

Supplementary Material S1: SEM-BSE images and Electron Dispersive Spectroscopy (EDS) mineral analyses for sample AX1B.



Figure S1.1: AX1B thin section showing respective sites taken for mineral chemical analyses (EDS) via Scanning Electron Microscope (SEM).

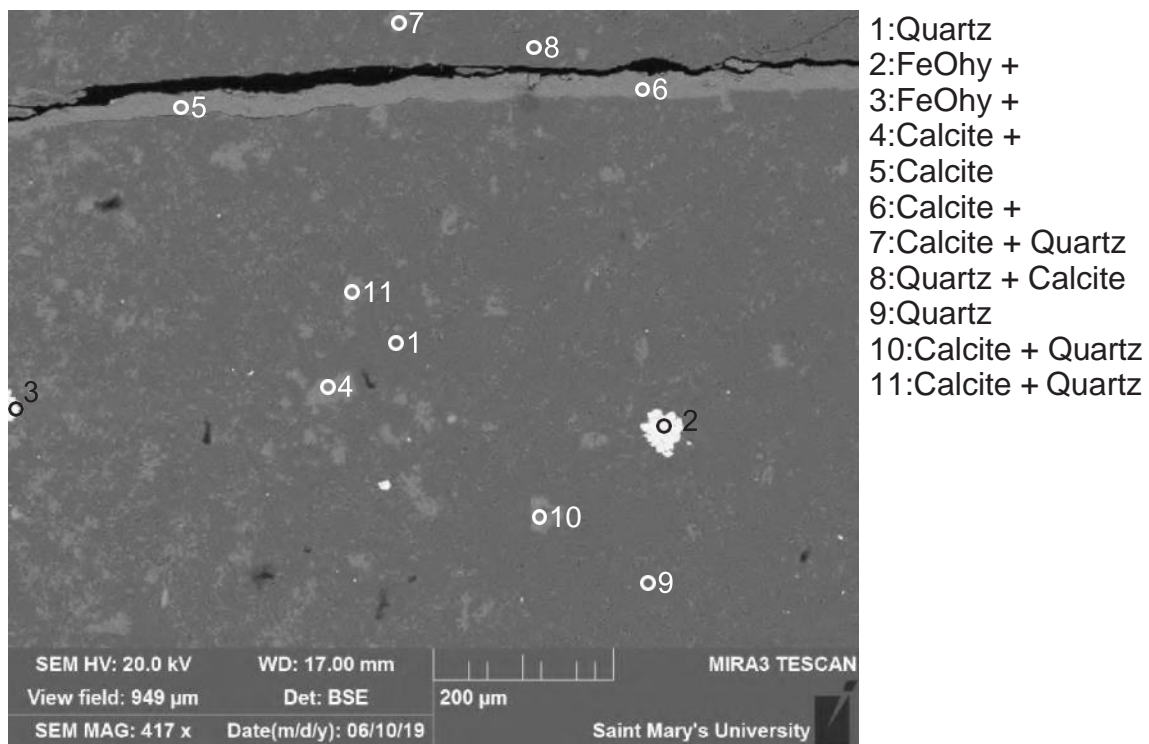


Figure S1.2: AX1B (SEM) Site 1 (Table S1.1). Blebs of goethite (2,3) in a mixture of quartz and calcite (1,4,7-11). Calcite vein (5,6) cutting the quartz.

