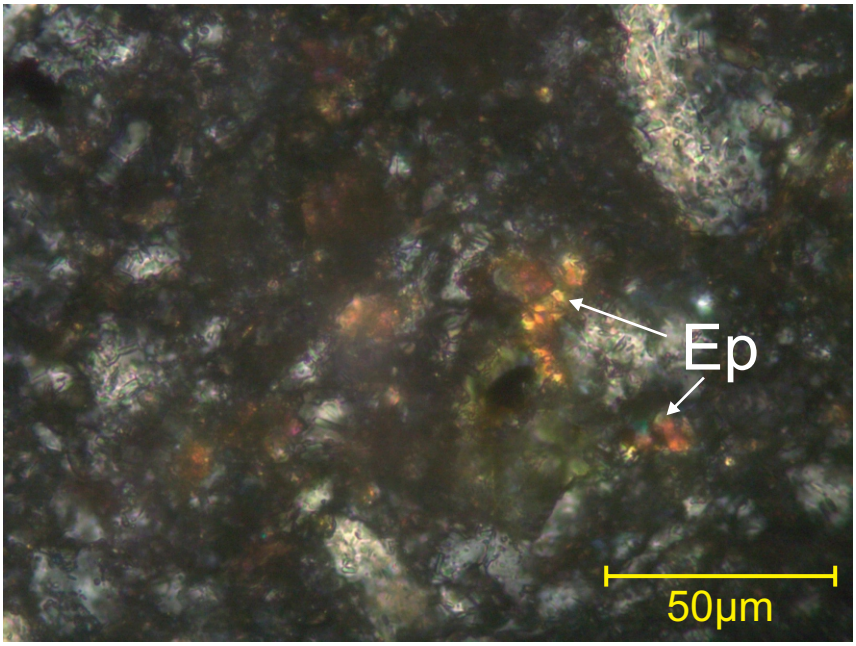


Figure 1-4D.12: Microphotograph. Sample 216.4L. Transmitted light, xpl, 40x. Epidote seen with bright second order colors.

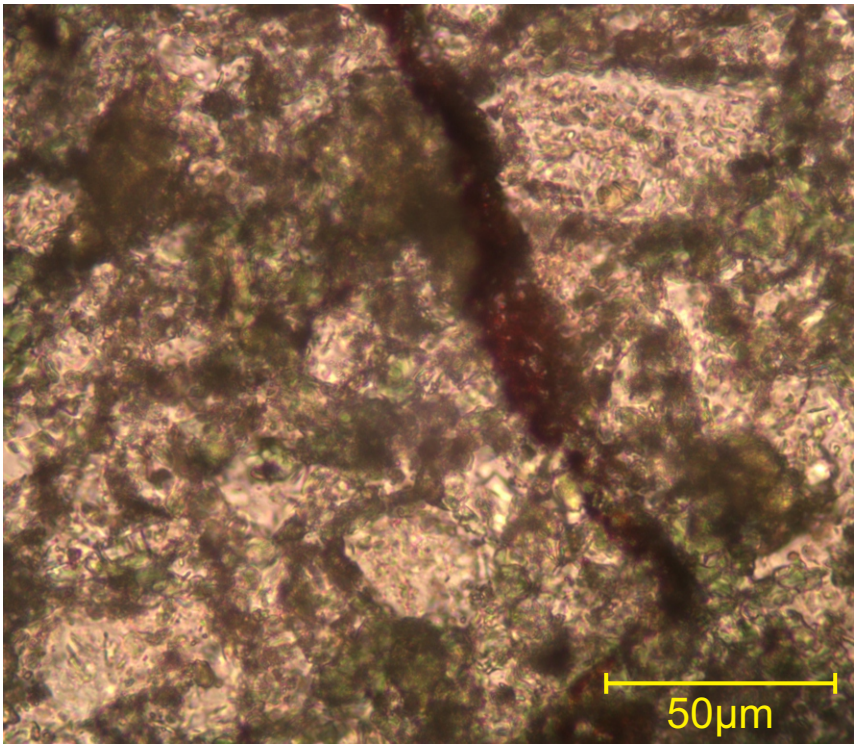


Figure 1-4D.13: Microphotograph. Sample 216.4L. Transmitted light, ppl, 40x. Mineralization filling fracture (too small to analyse).

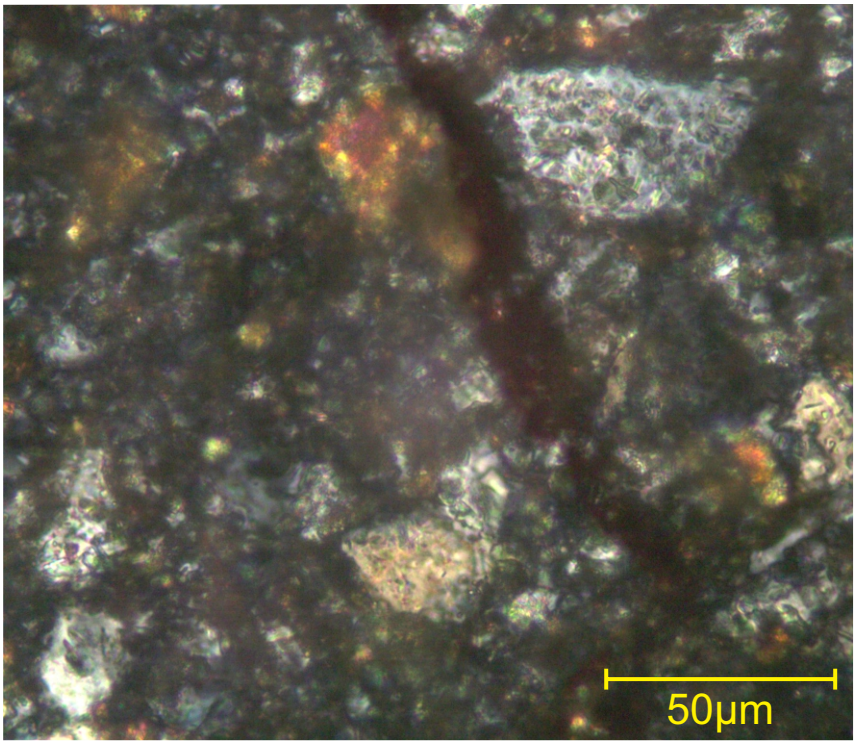


Figure 1-4D.14: Microphotograph. Sample 216.4L. Transmitted light, xpl, 40x. Mineralization filling fracture.

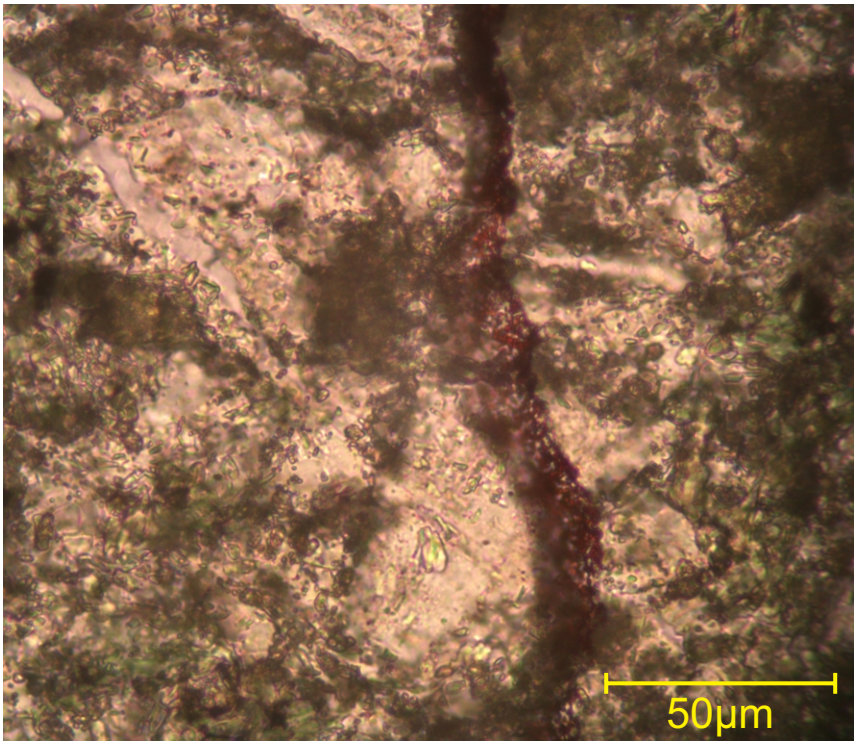


Figure 1-4D.15: Microphotograph. Sample 216.4L. Transmitted light, ppl, 40x. Mineralization filling fracture.

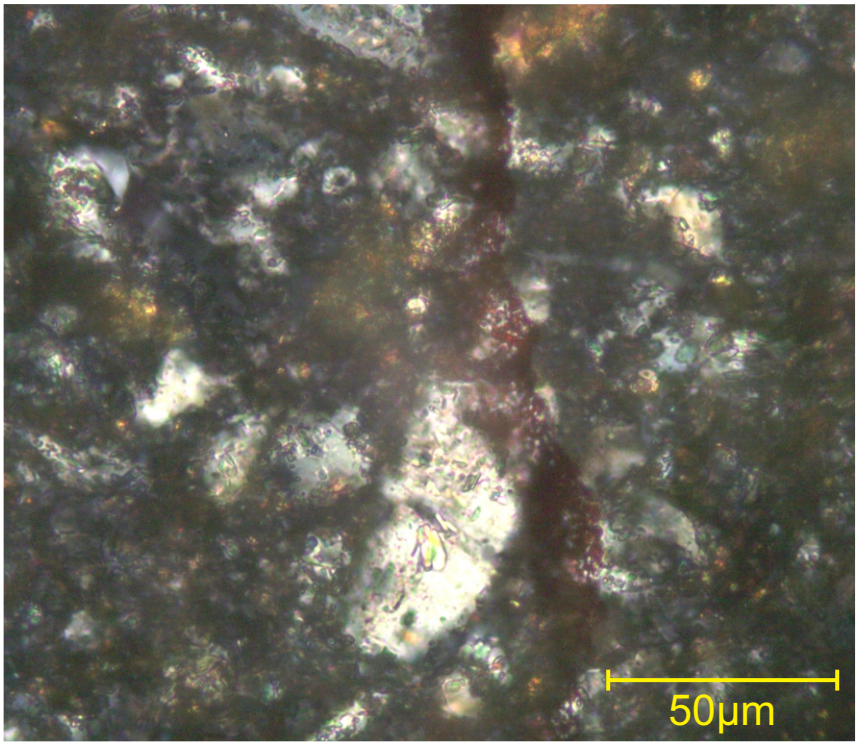


Figure 1-4D.16: Microphotograph. Sample 216.4L. Transmitted light, xpl, 40x. Mineralization filling fracture.

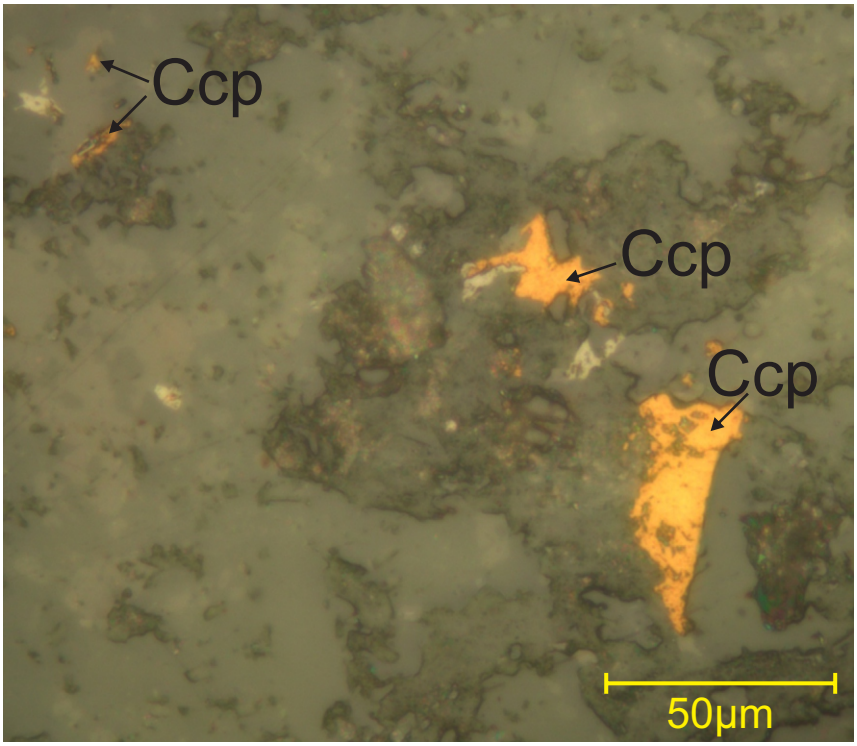


Figure 1-4D.17: Microphotograph. Sample 216.4L. Reflected light, ppl, 40x. Strong yellow color indicating Chalcopyrite.

Table 1-4D.1: Scanning electron microscope chemical analyses of Granules from Flemish Cap. (Sample 216.4L)

Sample	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	Cl	V2O5	CuO	BaO	Yb2O3	Total	Actual Total
39.153.4L	1	1	Mix	61.29	0.97	13.92	9.48		3.28	10.60	0.46									100	118
39.153.4L	1	2	Ab +	59.38	0.43	18.11	7.42	0.30	6.27	1.08	6.84	0.18								100	74
39.153.4L	1	3	Chl + Kfs	46.38		21.18	13.72	0.38	12.54		0.57	5.23								100	56
39.153.4L	1.1	1	Ccp				22.19							53.77			24.04			100	196
39.153.4L	1.1	2	Feohy + Ccp	3.12		0.63	76.68			1.05			0.93	11.93	0.62		5.04			100	99
39.153.4L	1.1	3	Ccp				22.72							53.00			24.28			100	192
39.153.4L	1.1	4	Feohy + Ccp	2.19			80.89			0.37				8.77	0.47		7.31			100	97
39.153.4L	1.1	5	Ep	40.63		22.83	11.71			21.84										97	110
39.153.4L	1.1	6	Ccp +	1.93		0.53	22.12		0.49					51.53			23.40			100	184
39.153.4L	1.1	7	Ep + Ttn	39.76	11.87	17.01	7.65			23.70										100	111
39.153.4L	1.1	8	Ttn +	35.59	32.46	2.86	2.16			23.56	1.37				0.50		1.50			100	117
39.153.4L	1.1	9	Ab	68.78		19.33	0.22			0.58	11.09									100	119
39.153.4L	1.1	10	Ep	40.89		21.35	13.78			20.98										97	108
39.153.4L	1.1	11	Ab	69.48		18.90				0.35	11.27									100	119
39.153.4L	1.1	12	Kfs	65.60		17.87					0.29	15.21						1.03		100	119
39.153.4L	1.1	13	Chl	29.01		18.42	19.64	0.43	17.50											85	98
39.153.4L	1.1	14	Chl	27.68		19.03	20.77	0.54	16.97											85	95
39.153.4L	1.1	15	Kfs	66.24		17.67	0.30					15.78								100	118
39.153.4L	1.2	1	Chl + Kfs	29.54	0.31	10.75	49.02		5.38		0.95	3.76				0.30				100	113
39.153.4L	1.2	2	Kfs	63.57		18.06	1.99		1.65			13.95						0.77		100	117
39.153.4L	1.2	3	Qz	99.67			0.33													100	120
39.153.4L	1.2	4	Chl	27.48		20.21	19.76	0.44	17.11											85	97
39.153.4L	1.2	5	Ttn +	36.32	31.33	4.56	1.26		0.52	24.46	1.09	0.45								100	115
39.153.4L	1.2	6	Mix	49.61		20.43	9.82			17.37	0.28	2.50								100	113
39.153.4L	1.2	7	Ep	40.92		21.81	12.65			21.62										97	112
39.153.4L	1.2	8	Ab	69.85		18.75				0.44	10.96									100	118
39.153.4L	1.2	9	Ab	69.36		18.90				0.18	11.56									100	120
39.153.4L	1.2	10	Chl	29.30		17.35	20.99	0.46	16.91											85	99
39.153.4L	1.2	11	Chl	27.32		17.57	23.08	0.45	16.58											85	91
39.153.4L	1.2	12	Chl +	34.36	3.78	19.30	22.04	0.47	16.88	3.18										100	98
39.153.4L	1.2	13	Ttn +	50.60	22.24	4.60	2.99		2.50	17.08										100	117
39.153.4L	1.2	14	Chl	31.50		18.22	17.92	0.48	16.68	0.21										85	100
39.153.4L	1.3	1	Kfs	66.09		17.54					0.22	15.44						0.71		100	118
39.153.4L	1.3	2	Kfs	66		17.71					0.26	15.19						0.85		100	117

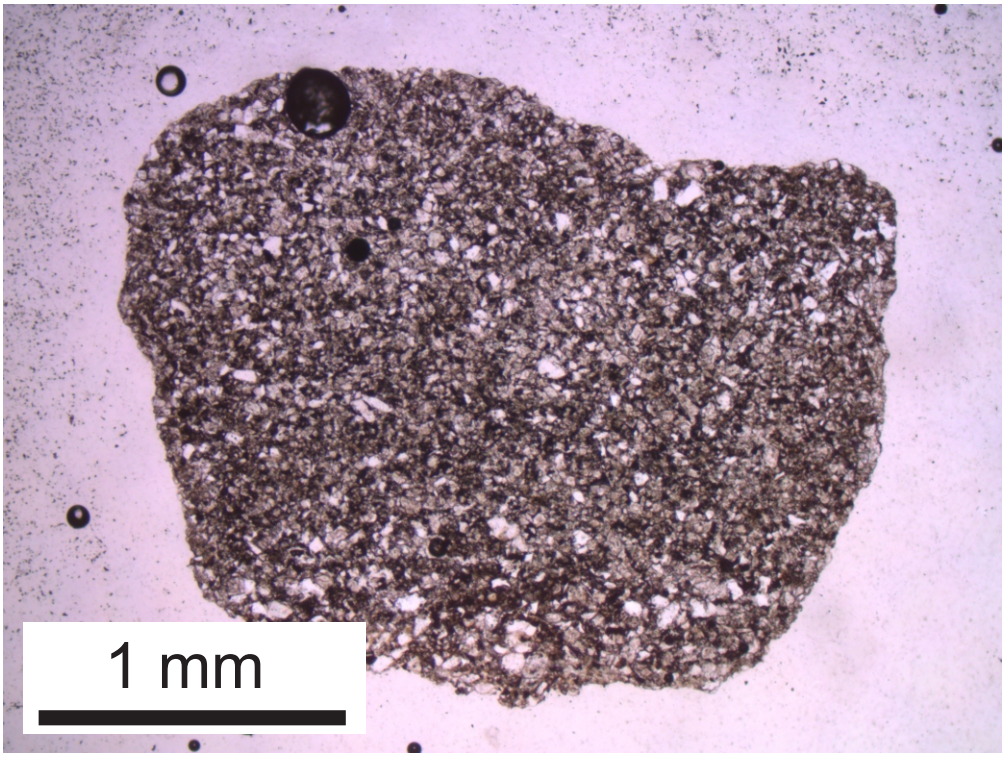
Table 1-4D.1: Scanning electron microscope chemical analyses of Granules from Flemish Cap. (Sample 216.4L)