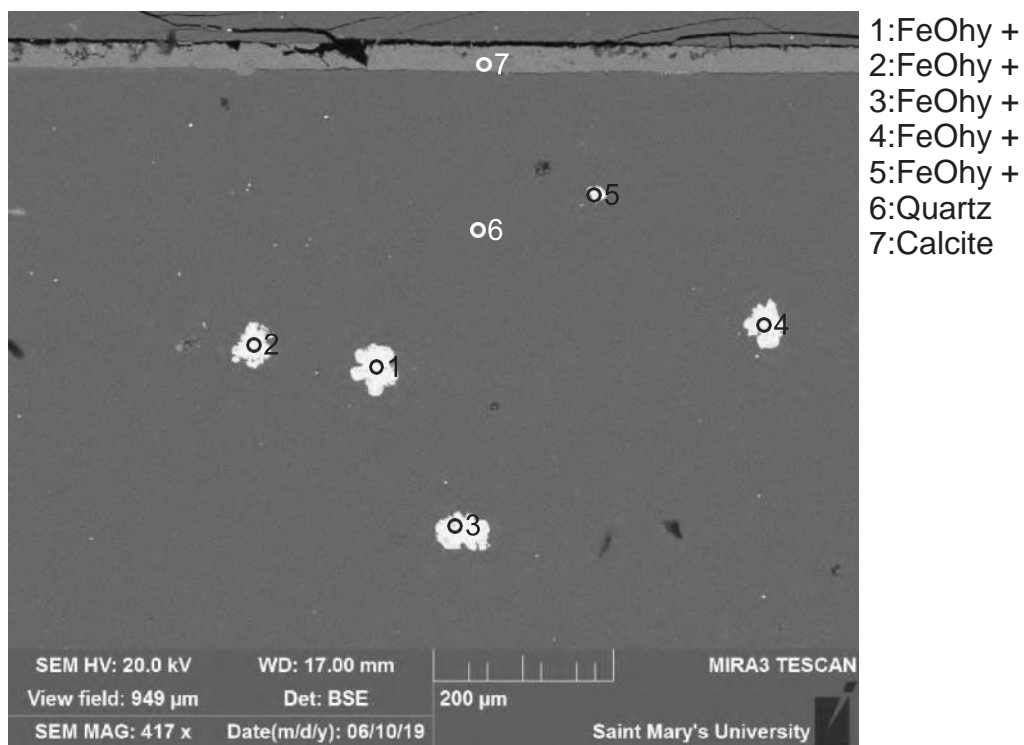


Figure S1.3: AX1B (SEM) Site 2 (Table S1.1). Blebs of goethite (1-5) scattered across the quartz (6). A calcite vein (7) cuts across the quartz.

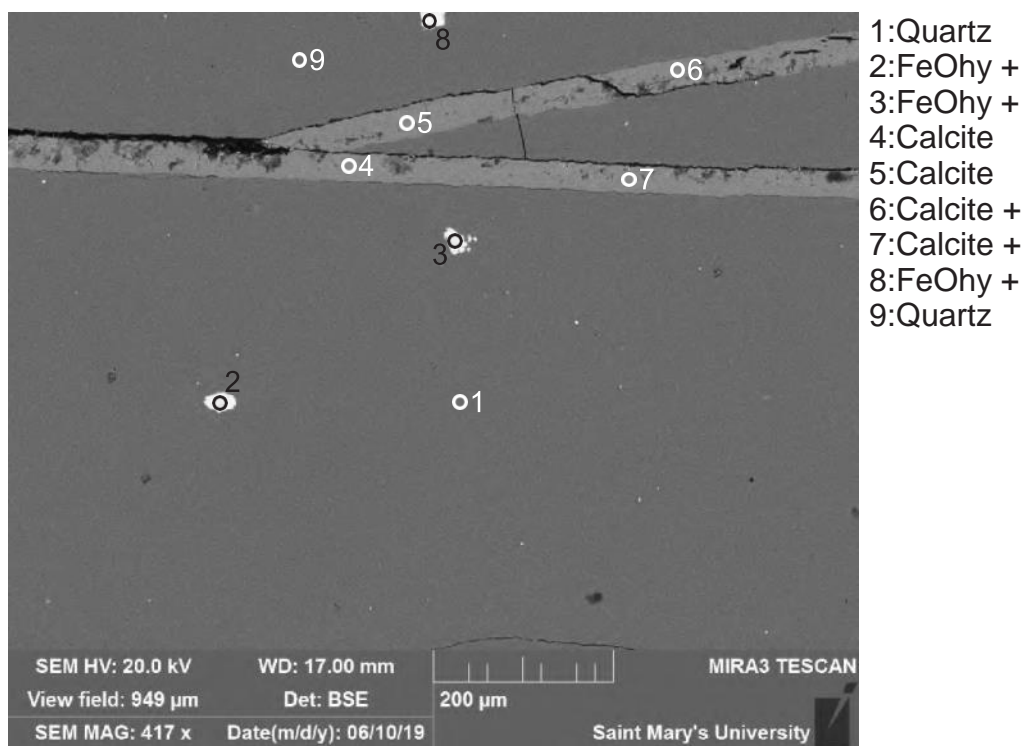


Figure S1.4: AX1B (SEM) Site 3 (Table S1.1). Two calcite veins (4-7) cutting quartz. Scattered goethite blebs (2,3,8).

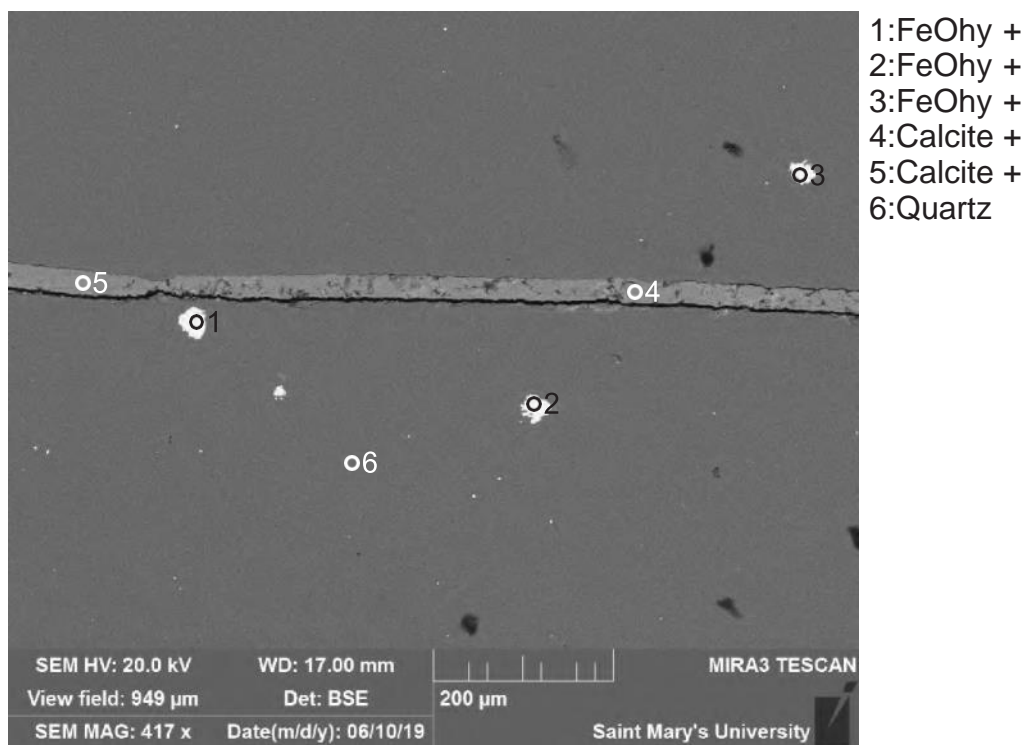


Figure S1.5: AX1B (SEM) Site 4 (Table S1.1). Similar to Fig.S1.3.

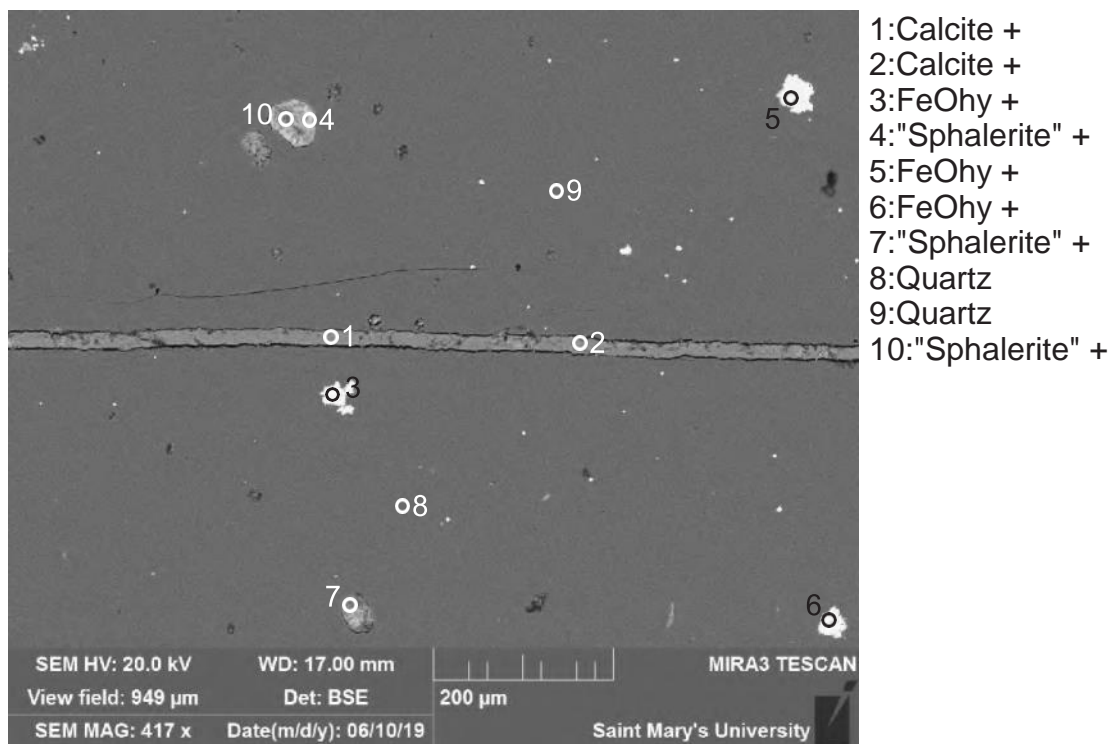


Figure S1.6: AX1B (SEM) Site 5 (Table S1.1). Scattered blebs of goethite (3,5,6) in quartz (8,9). Calcite vein cuts quartz (1,2). "Sphalerite", clay and probably calcite (4,7,10) seem to fill in voids in the quartz.