Sample	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	Cl	V2O5	CuO	BaO	Yb2O3	Total	Actual Total
39.153.4L	1.3	3	Kfs	65.76		17.77					0.24	15.29						0.95		100	119
39.153.4L	1.3	4	Kfs	64.76		18.04	0.85		0.59			14.85						0.92		100	118
39.153.4L	1.3	5	Ep	39.91		21.84	12.77			22.48										97	110
39.153.4L	1.3	6	Ep	41.82		23.19	10.08	0.23		21.68										97	109
39.153.4L	1.3	7	Kfs +	64.63		18.08	0.93			2	0.29	14.07								100	116
39.153.4L	1.3	8	Ep	39.67		21.44	13.14			22.76										97	107
39.153.4L	1.3	9	Kfs	66.24		17.6	0.21				0.26	15.7								100	117
39.153.4L	1.3	10	Ab	68.17		19.8	0.19			1.06	10.79									100	118
39.153.4L	1.3	11	Chl	34.01		18.13	16.85	0.4	14.33		0.289	0.986								85	107
39.153.4L	1.3	12	Chl	28.93		18.35	18.43	0.43	18.86											85	99
39.153.4L	1.4	1	Bt	33.47	0.998	8.716	40.48		1.997	0.403		9.561				0.37				96	92
39.153.4L	1.4	2	Feohy + Kfs	29.21	2.09	8.94	48.47		4.2	1.32	0.36	5.41								100	100
39.153.4L	1.4	3	Feohy + Kfs	21.73	0.54	6.64	64.73		2.88			2.89				0.6				100	103
39.153.4L	1.4	4	Feohy + Kfs	22.01	0.8	5.92	64.62		2.33	0.28	2.35	1.05				0.64				100	110
39.153.4L	1.4	5	Ttn	35.51	32.32	2.88	1.89		0.99	25.36		0.23				0.83				100	115
39.153.4L	1.4	6	Chl	29.18		16.36	21.67	0.46	17.33											85	98
39.153.4L	1.4	7	Chl	29.62		15.65	22.69	0.37	16.68											85	95
39.153.4L	1.4	8	Qz	99.79			0.21													100	122
39.153.4L	1.4	9	Chl	31.31		19.32	17.54	0.48	15.35		0.774	0.23								85	102
39.153.4L	1.4	10	Ab	68.38		19.56	0.42			1.11	10.42	0.12								100	117
39.153.4L	1.4	11	Chl	29.58		16.23	21.83	0.48	16.88											85	99
39.153.4L	1.4	12	Ep	39.71		20	14.67	0.4		22.22										97	108
39.153.4L	1.4	13	Chl	32.1		14.74	21.8	0.46	15.9											85	92
39.153.4L	1.4	14	Qz	99.59			0.25					0.17								100	121
39.153.4L	1.4	15	Qz +	94.47	1.62	1.53	0.39		0.22	1.2		0.56								100	122
39.153.4L	1.4	16	Chl	31.3		18.56	17.92	0.48	16.46		0.289									85	105
39.153.4L	1.5	1	Feohy +	2.1	0.43	1	95.36		0.37							0.74				100	87
39.153.4L	1.5	2	Ep	40.68		23	12.23	0.47		20.62										97	105
39.153.4L	1.5	3	Ep	39.5		21.59	12.39			22.8			0.73							97	109
39.153.4L	1.5	4	Chl	27.42		20.17	19.15	0.52	17.74											85	100
39.153.4L	1.5	5	Qz	98.54		0.65	0.45		0.21			0.15								100	119
39.153.4L	1.5	6	Chl	28.41		17.17	22.13	0.51	16.79											85	94
39.153.4L	1.5	7	Chl	27.55		18.77	21.03	0.37	17.28											85	93
39.153.4L	1.5	8	Ttn	32.02	37.05	1.79	1.36		0.59	27.19										100	103

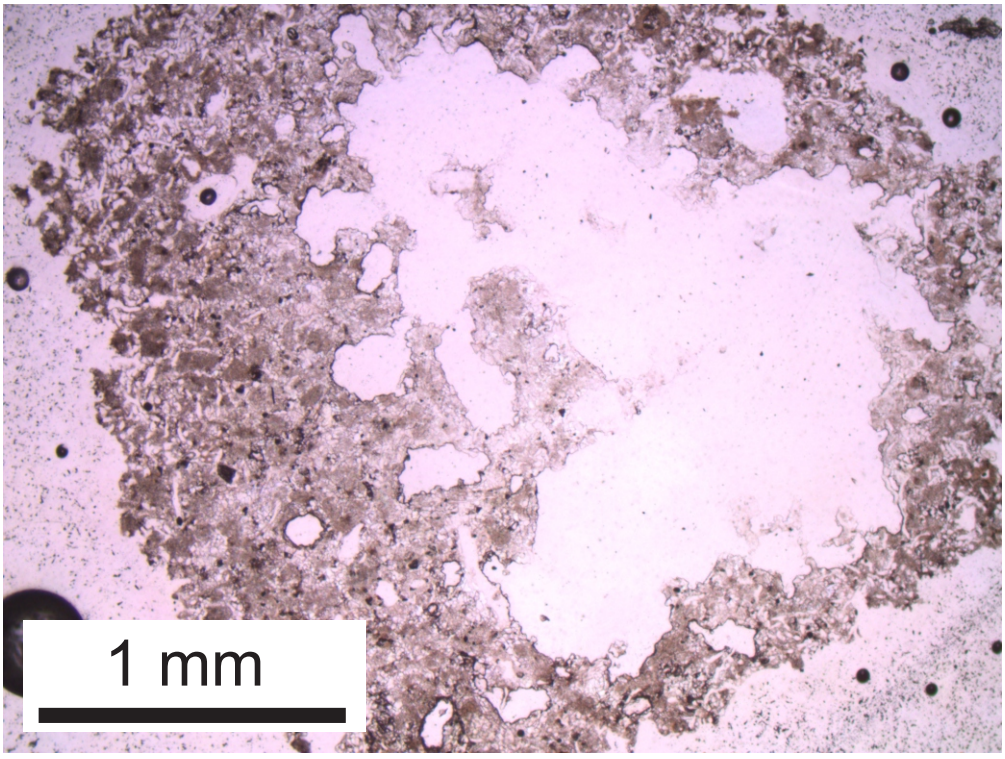
Table 1-4D.1: Scanning electron microscope chemical analyses of Granules from Flemish Cap. (Sample 216.4L)

Sample	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	Cl	V2O5	CuO	BaO	Yb2O3	Total	Actual Total
39.153.4L	1.5	9	Ep	40.4		22.89	11.26	0.29		22.15										97	108
39.153.4L	1.5	10	Ab	68.43		19.11	0.35			0.8	11.17	0.15								100	117
39.153.4L	1.5	11	Qz	99.64			0.23				0.2								-0.07	100	118
39.153.4L	1.5	12	Chl	27.97	2.295	15.92	20.73	0.37	15.69	2.023										85	100
39.153.4L	1.5	13	Qz	99.78			0.22													100	120
39.153.4L	1.5	14	Chl	28.7		17.72	20.9	0.4	17.28											85	102
39.153.4L	1.5	15	Ep + Qz	51.36		19.11	10.77	0.24		18.27	0.25									100	109
39.153.4L	1.5	16	Chl	28.75	7.088	13.24	16.57	0.28	12.75	5.677		0.637								85	102
39.153.4L	1.5	17	Chl	29.05		17.4	21.33	0.43	16.48		0.306									85	96
39.153.4L	1.5	18	Chl	27.15		18.71	21.3	0.54	17.3											85	92
			Notes																		
			"+" indicates more than one mineral present																		

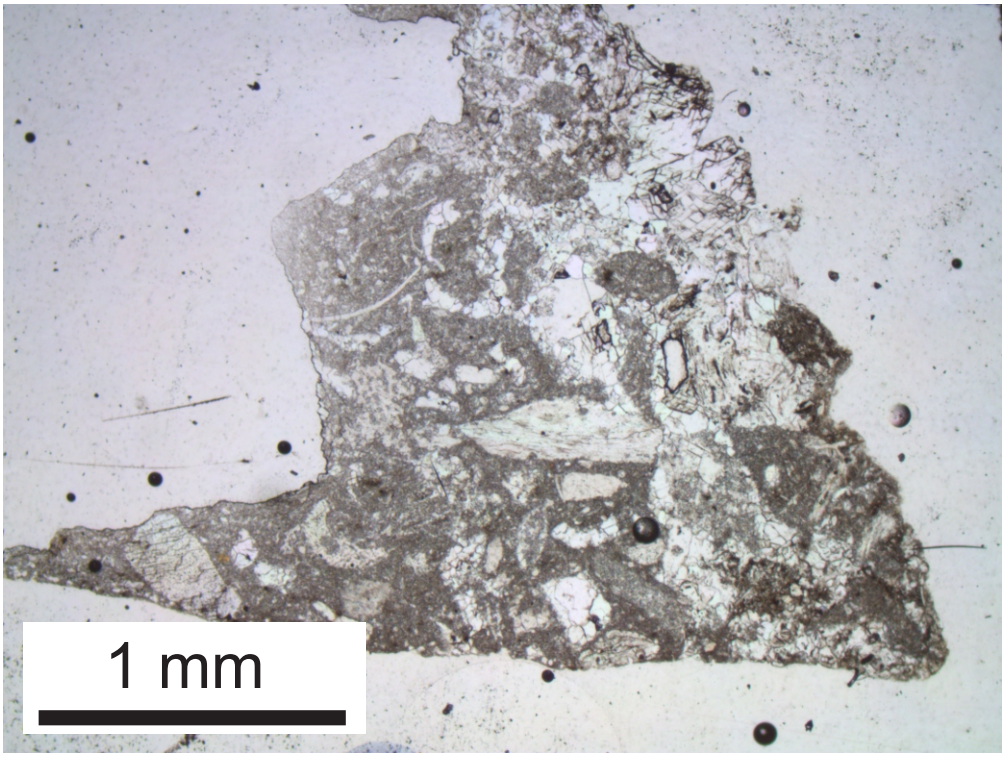
Appendix 2: Microphotographs of selected samples using optical microscope.