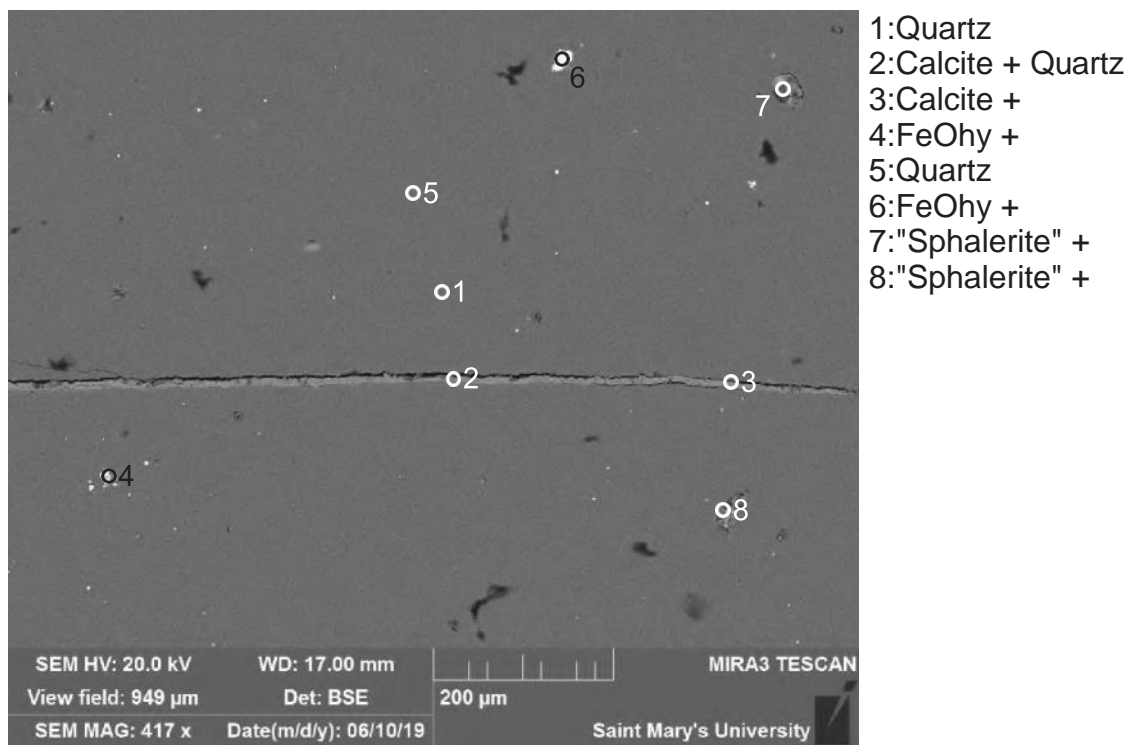


Figure S1.7: AX1B (SEM) Site 6 (Table S1.1). Similar to Fig.S1.6.

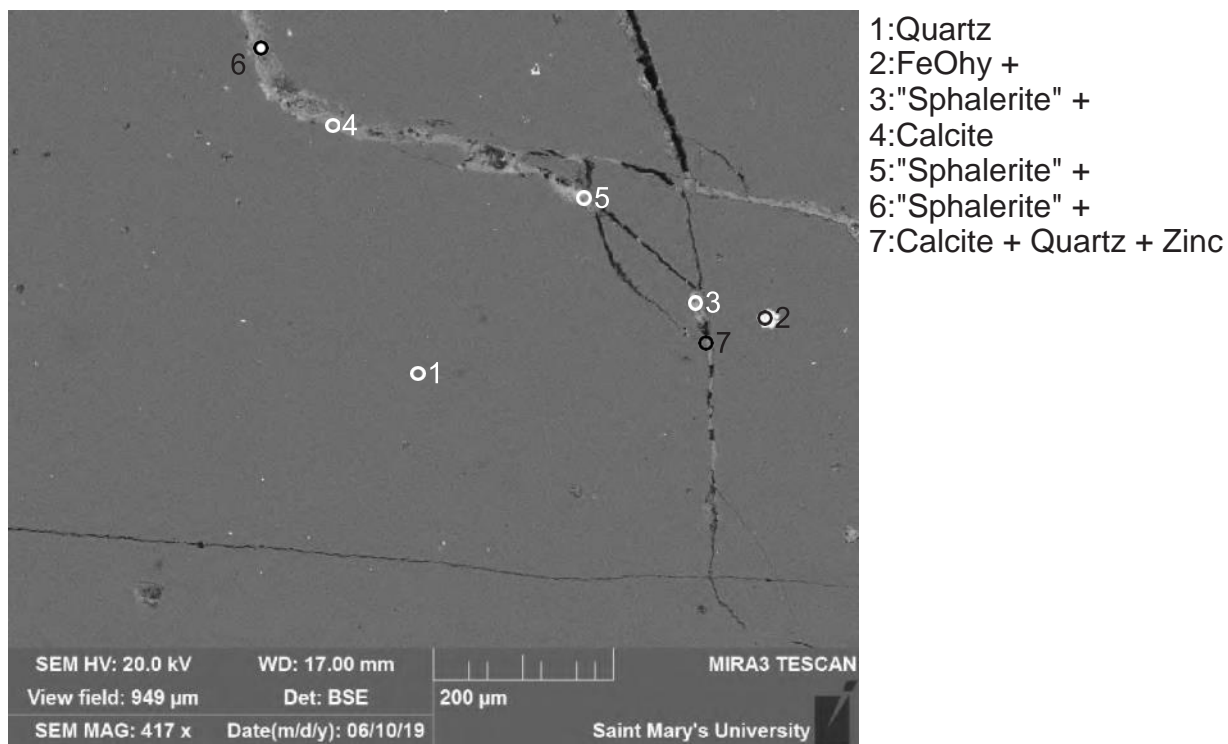


Figure S1.8: AX1B (SEM) Site 7 (Table S1.1). Fractures in quartz (1). Some fractures are filled by a mixture of "sphalerite" (3,5,6) and calcite (4,7). Position 7 shows a higher Zinc content (up to 4.11%).

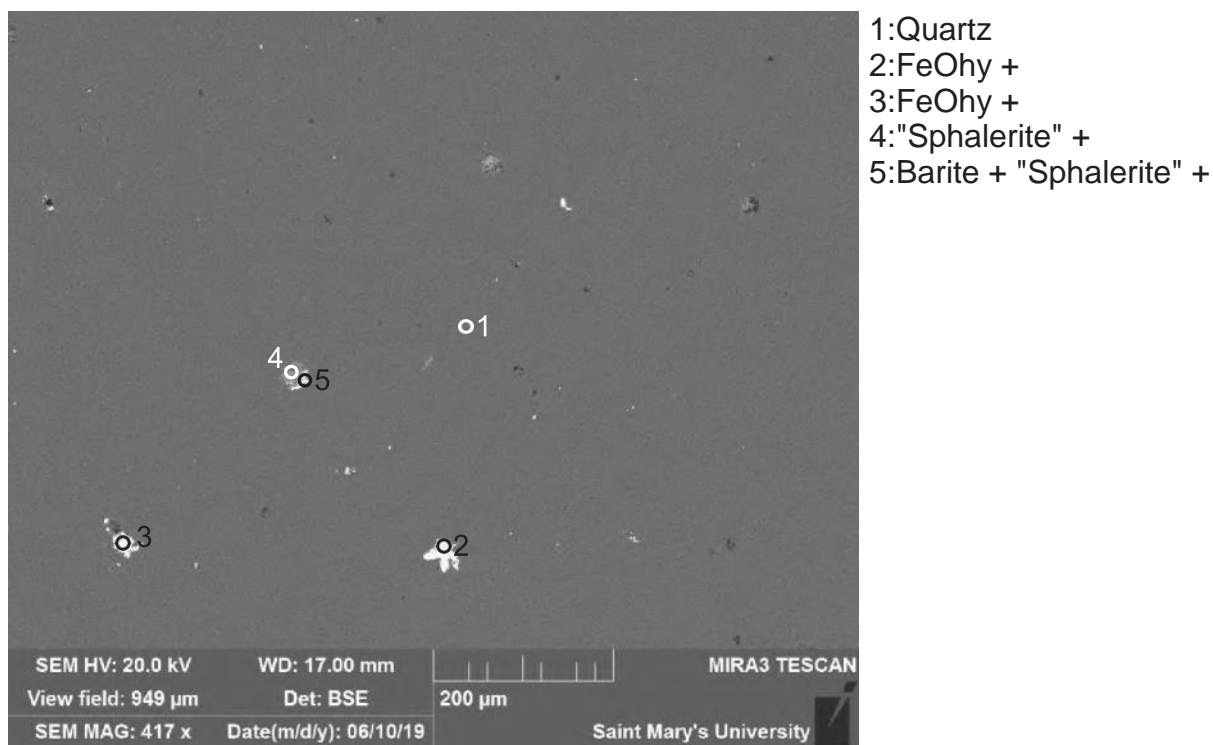
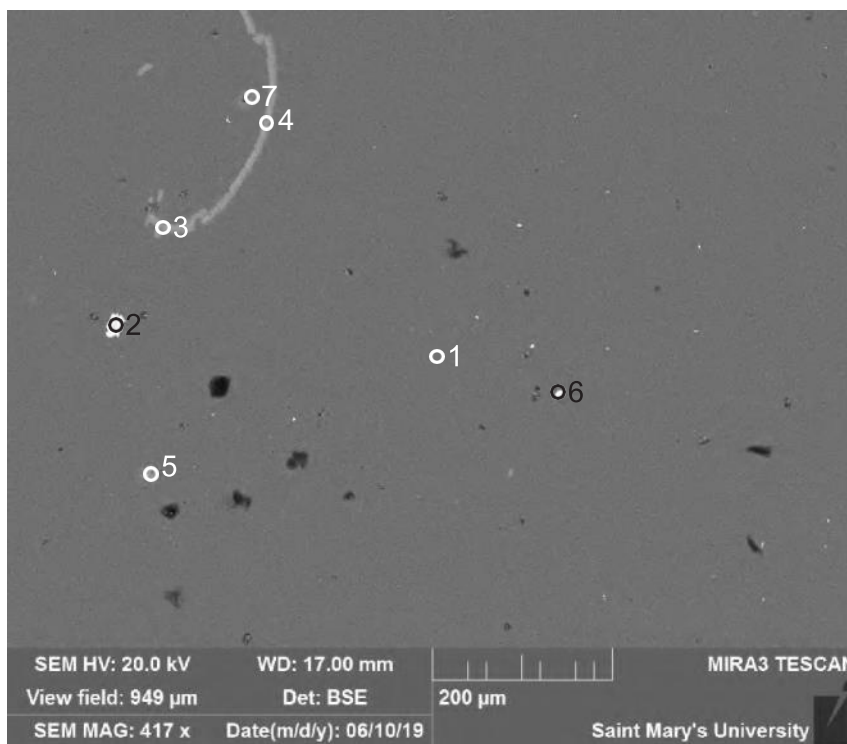
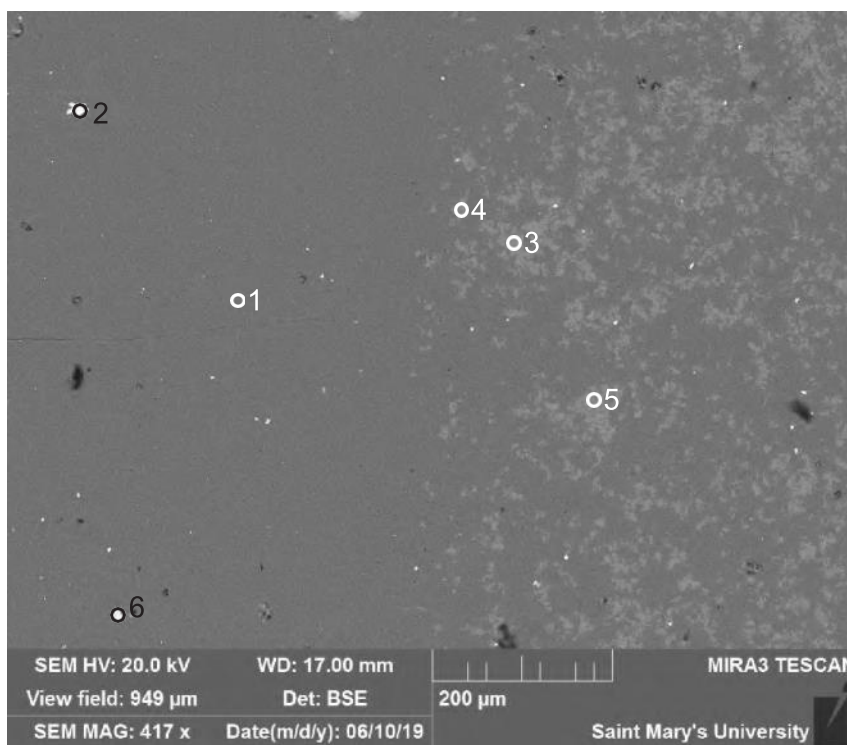