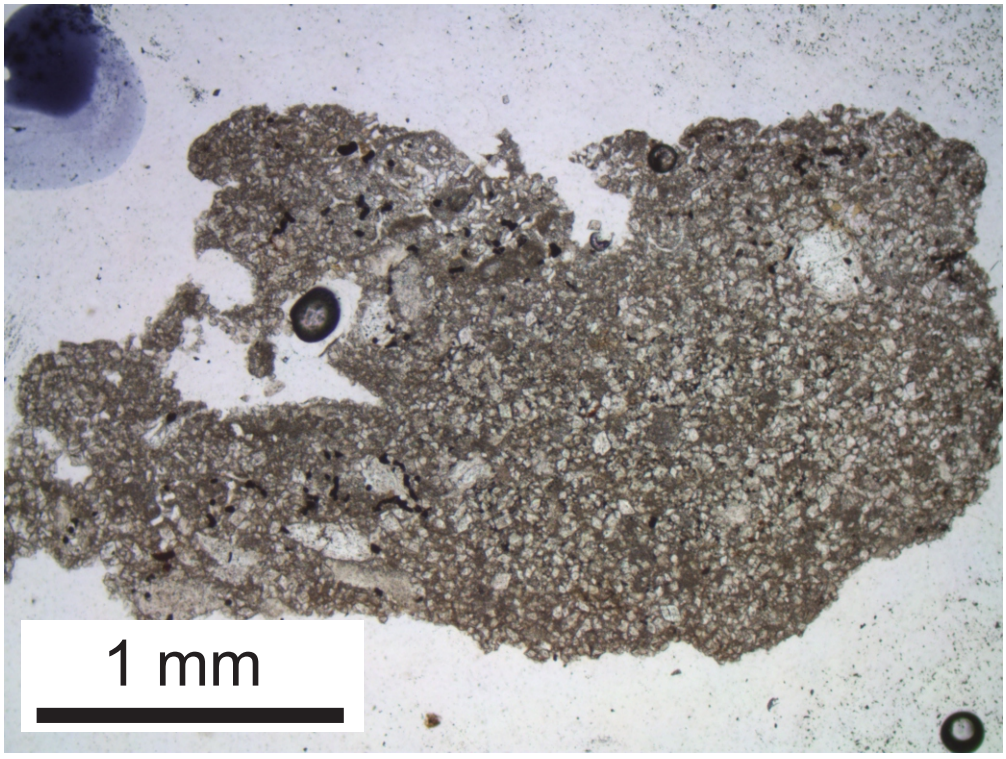
195.3M 4x magnification grain 1



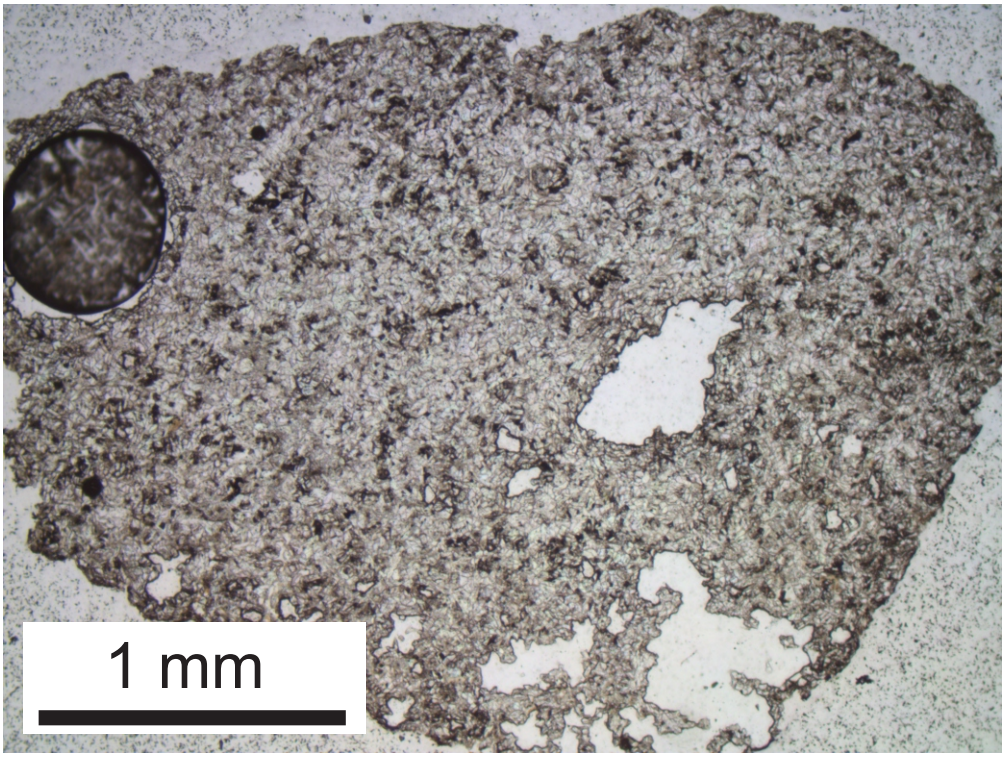
195.3M 4x magnification grain 2



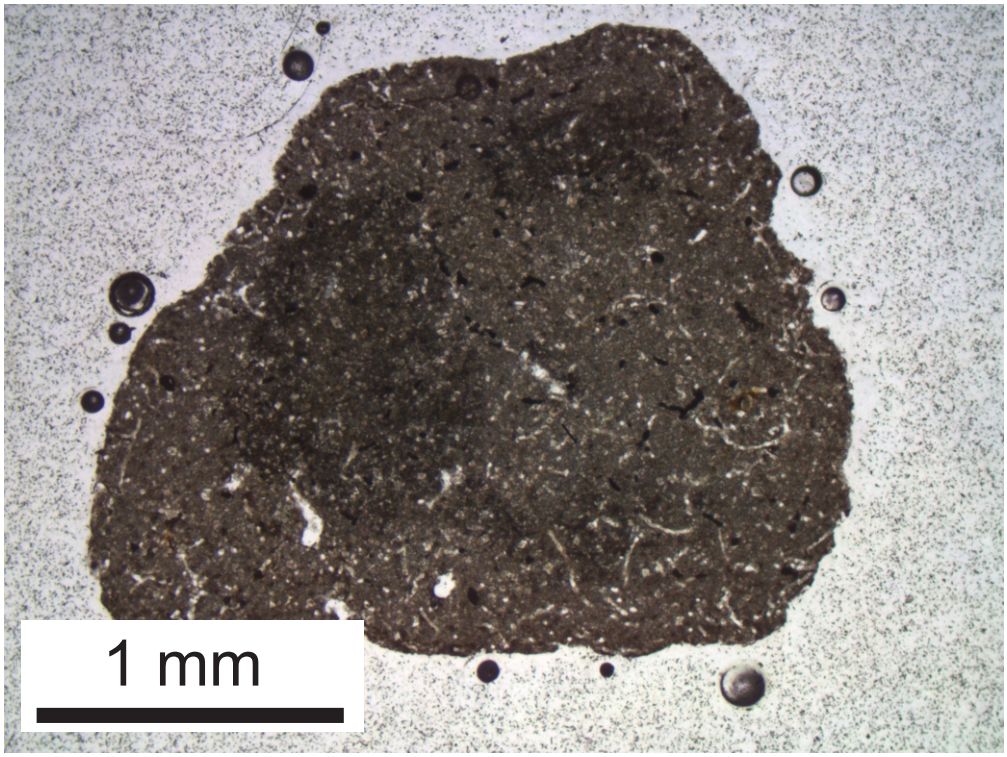
195.3M 4x magnification grain 3



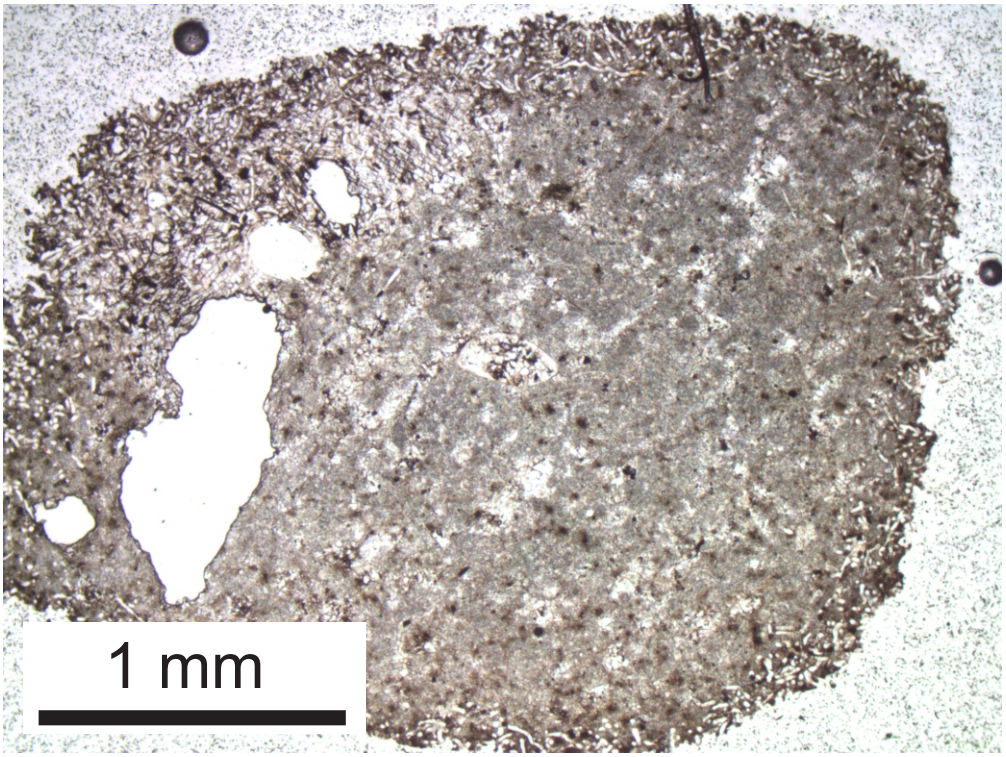
195.3M 4x magnification grain 4



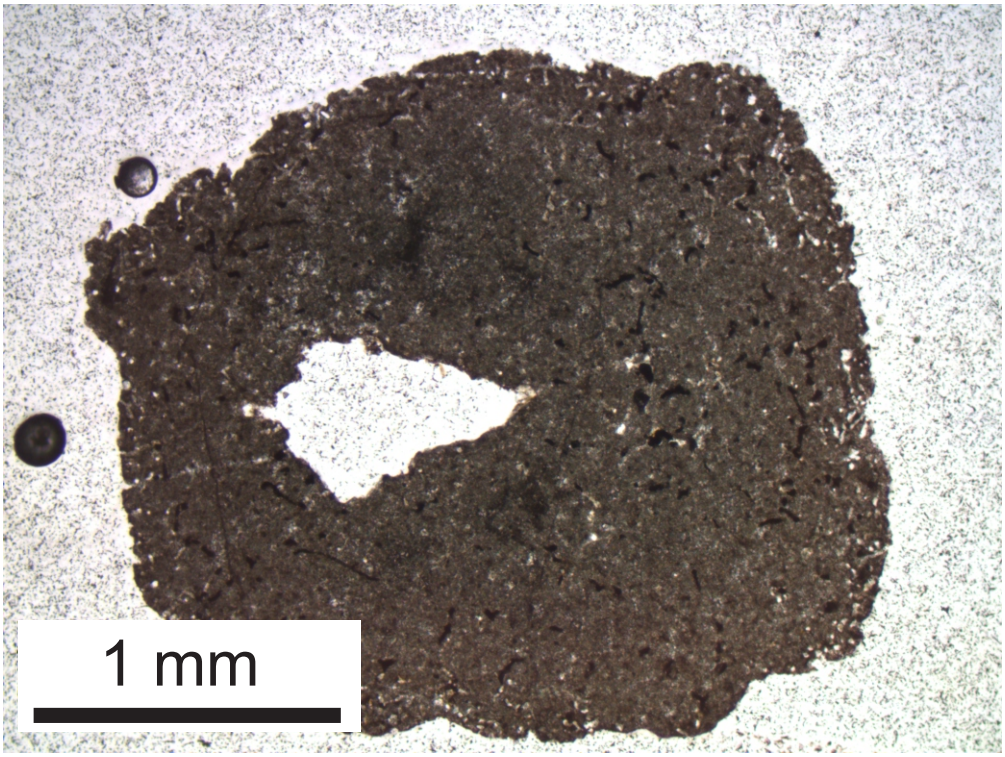
195.3M 4x magnification grain 5



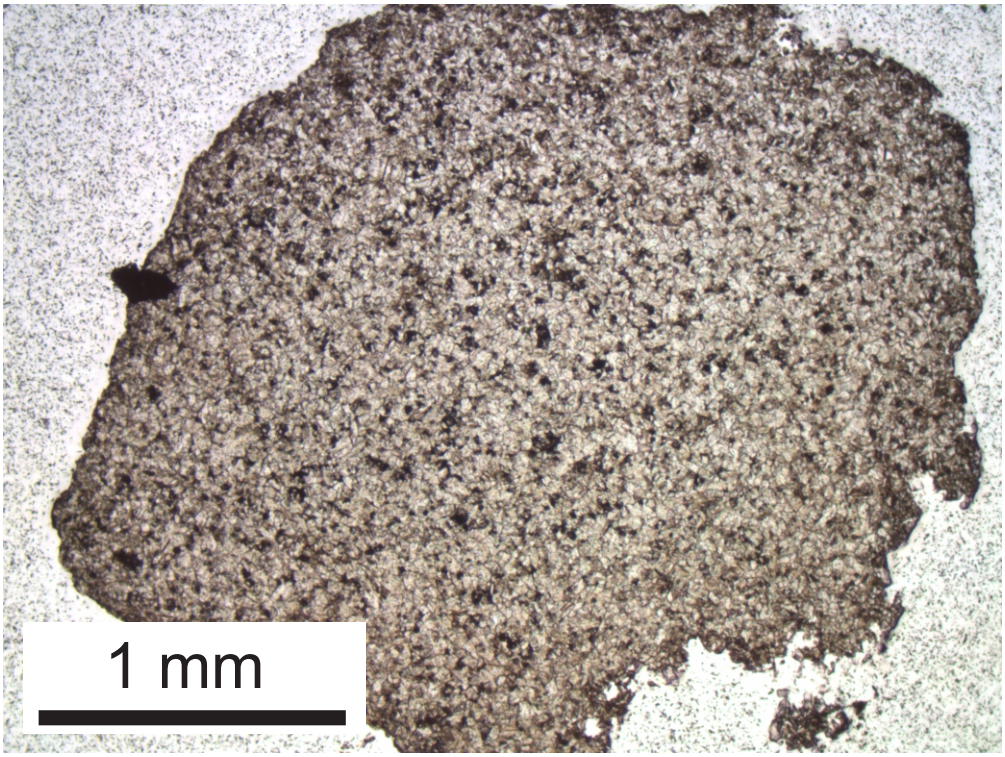
195.3M 4x magnification grain 6



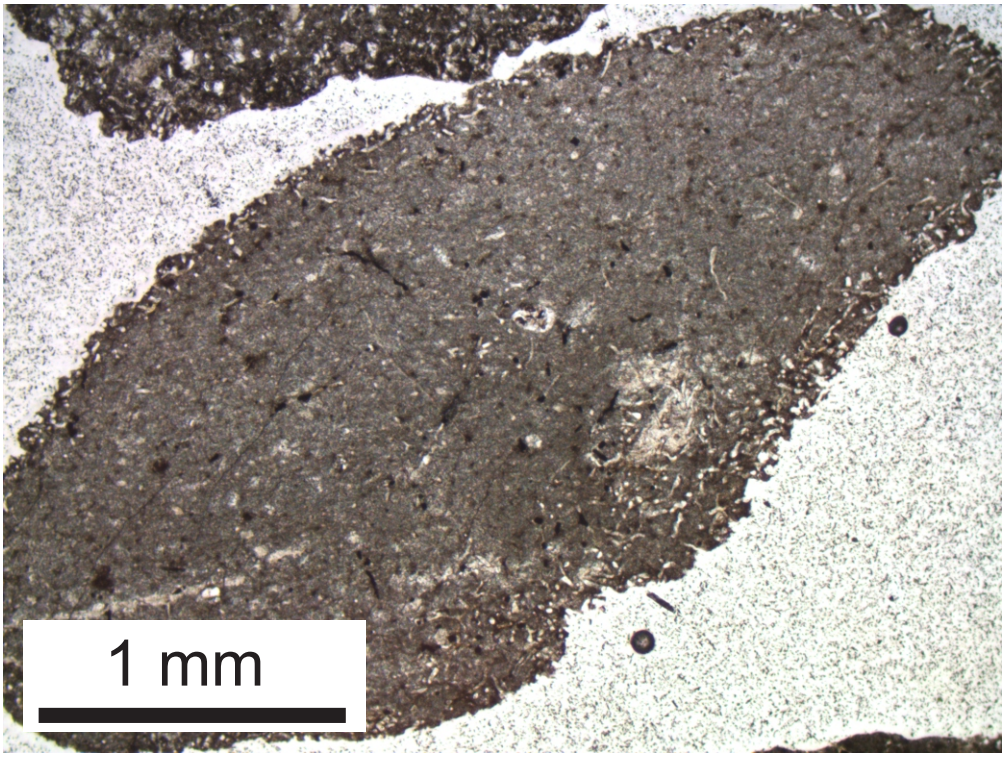
195.3M 4x magnification grain 7



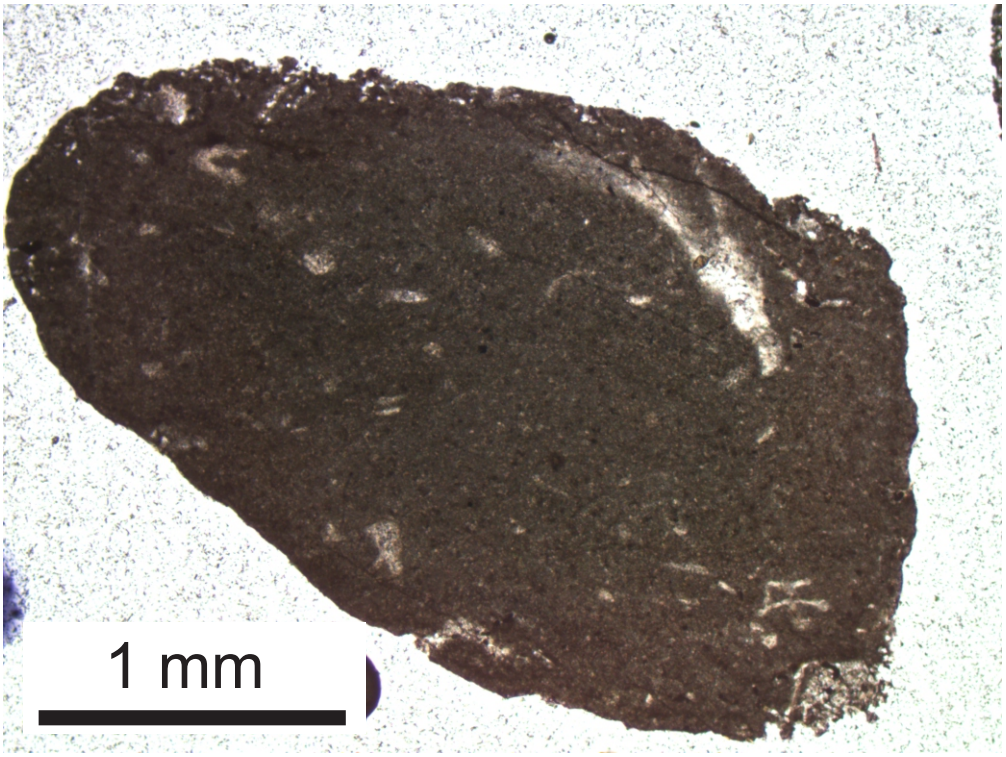
195.3M 4x magnification grain 8



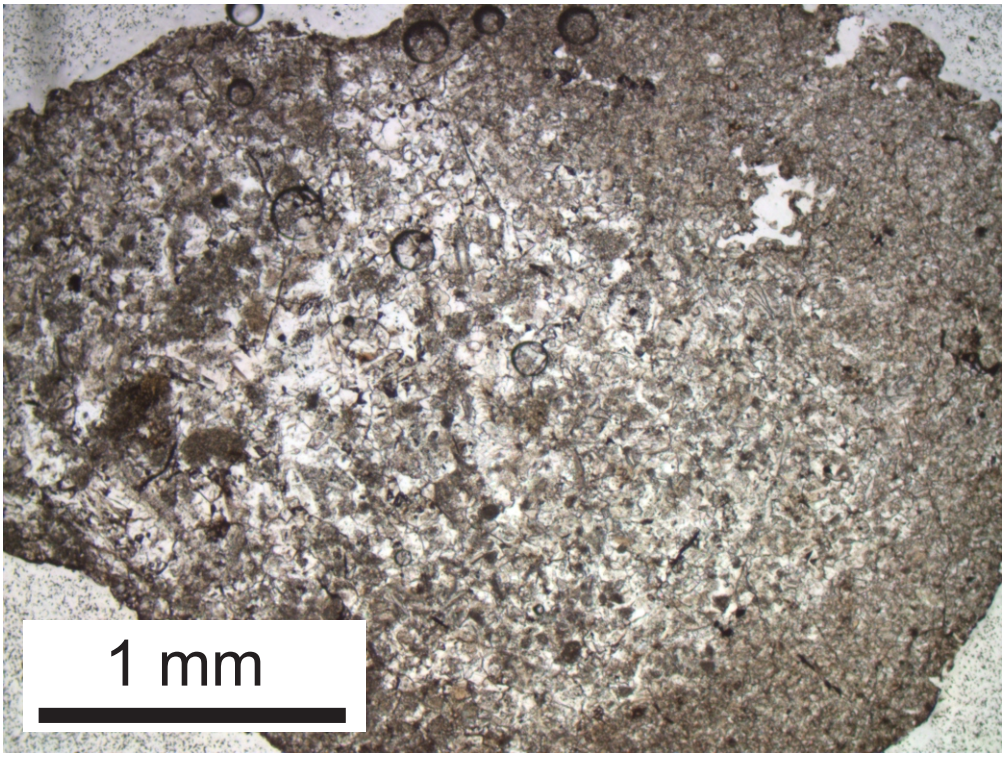