Figure S1.9: AX1B (SEM) Site 8 (Table S1.1). Scattered blebs of goethite (2,3), "sphalerite" (4,5) and barite (5).



- 1:Quartz
- 2:FeOhy +
- 3:Apatite + Quartz
- 4:Apatite + Quartz
- 5:"Sphalerite" +
- 6:FeOhy +
- 7:Apatite + Quartz

Figure S1.10: AX1B (SEM) Site 9 (Table S1.1). Most likely a fossil replaced by apatite (3,4). Scattered blebs of goethite (2,6). Some porosity with some of the voids filled by "sphalerite" (5).



- 1:Quartz
- 2:FeOhy +
- 3:Calcite + Quartz
- 4:Calcite + Quartz
- 5:Calcite + Quartz
- 6:FeOhy +

Figure S1.11: AX1B (SEM) Site 10 (Table S1.1). FeOhy blebs (2,6) in quartz (1). Transition into more patches of calcite in the quartz (3-5).

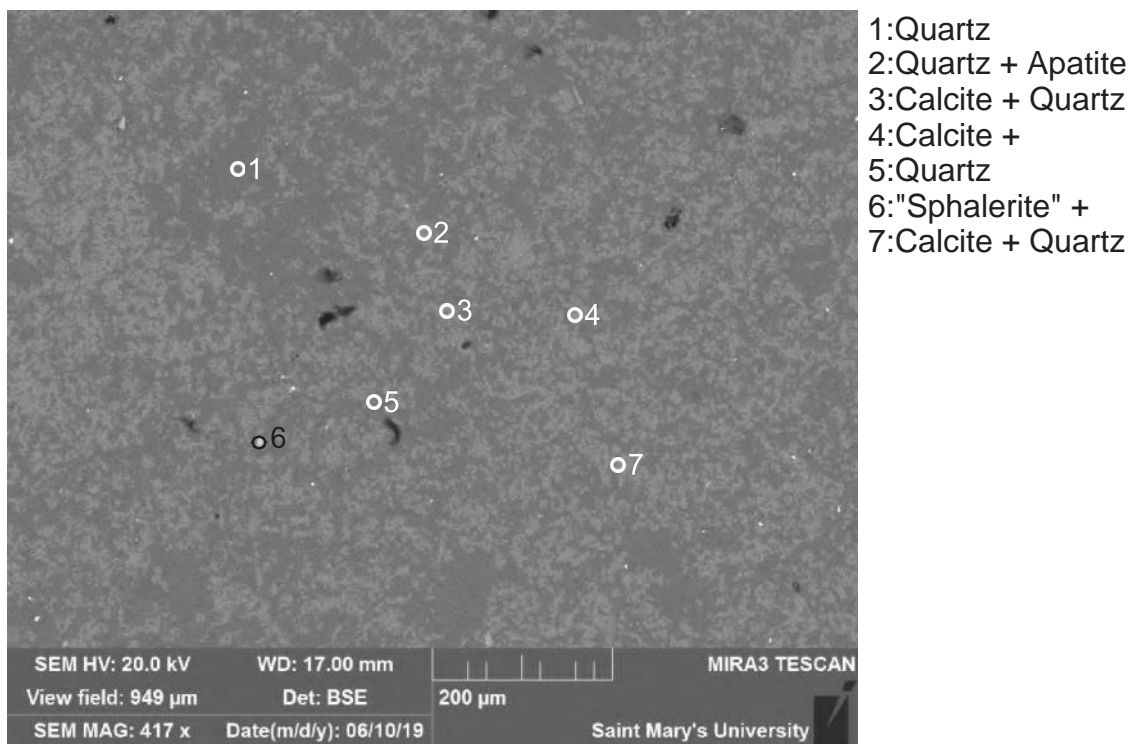


Figure S1.12: AX1B (SEM) Site 11 (Table S1.1). Mixture of calcite and quartz (3,7) with some blebs of apatite (2) and "sphalerite" (6).

Table S1.1: Scanning Electron Microscope (SEM) mineral chemical analyses (EDS) of AX1B.

Sample	Site	Position	Mineral	SiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	NiO	CuO	ZnO	As2O3	BaO	Total	Total
AX1 B	1	1	Qz	100.00																	100	111
AX1 B	1	2	FeOhy +	5.87		92.70	0.88		0.56												100	75
AX1 B	1	3	FeOhy +	6.88		91.61	0.80		0.70												100	70
AX1 B	1	4	Cal +	2.16					97.84												100	52
AX1 B	1	5	Cal	0.76					54.97									0.27			56	50
AX1 B	1	6	Cal +	2.42				0.69	96.89												100	52
AX1 B	1	7	Cal + Qz	12.58				0.68	86.29									0.45			100	56
AX1 B	1	8	Qz + Cal	76.46					23.54												100	85
AX1 B	1	9	Qz	100.00																	100	115
AX1 B	1	10	Cal + Qz	11.96					87.81									0.24			100	59
AX1 B	1	11	Cal + Qz	18.19				0.65	81.15												100	58
AX1 B	2	1	FeOhy +	8.96		89.69			0.66							0.69					100	72