195.3M 4x magnification grain 9



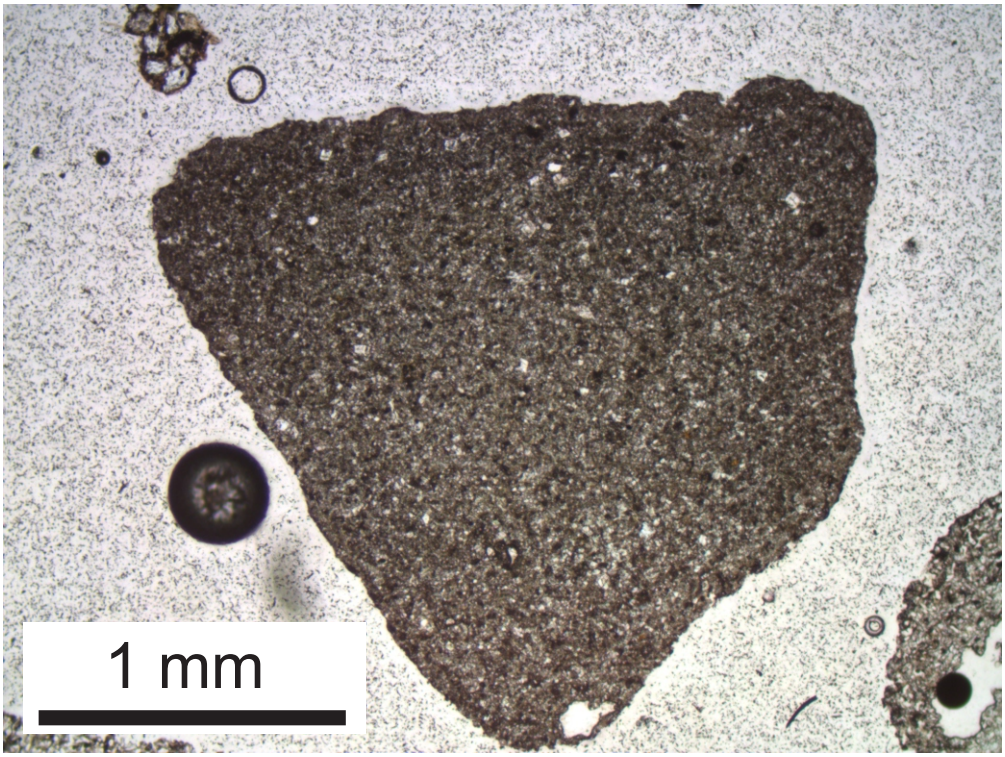
195.3M 4x magnification grain 10



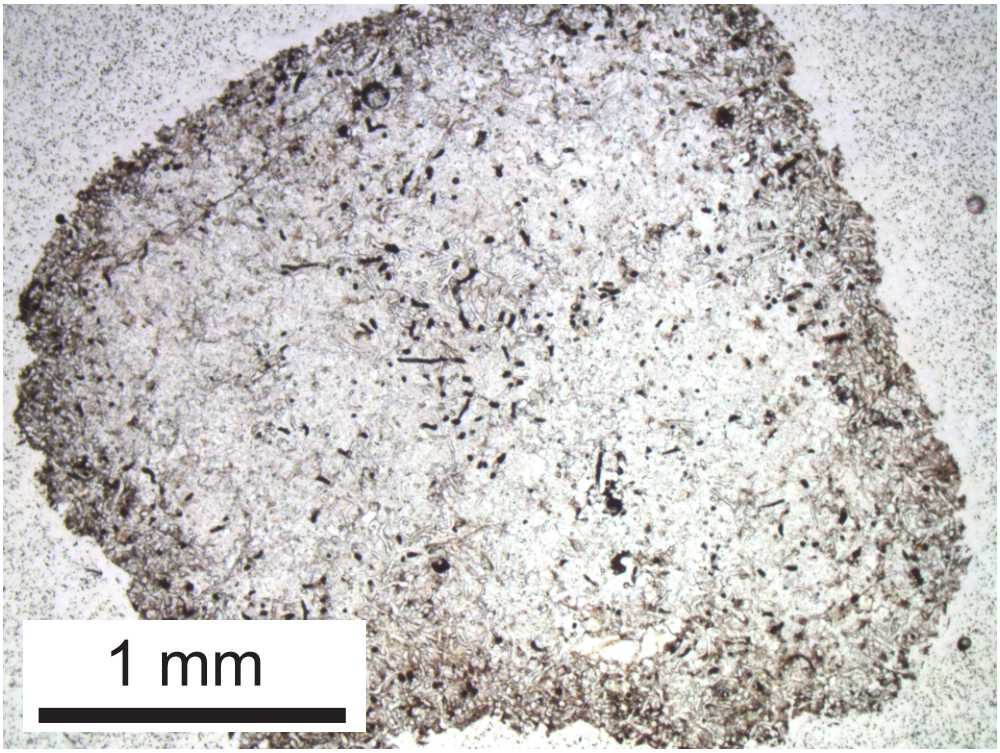
195.3M 4x magnification grain 11



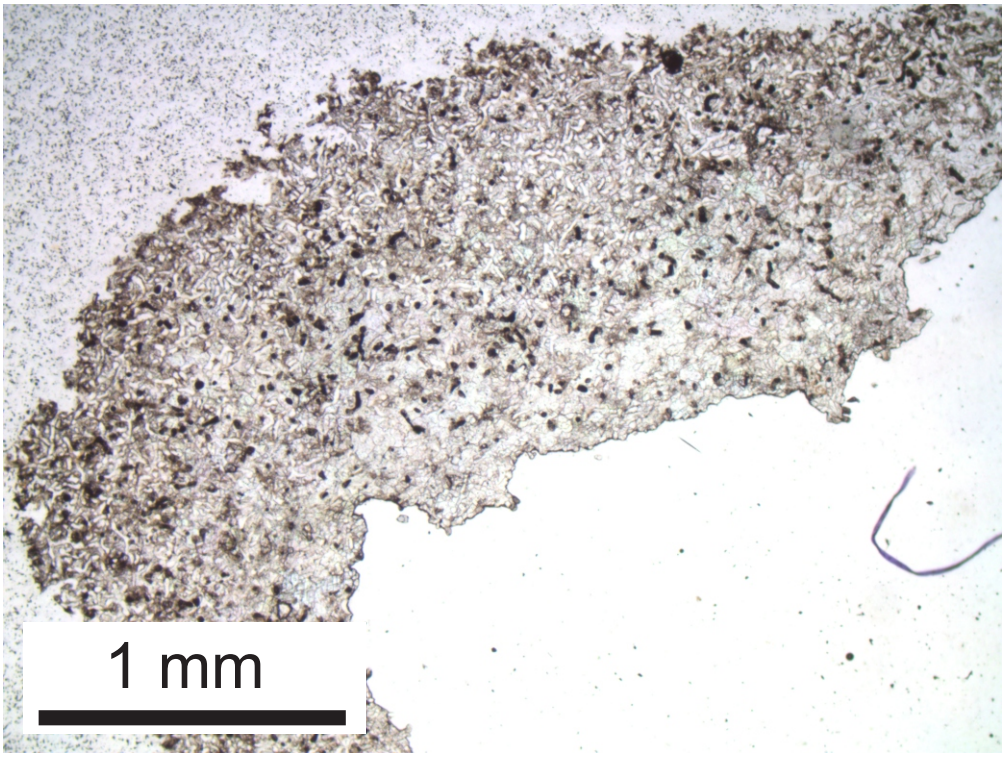
195.3M 4x magnification grain 12



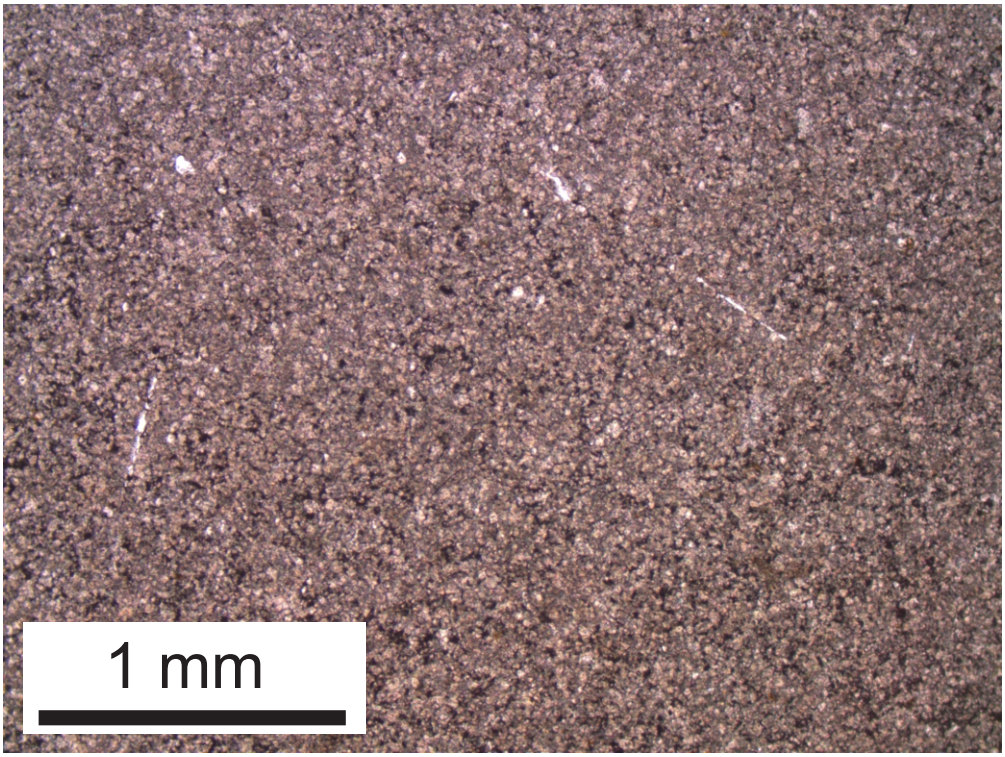
195.3M 4x magnification grain 13



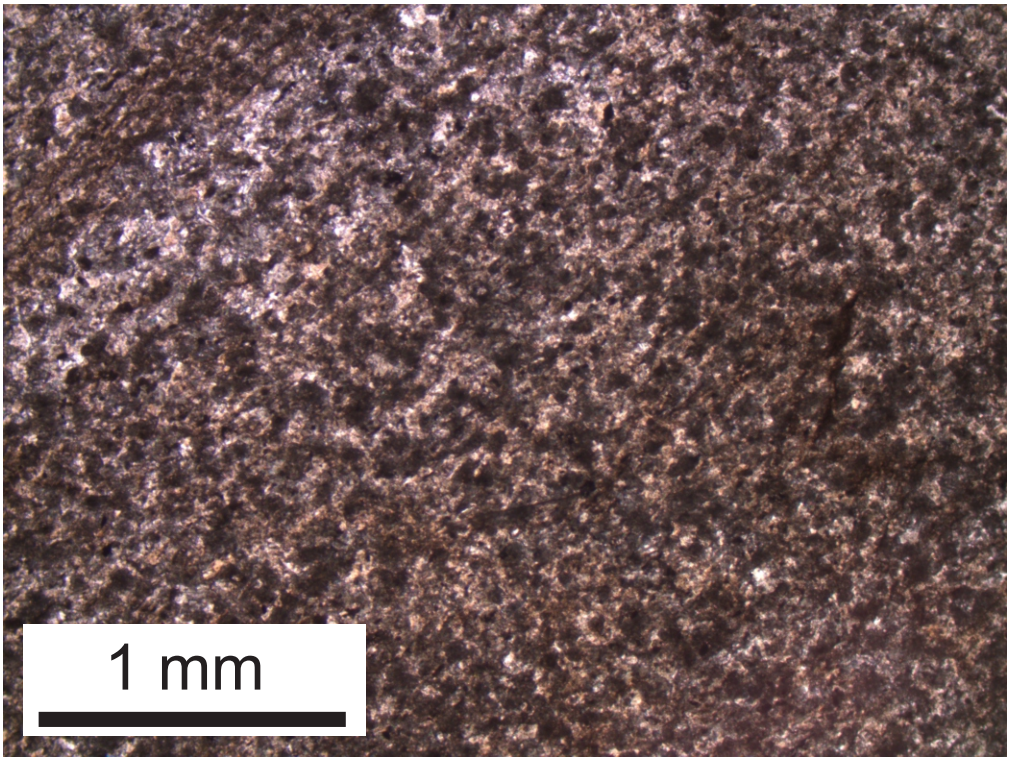
195.3M 4x magnification grain 14



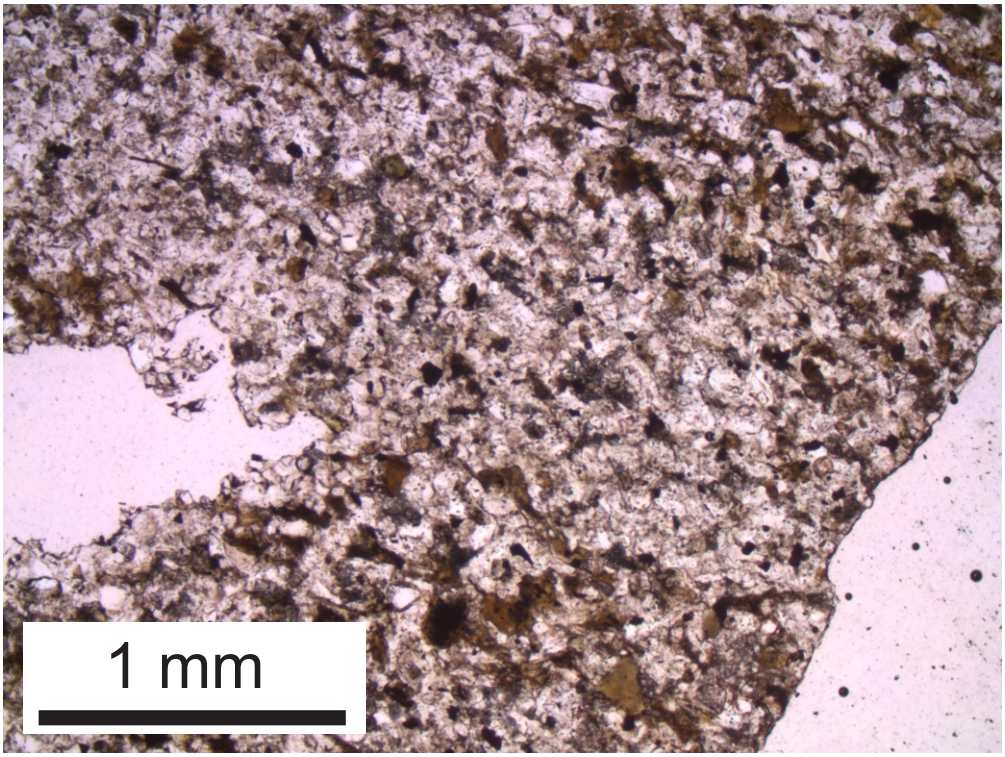
195.3M 4x magnification grain 15



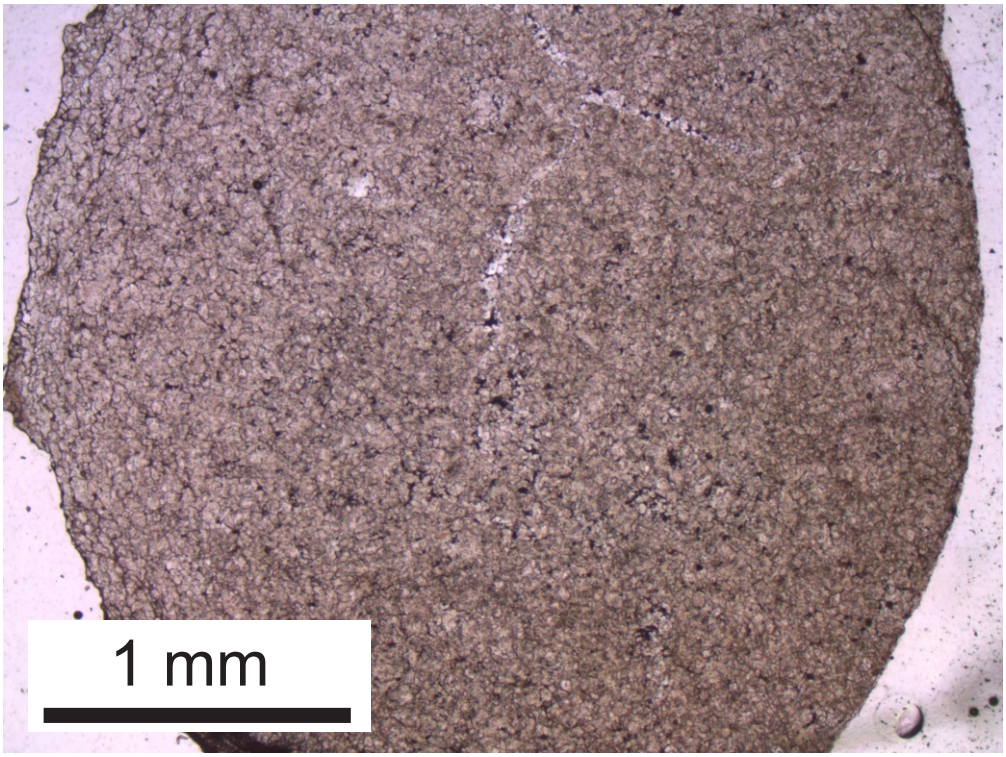
229.1L 4x magnification grain 1



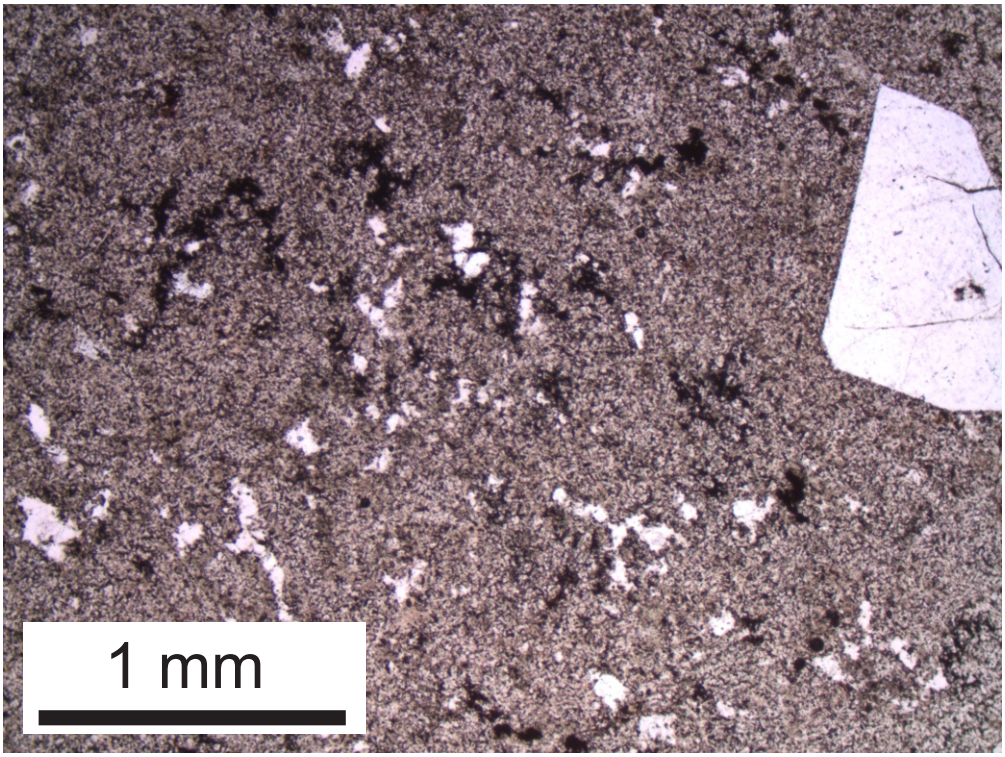
229.1L 4x magnification grain 2



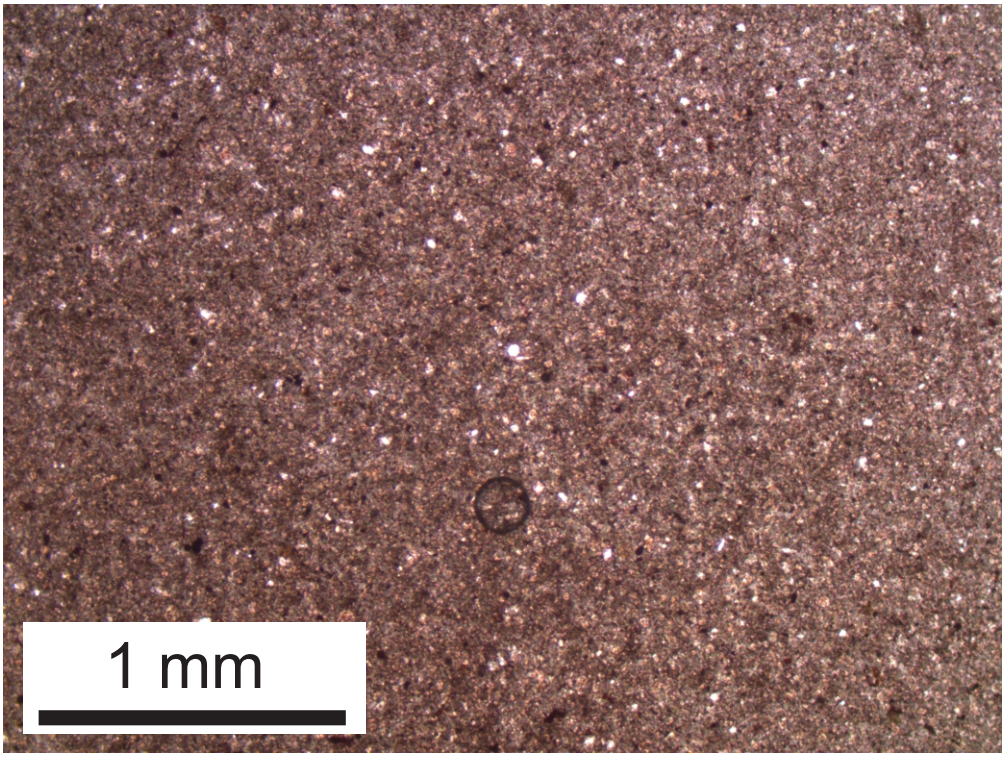
229.1L 4x magnification grain 3



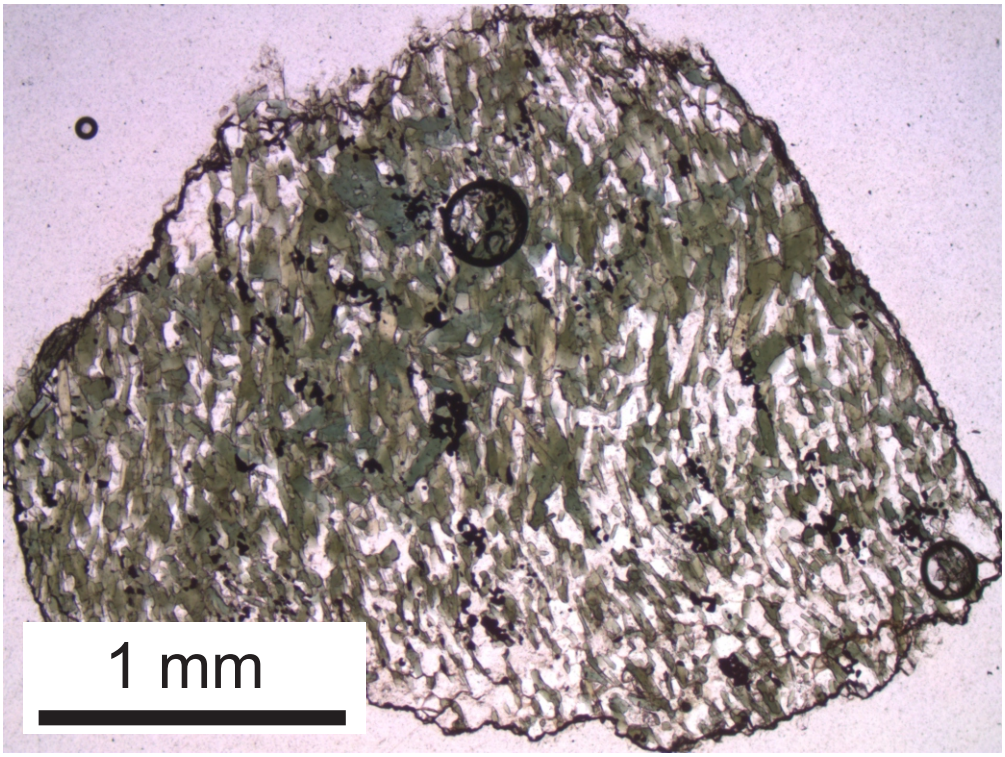
229.1L 4x magnification grain 4



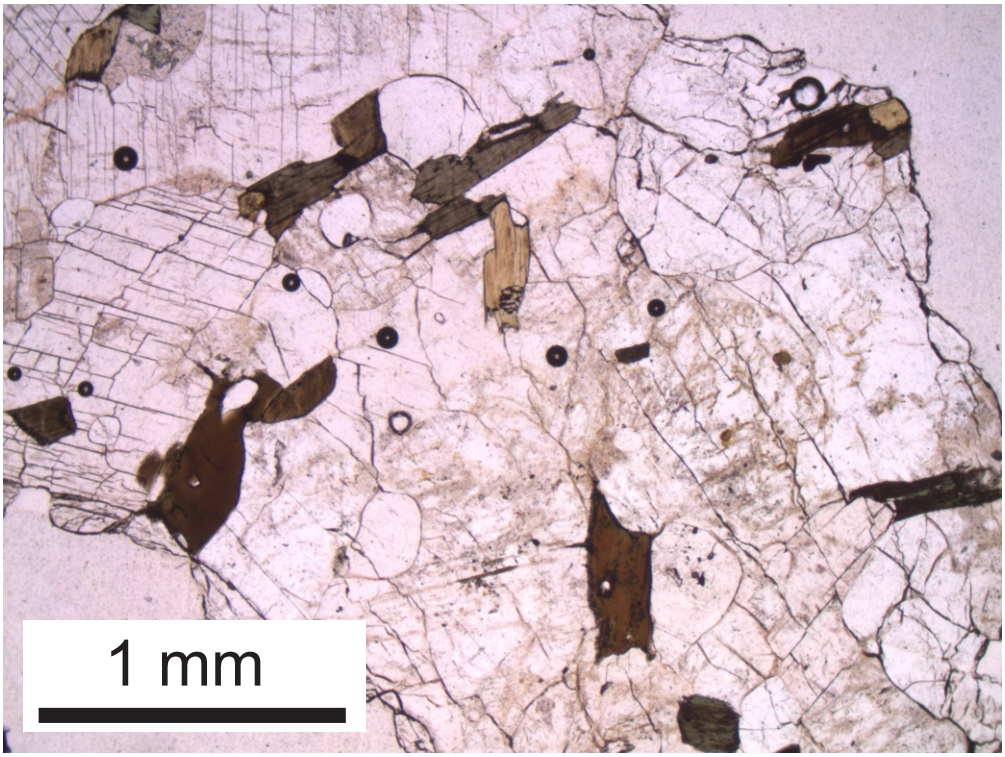
229.1L 4x magnification grain 5



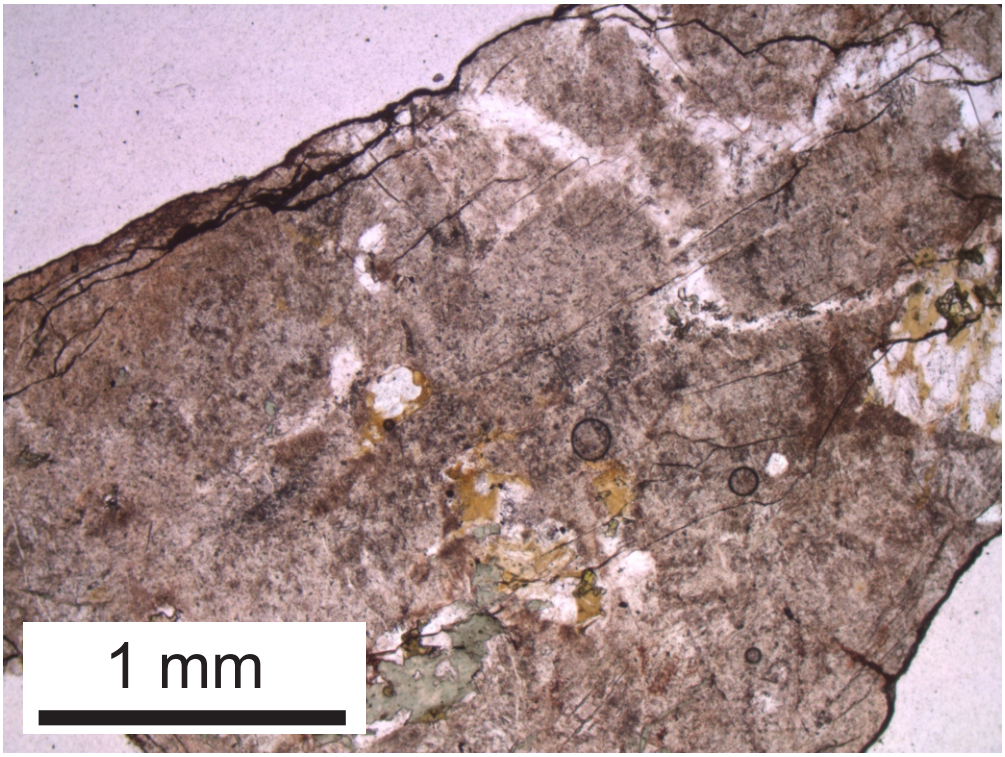
229.4L 4x magnification grain 4



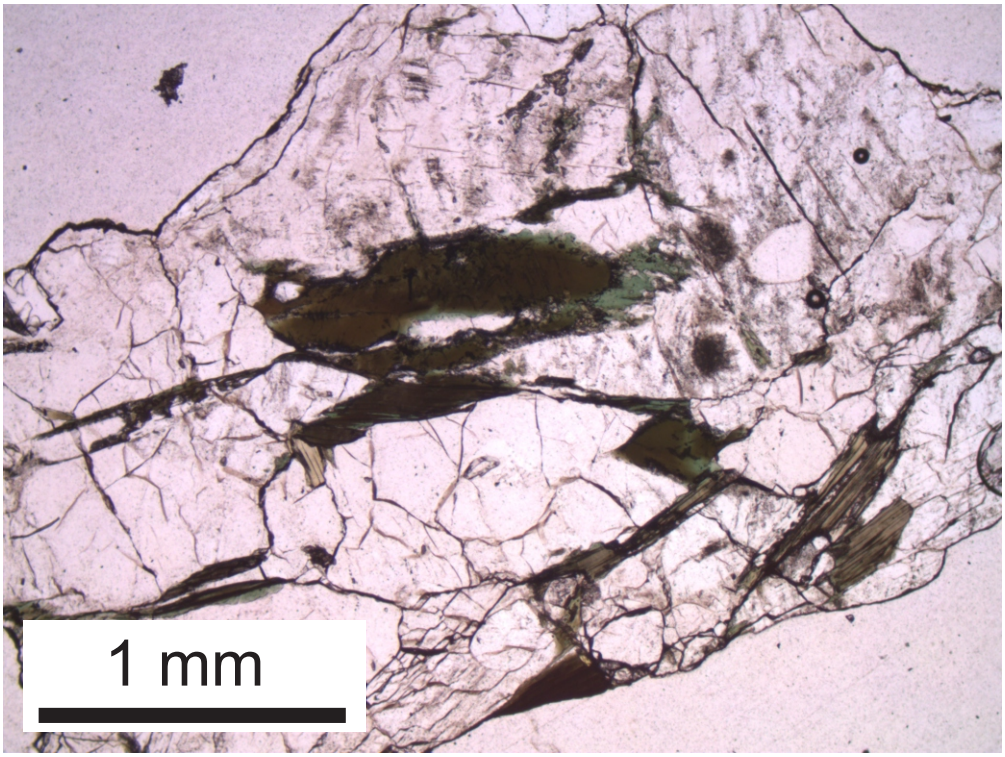
229.5M 4x magnification grain 1



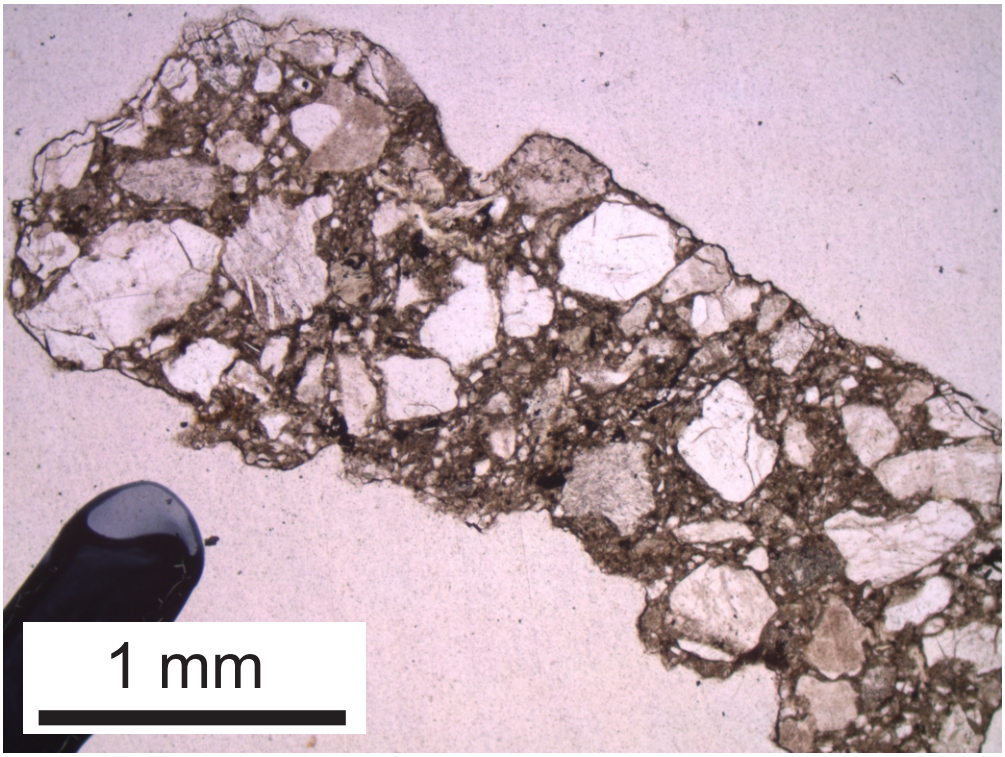
229.5M 4x magnification grain 2



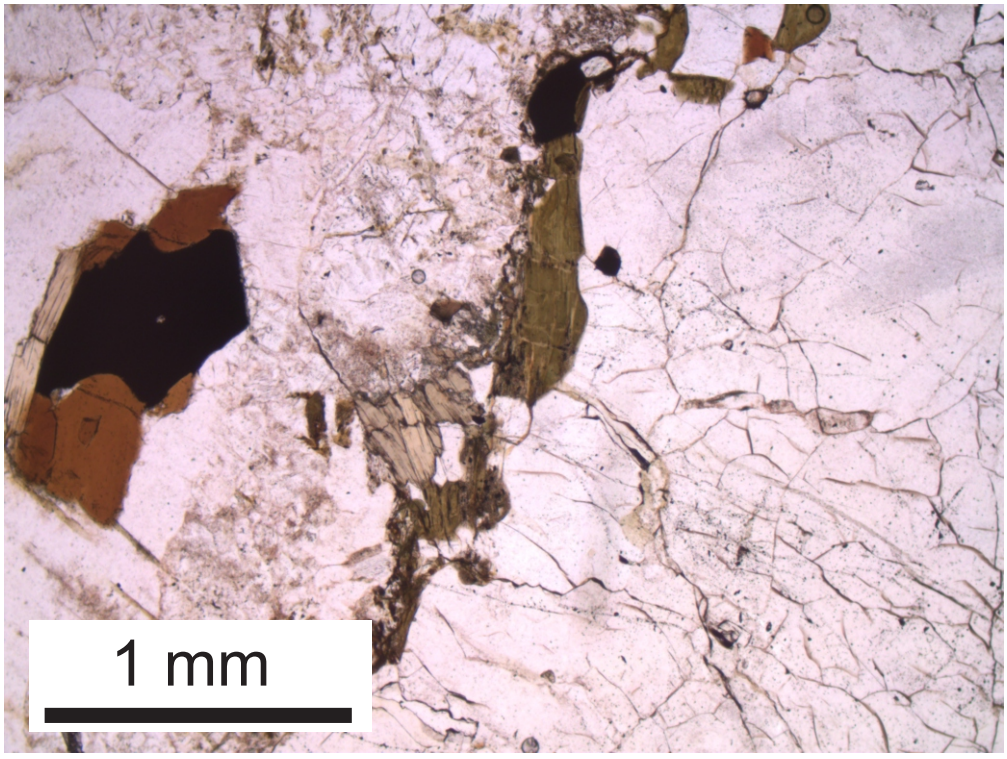
229.5M 4x magnification grain 3



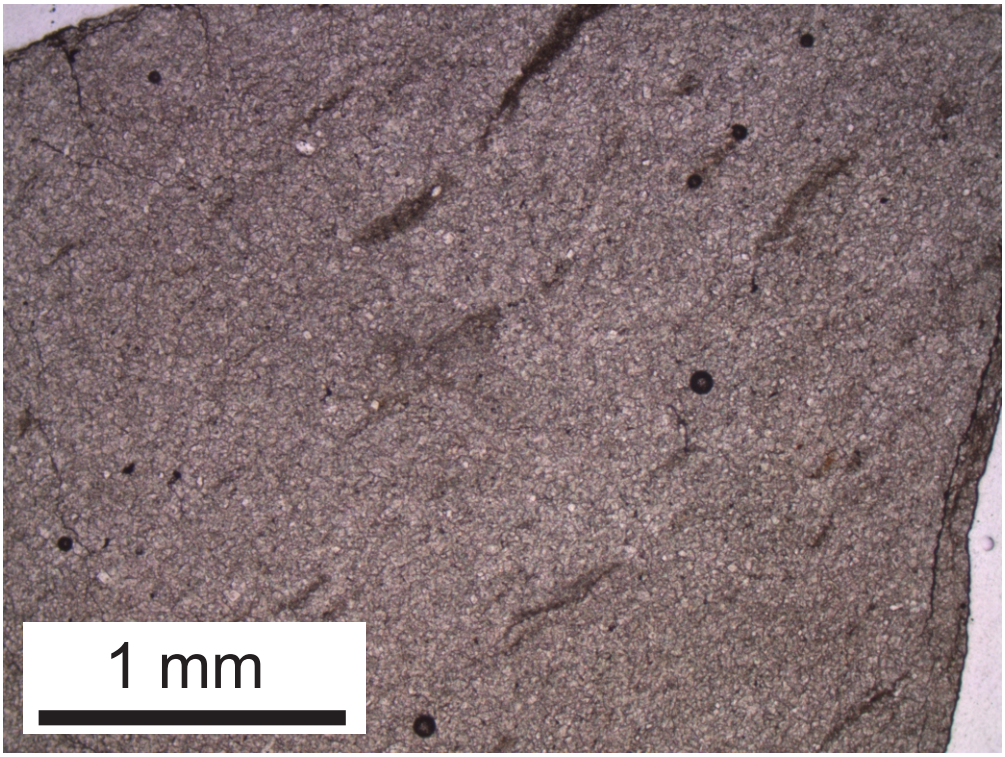
229.5M 4x magnification grain 4



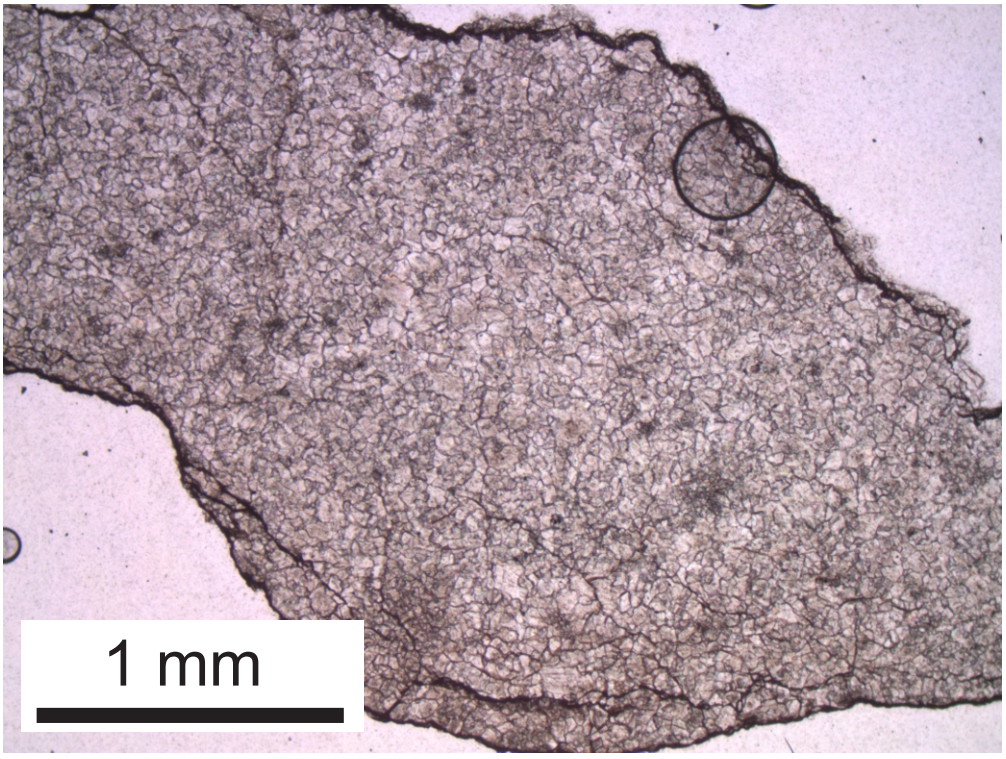