AX1 B	2	2	FeOhy +	9.44		90.02			0.54												100	70
AX1 B	2	3	FeOhy +	8.95		90.47			0.58												100	74
AX1 B	2	4	FeOhy +	9.45		89.99			0.56												100	74
AX1 B	2	5	FeOhy +	8.16		91.36			0.48												100	74
AX1 B	2	6	Qz	100.00																	100	111
AX1 B	2	7	Cal	0.91					55.09												56	51
AX1 B	3	1	Qz	100.00																	100	114
AX1 B	3	2	FeOhy +	10.26		86.58	1.31		0.68						0.32		0.84				100	72
AX1 B	3	3	FeOhy +	8.76		90.75			0.48												100	72
AX1 B	3	4	Cal	0.71					55.29												56	52
AX1 B	3	5	Cal	1.09				0.44	54.47												56	52
AX1 B	3	6	Cal +	7.46					92.01									0.53			100	55
AX1 B	3	7	Cal +	2.09					97.91												100	54
AX1 B	3	8	FeOhy +	8.40		89.77	1.14		0.70												100	70
AX1 B	3	9	Qz	100.00																	100	109
AX1 B	4	1	FeOhy +	8.99		87.47	0.95		0.88				0.98					0.73			100	72
AX1 B	4	2	FeOhy +	5.87		91.98	1.60		0.55												100	74
AX1 B	4	3	FeOhy +	6.44		91.79	0.91		0.52						0.33						100	75
AX1 B	4	4	Cal +	2.36					97.64												100	55
AX1 B	4	5	Cal +	2.95					97.05												100	53
AX1 B	4	6	Qz	100.00																	100	114
AX1 B	5	1	Cal +	7.59					91.95									0.46			100	57
AX1 B	5	2	Cal +	4.06		0.62		1.13	90.25				1.97					1.97			100	58
AX1 B	5	3	FeOhy +	7.70		90.83	0.91		0.56												100	74
AX1 B	5	4	Sp +	19.01	1.91	1.26		5.28	7.85		0.33		35.23		0.84			28.72	-0.43		100	86
AX1 B	5	5	FeOhy +	7.09		92.00	0.91														100	75
AX1 B	5	6	FeOhy +	9.07		86.76			0.58			1.00				0.74	1.17	0.68			100	80
AX1 B	5	7	Sp +	22.34	2.73	1.69		4.65	7.56				33.55		0.76			25.67		1.05	100	65
AX1 B	5	8	Qz	100.00																	100	116
AX1 B	5	9	Qz	100.00																	100	115
AX1 B	5	10	Sp +	15.72	1.78	1.22		4.38	8.53				36.81		0.88			30.63	0.05		100	58