229.5M 4x magnification grain 5



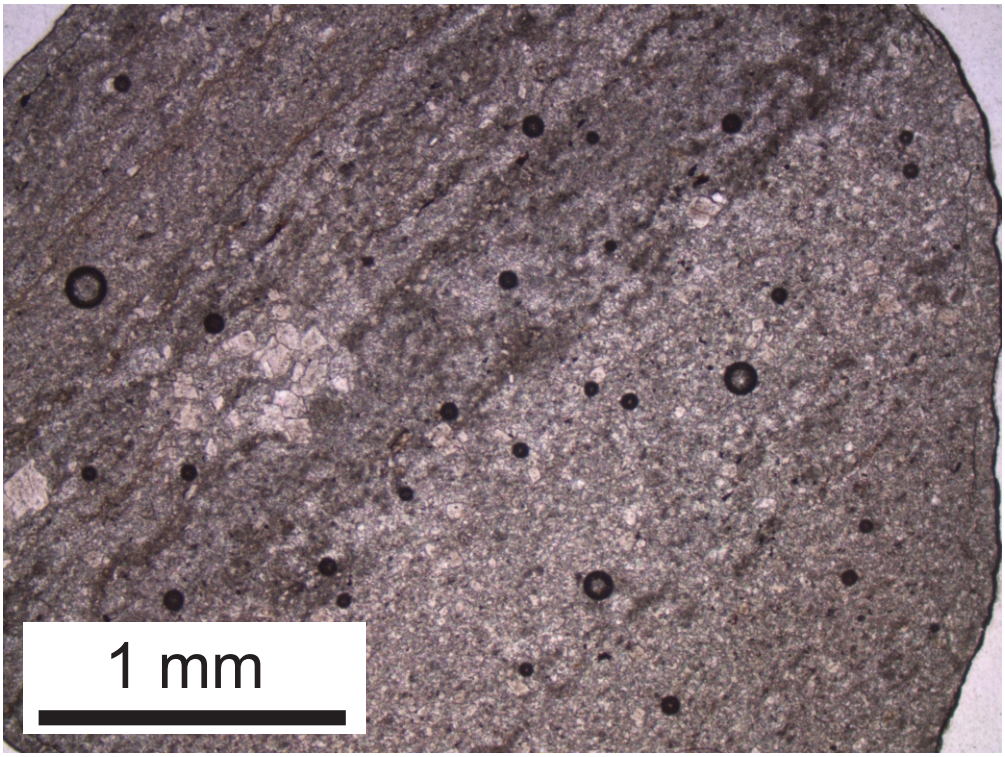
229.5M 4x magnification grain 6



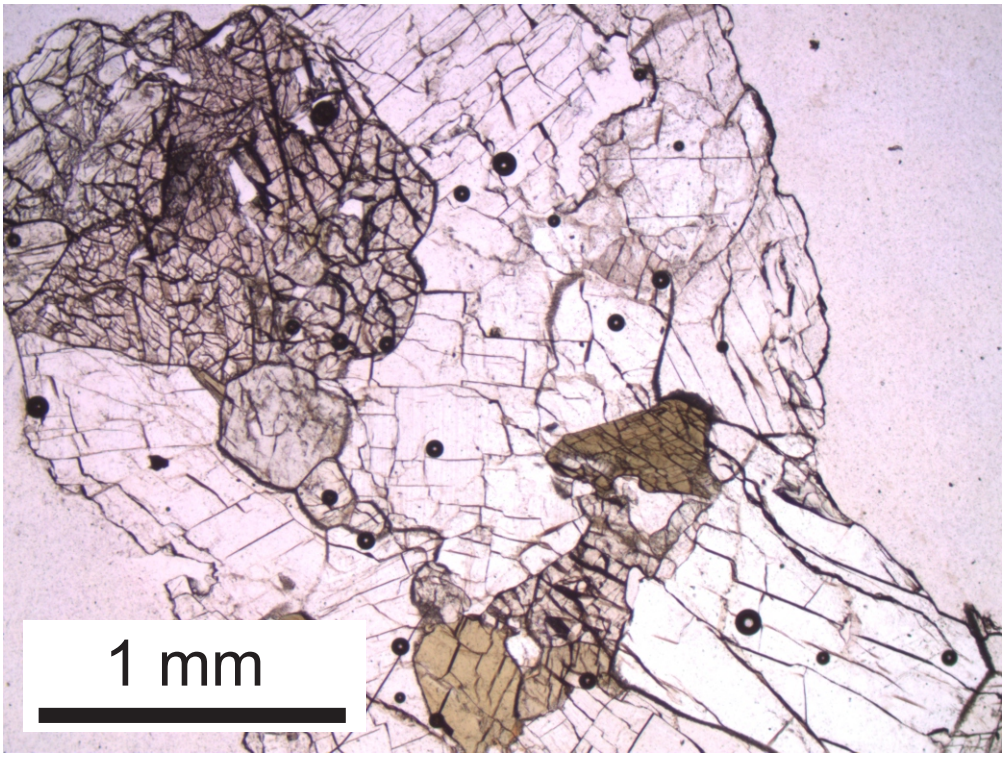
229.5M 4x magnification grain 7



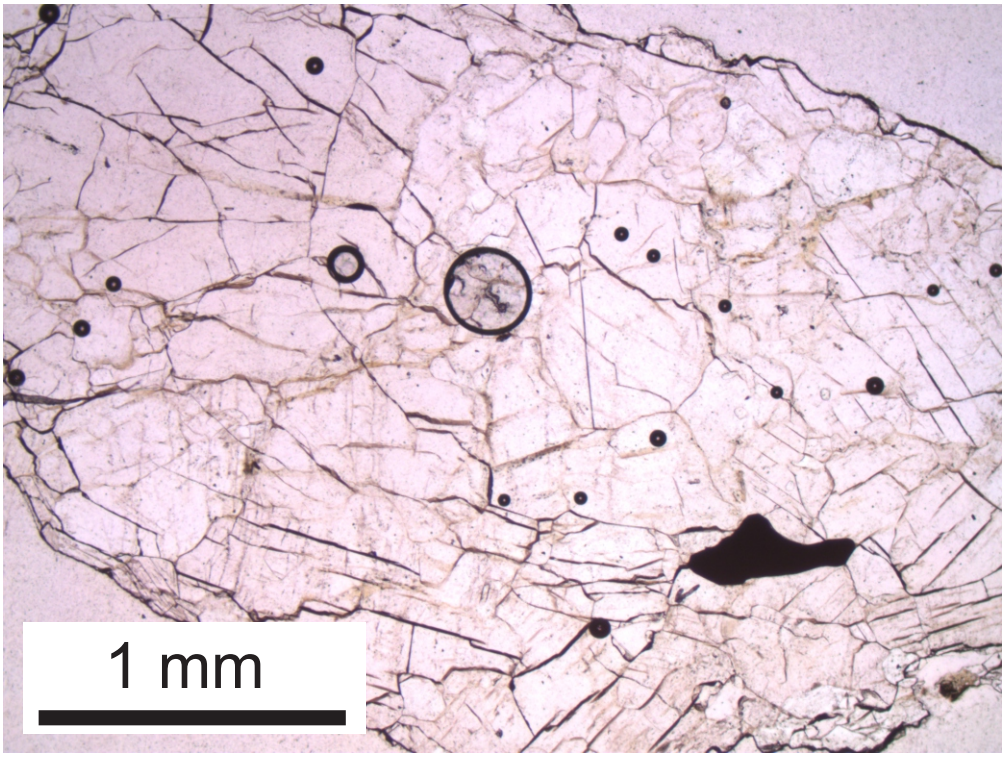
229.5M 4x magnification grain 8



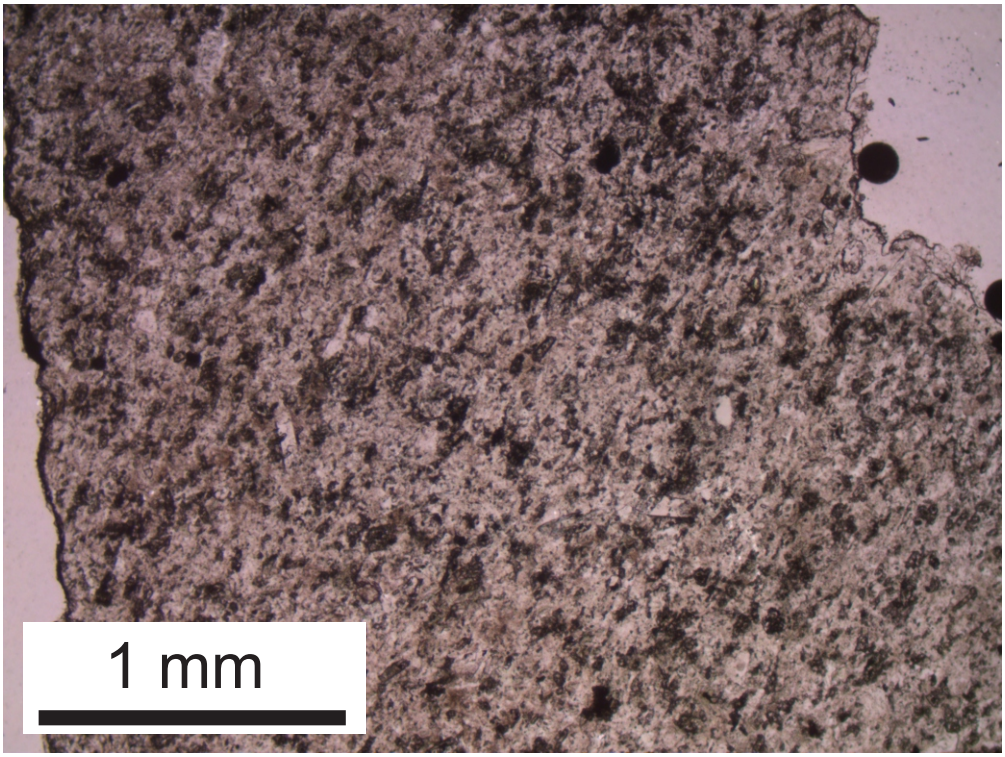
229.5M 4x magnification grain 9



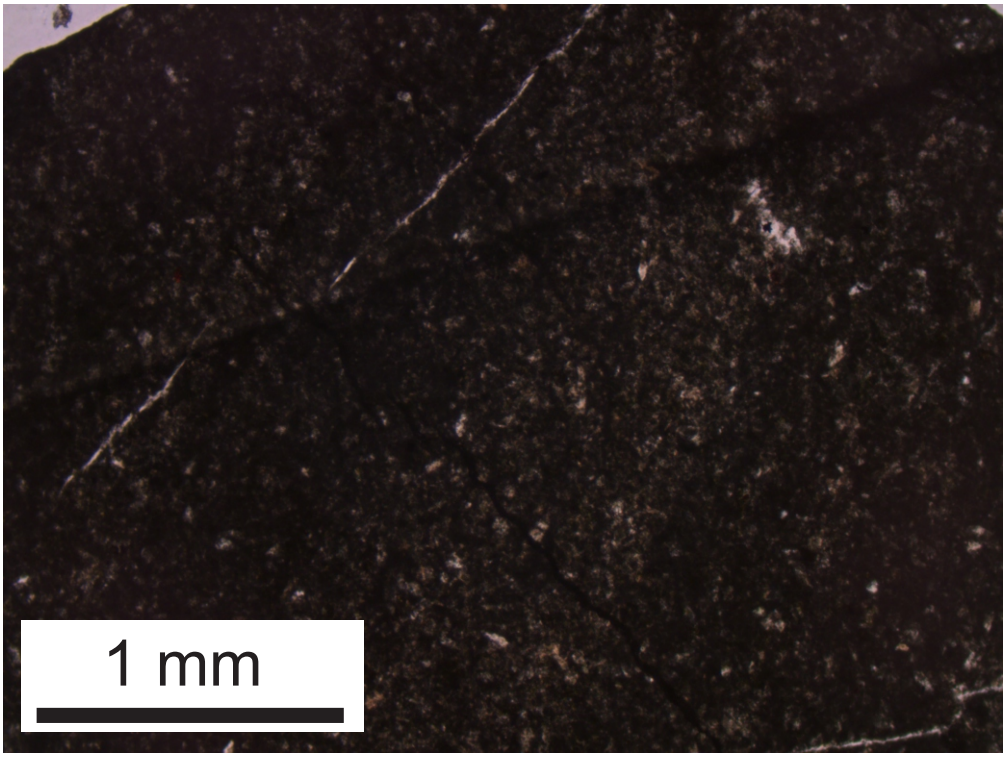
229.5M 4x magnification grain 10



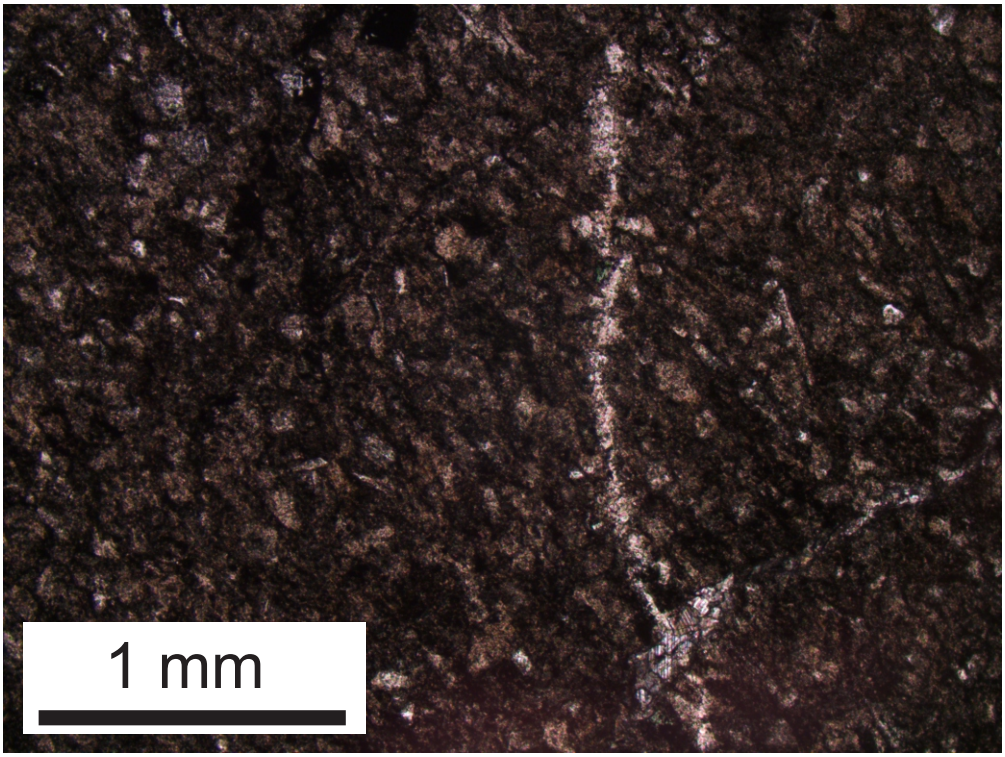
229.5M 4x magnification grain 11



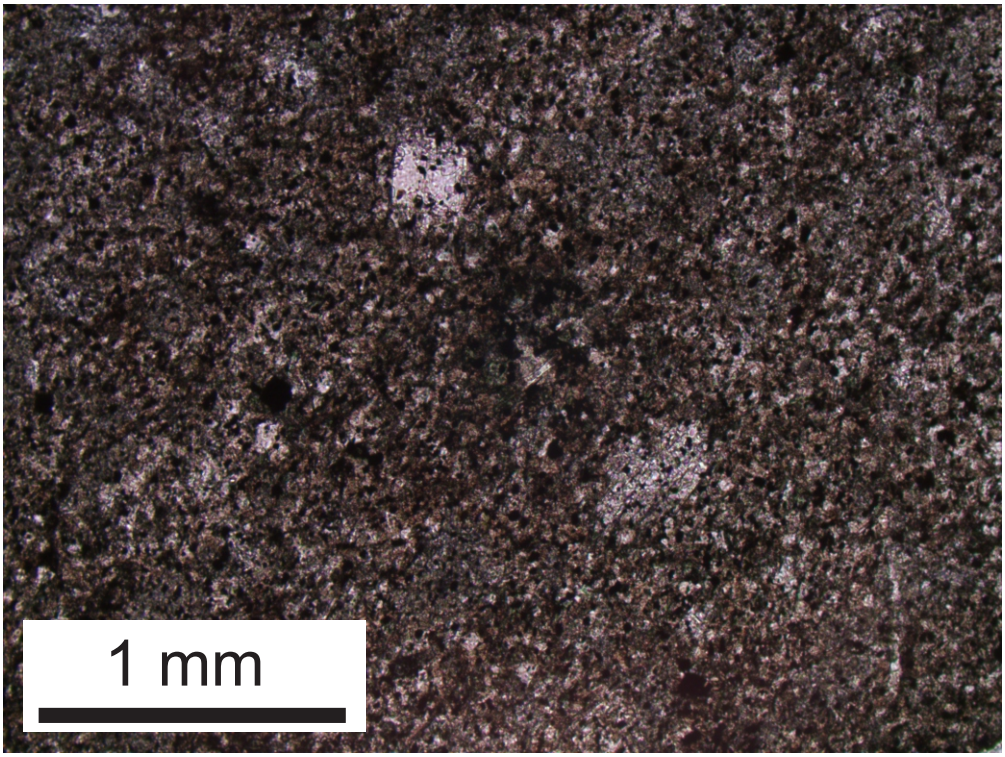
216.2L 4x magnification grain 1



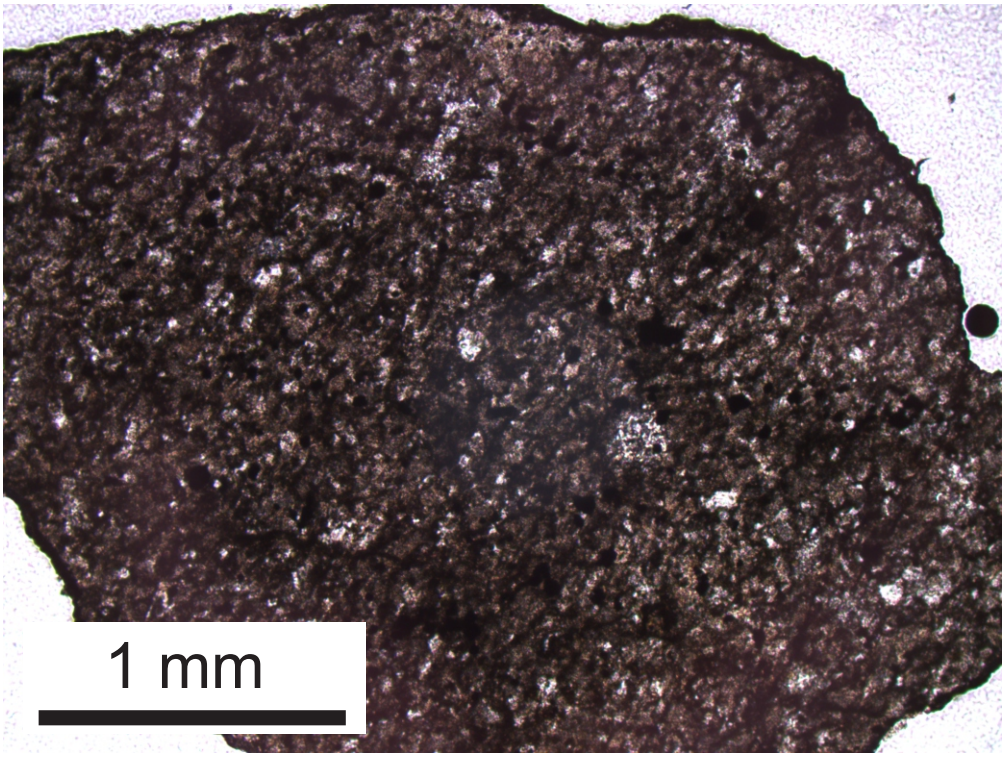
216.2L 4x magnification grain 2



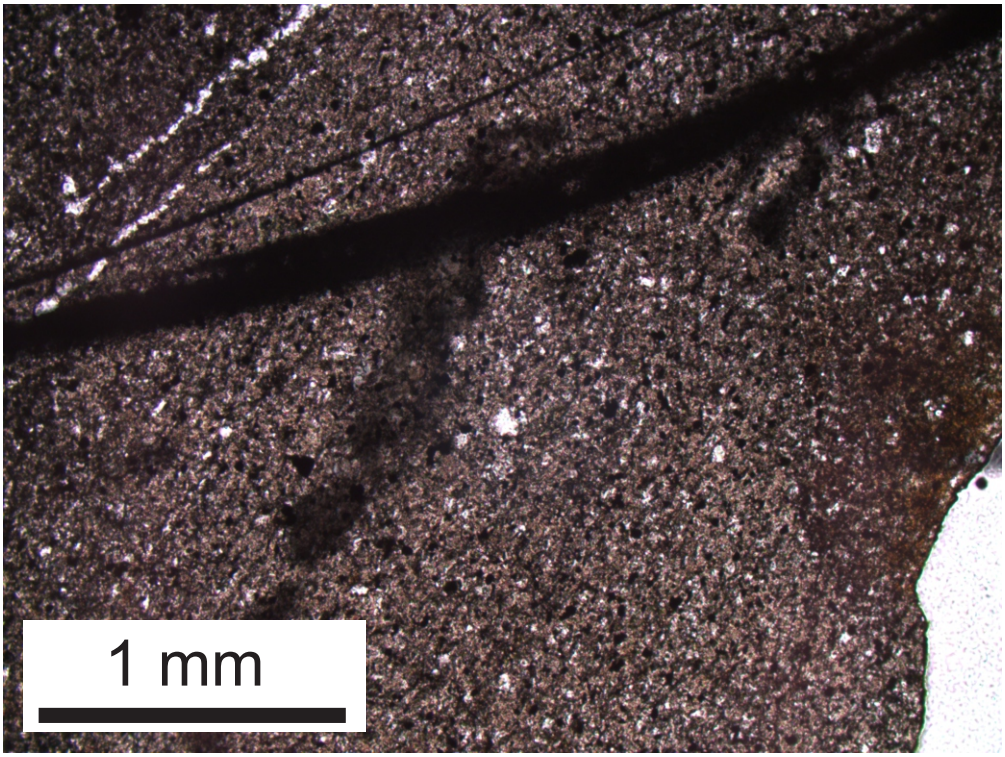
216.2L 4x magnification grain 3



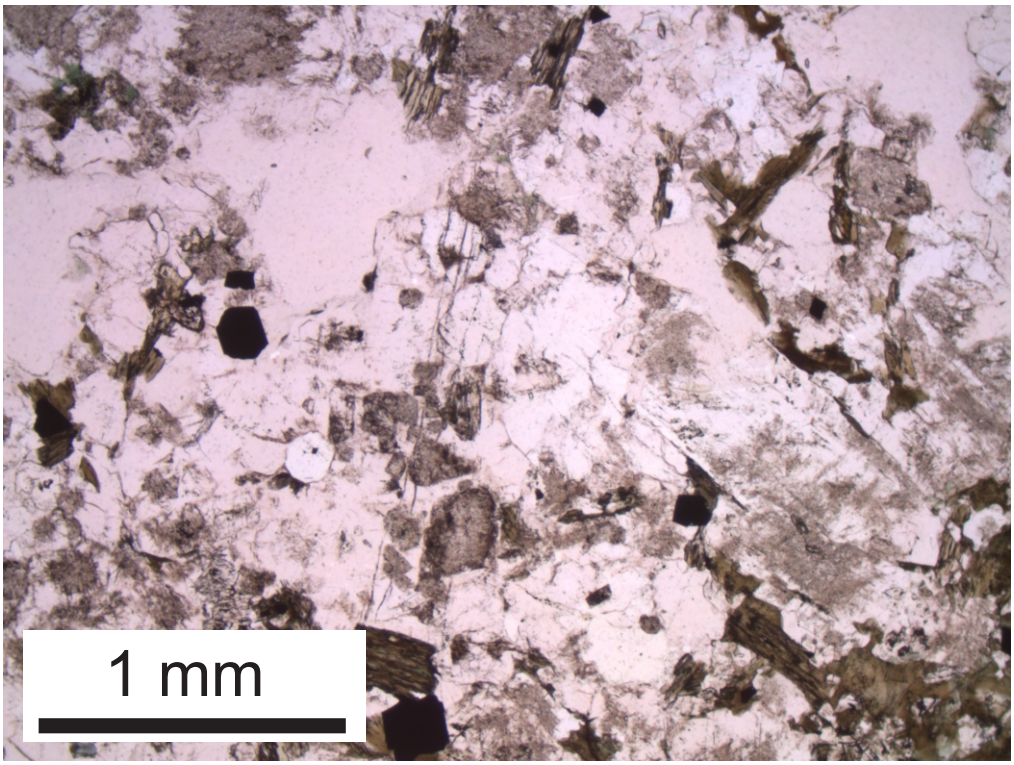
216.2L 4x magnification grain 4



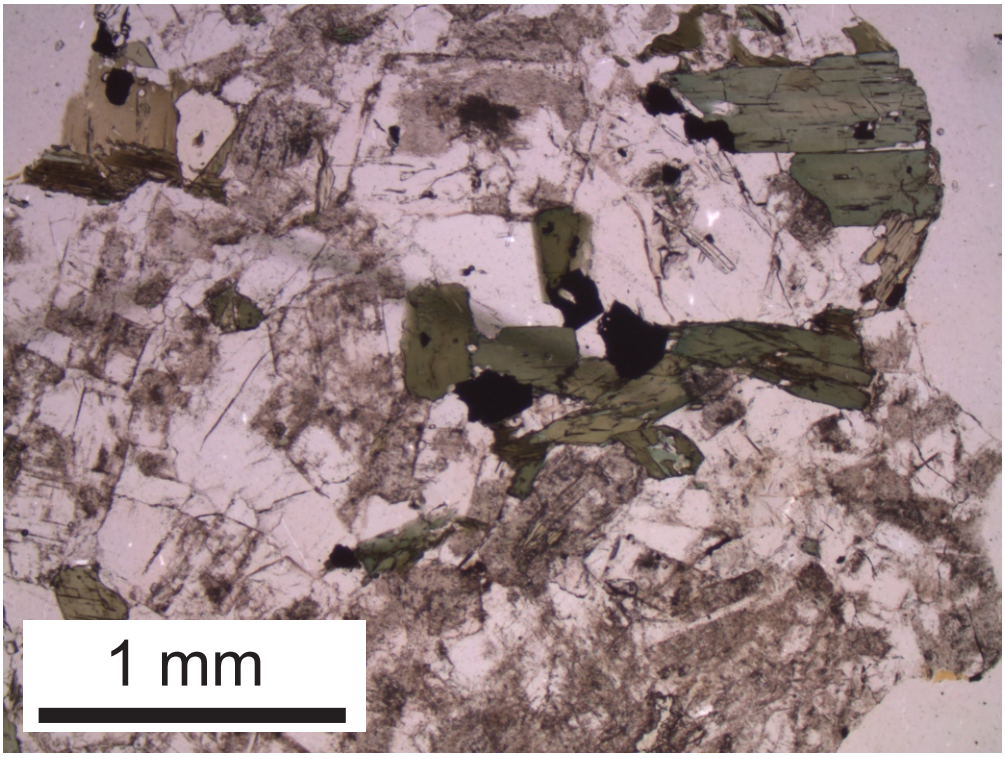
216.2L 4x magnification grain 5



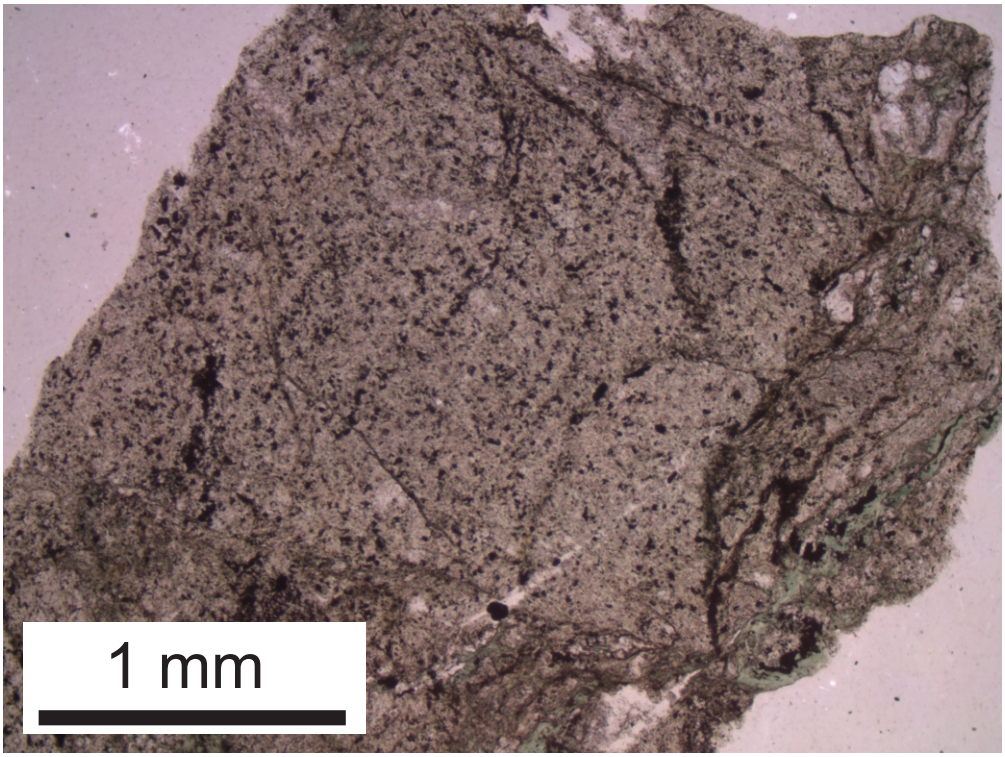
216.2L 4x magnification grain 6



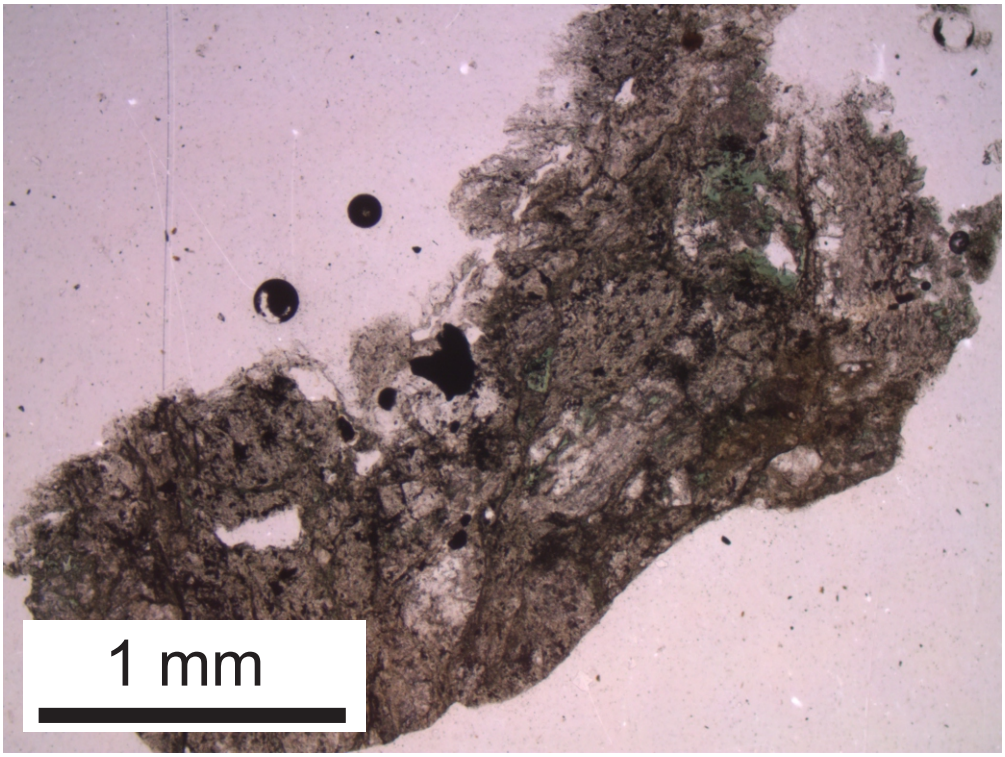
216.3L 4x magnification grain 1



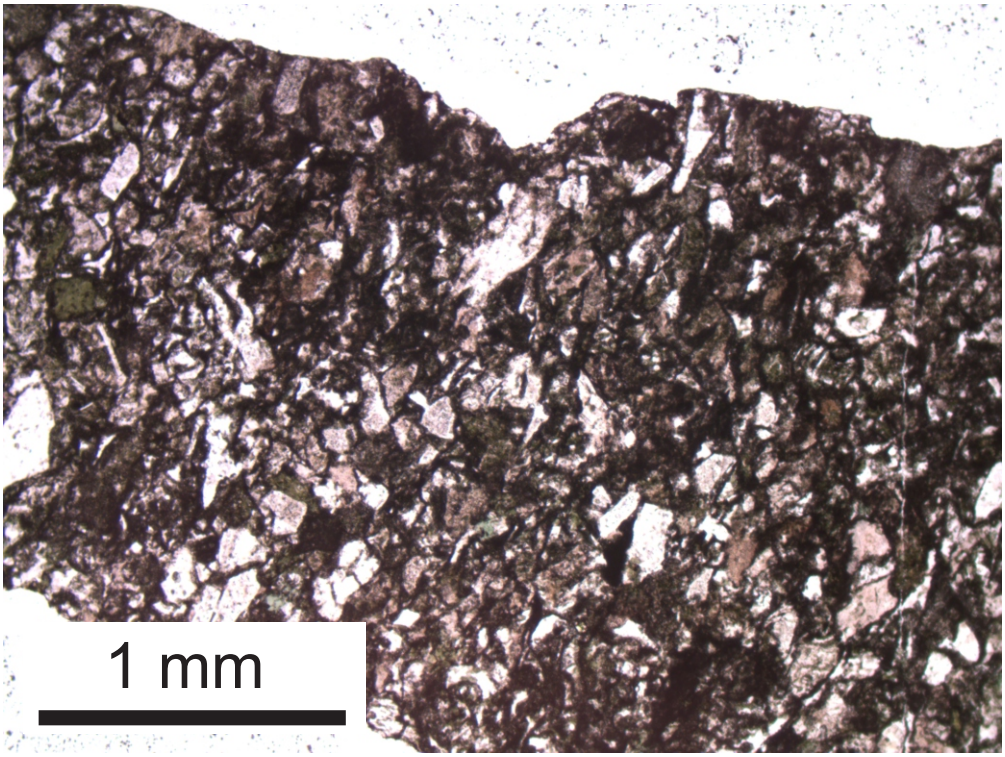
216.3L 4x magnification grain 2



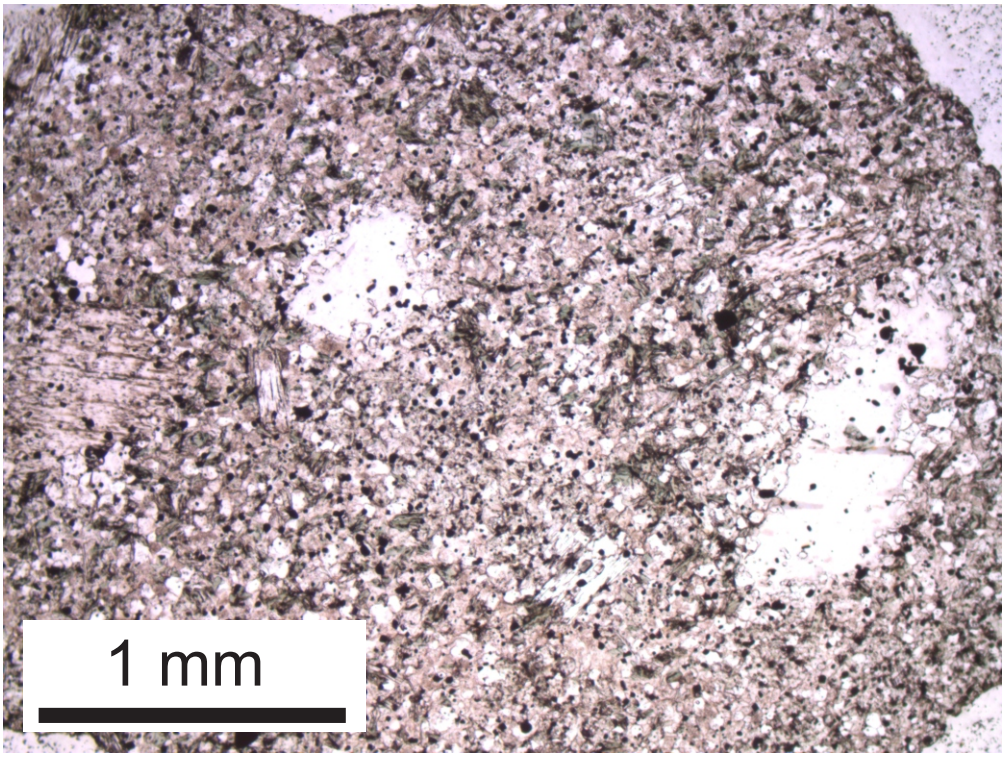
216.3L 4x magnification grain 3



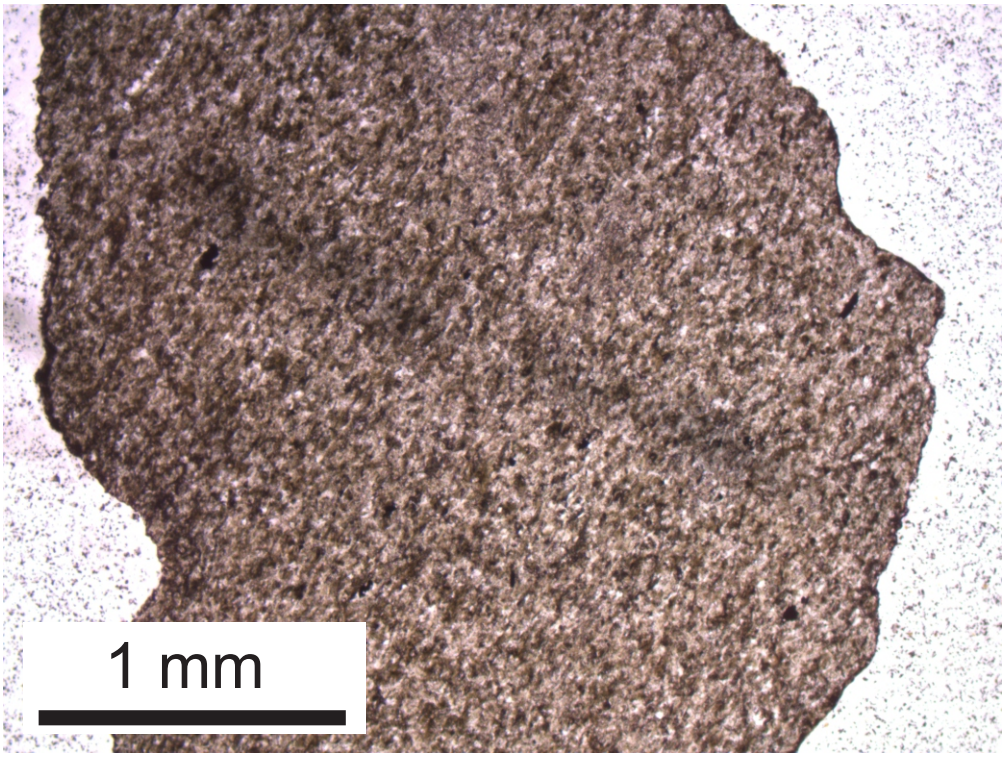
216.3L 4x magnification grain 4



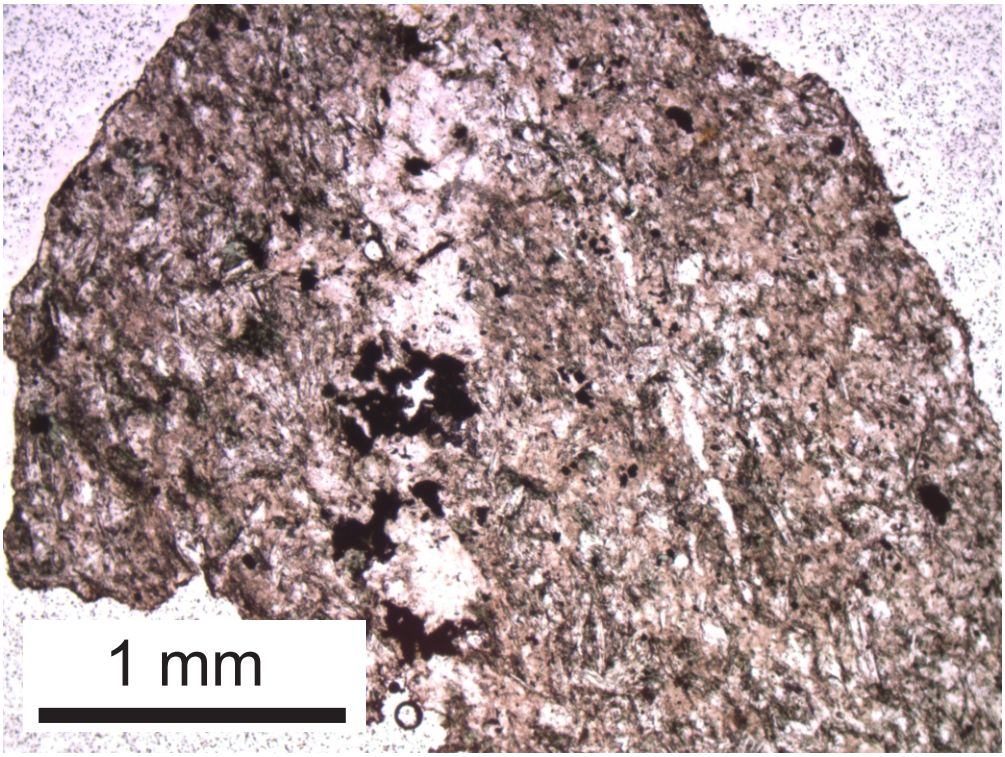
216.5M 4x magnification grain 1



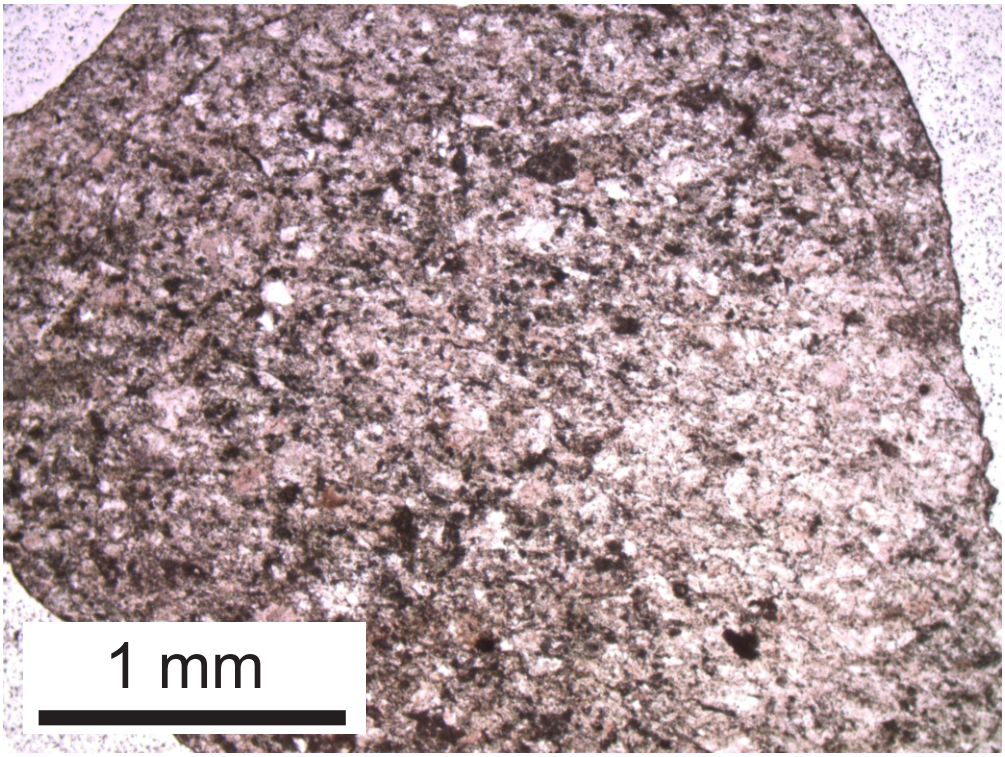
216.5M 4x magnification grain 2



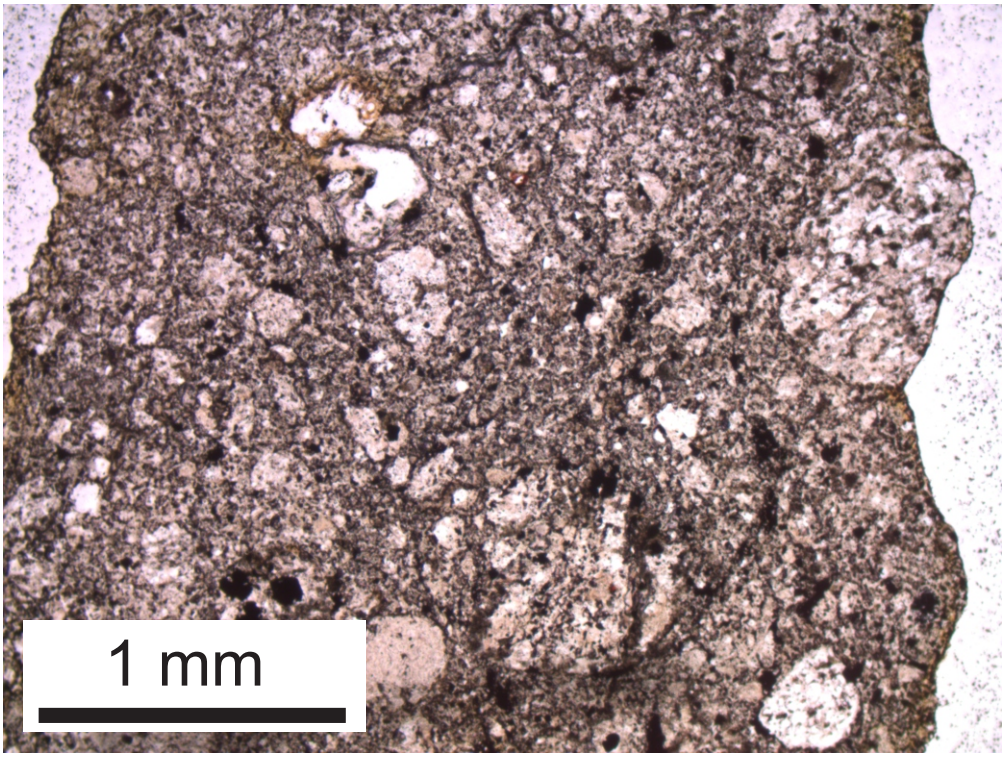
216.5M 4x magnification grain 3



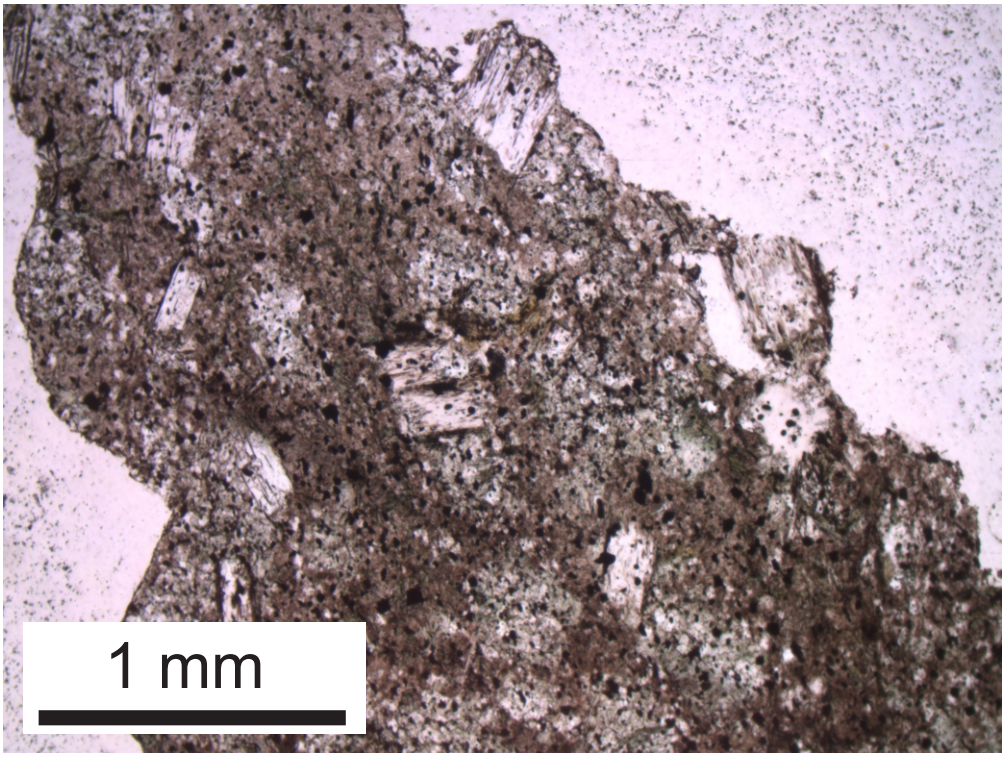
216.5M 4x magnification grain 4



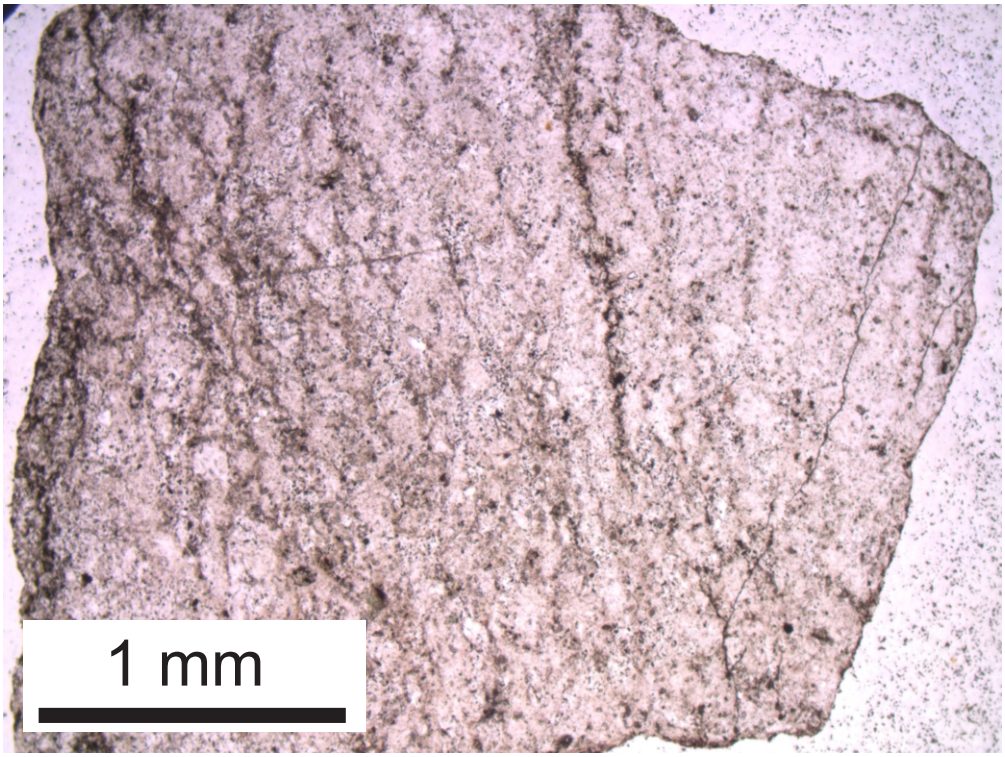
216.5M 4x magnification grain 5



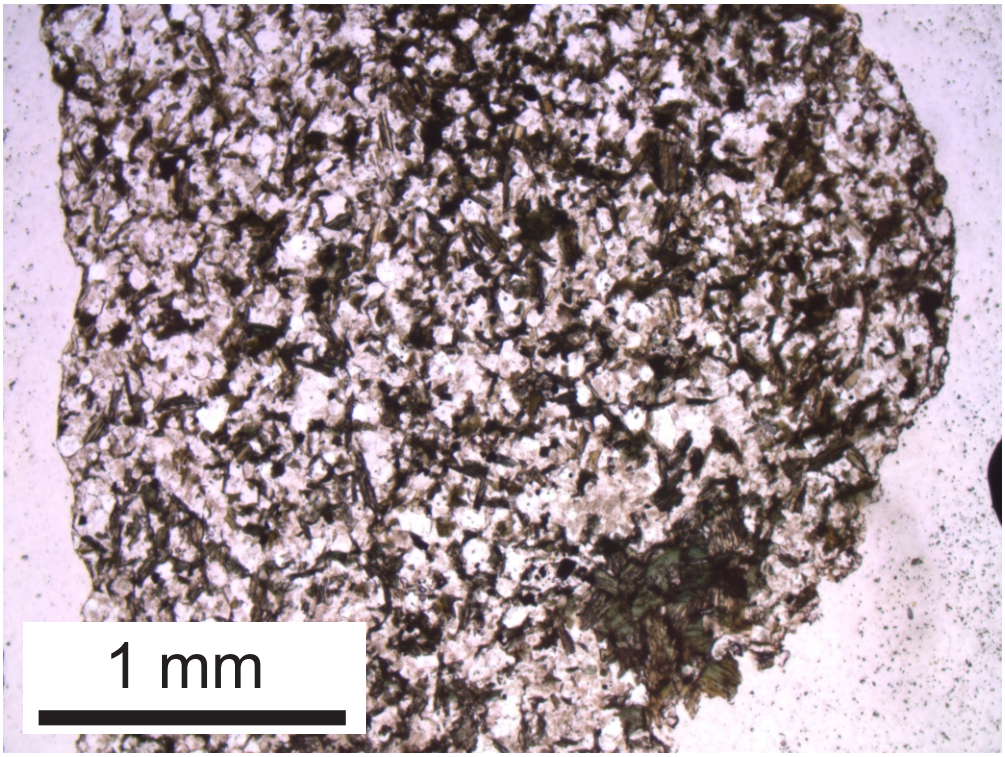
216.5M 4x magnification grain 6



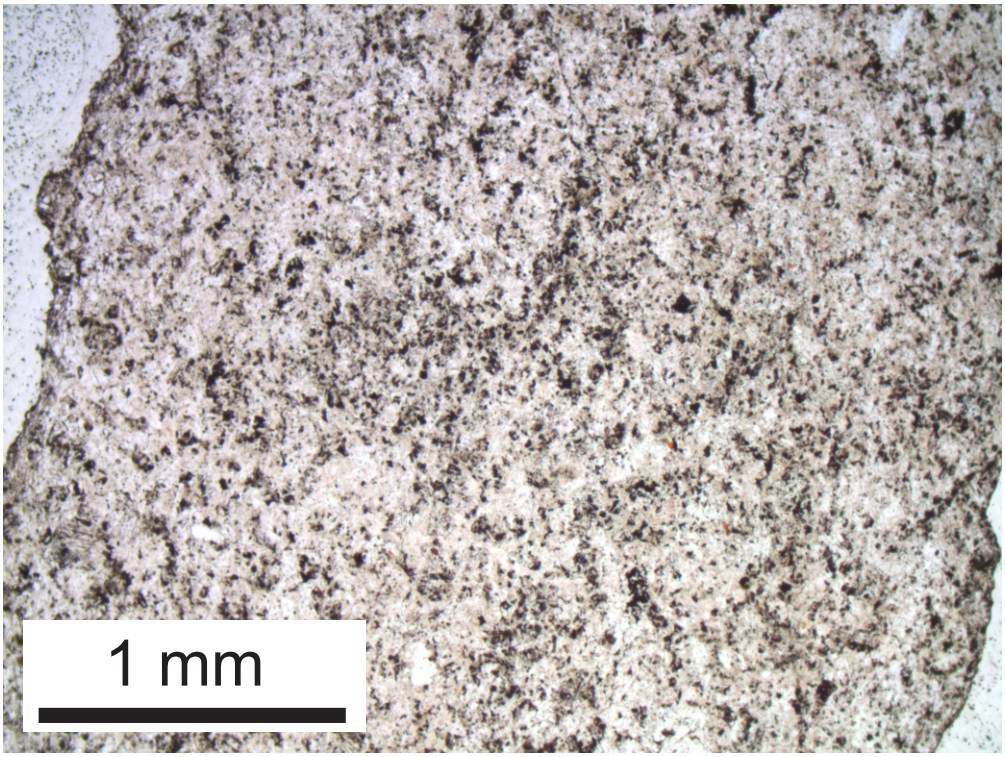
216.5M 4x magnification grain 7



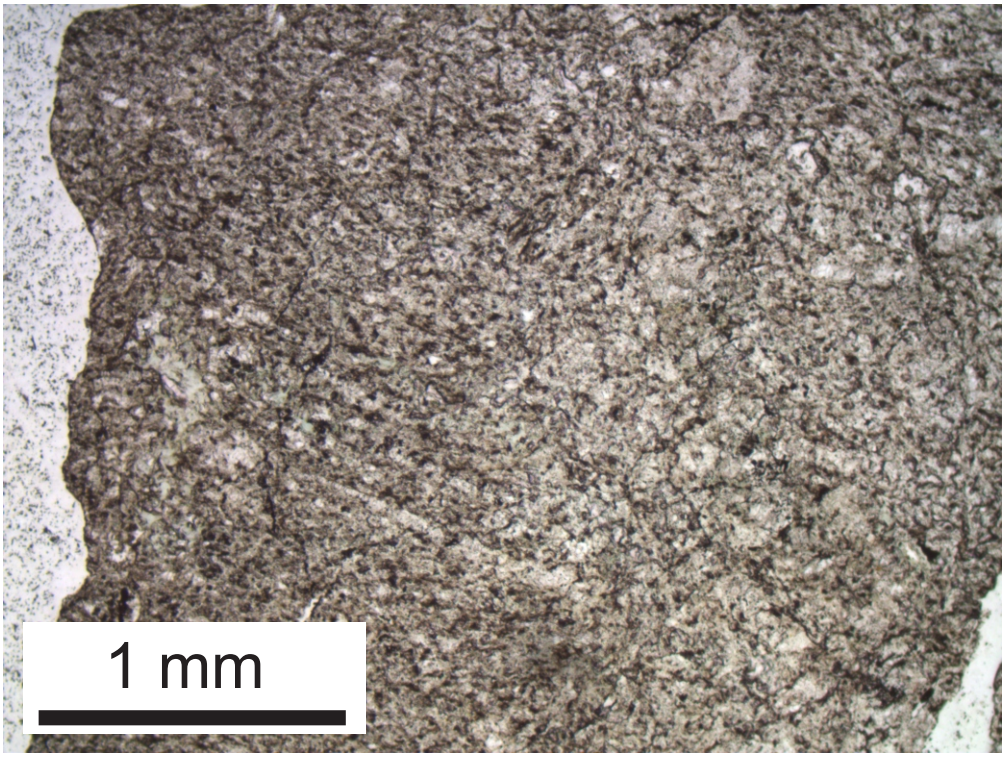
216.5M 4x magnification grain 8



216.5M 4x magnification grain 9



216.5M 4x magnification grain 10



216.5M 4x magnification grain 11