Table S1.1: Scanning Electron Microscope (SEM) mineral chemical analyses (EDS) of AX1B.

Sample	Site	Position	Mineral	SiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	NiO	CuO	ZnO	As2O3	BaO	Total	Total
AX1 B	6	1	Qz	100.00																	100	116
AX1 B	6	2	Cal + Qz	18.85					79.18				0.92					1.05			100	65
AX1 B	6	3	Cal +	2.75					96.53									0.71			100	57
AX1 B	6	4	FeOhy +	6.61		91.60	1.34		0.45												100	72
AX1 B	6	5	Qz	100.00																	100	114
AX1 B	6	6	FeOhy +	7.03		89.69	0.83		0.52							0.74	1.18				100	74
AX1 B	6	7	Sp +	29.53	4.57	3.61		5.48	10.17				24.55		0.84			21.25			100	42
AX1 B	6	8	Sp +	19.90	2.62	1.85		6.39	9.30		0.38		32.69		0.64			26.22			100	47
AX1 B	7	1	Qz	100.00																	100	116
AX1 B	7	2	FeOhy +	7.21		89.45	1.39		0.59								1.35				100	78
AX1 B	7	3	Sp +	31.24	3.39	3.17		3.55	9.82		0.40		25.76		0.93			21.51	0.23		100	65
AX1 B	7	4	Cal	1.18				0.80	53.85									0.17			56	55
AX1 B	7	5	Sp +	35.69	3.41	3.55		3.12	9.94		0.37		23.95		0.49			19.48			100	71
AX1 B	7	6	Sp +	29.95	3.06	2.56		6.86	14.07				24.09		0.60			18.76	0.05		100	56
AX1 B	7	7	Cal + Qz + Zn	38.29				0.55	52.82				4.23					4.11			100	75
AX1 B	8	1	Qz	100.00																	100	119
AX1 B	8	2	FeOhy +	9.01		88.64			0.58							0.71	1.06				100	74
AX1 B	8	3	FeOhy +	15.21		82.94			0.63								1.22				100	77
AX1 B	8	4	Sp +	24.84	2.98	2.08		5.13	8.15				32.49		0.51			23.95	-0.12		100	41
AX1 B	8	5	Brt + Sp +	15.76	1.01	1.27		2.62	2.49				32.73					8.18		35.94	100	112
AX1 B	9	1	Qz	100.00																	100	121
AX1 B	9	2	FeOhy +	9.50		87.06			0.65						0.35		2.44				100	73
AX1 B	9	3	Ap + Qz	55.28					22.61			18.94	0.63	2.54							100	111
AX1 B	9	4	Ap + Qz	46.52					25.18	0.52		22.86	0.76	4.16							100	118
AX1 B	9	5	Sp +	29.35	4.05	2.71		4.27	9.67		0.50		26.99		0.57			21.89			100	60
AX1 B	9	6	FeOhy +	17.59		80.07	0.91		0.49								0.94				100	84
AX1 B	9	7	Ap + Qz	59.98					18.50			16.21	1.82	2.79				0.70			100	100
AX1 B	10	1	Qz	100.00																	100	120
AX1 B	10	2	FeOhy +	6.99		91.87	0.72		0.41												100	75
AX1 B	10	3	Cal + Qz	29.90					70.10												100	71
AX1 B	10	4	Cal + Qz	11.69				0.66	87.65												100	62
AX1 B	10	5	Cal + Qz	35.59					64.41												100	75
AX1 B	10	6	FeOhy +	19.96		79.60			0.43												100	83
AX1 B	11	1	Qz	100.00																	100	118
AX1 B	11	2	Qz + Ap	69.72					15.08	0.34		12.89		1.97							100	116
AX1 B	11	3	Cal + Qz	43.11					55.41				0.70					0.78			100	78
AX1 B	11	4	Cal +	7.62				0.65	91.73												100	62
AX1 B	11	5	Qz	99.33					0.67												100	121
AX1 B	11	6	Sp +	21.90	2.66	1.81		4.77	7.02		0.42		33.43		0.59			26.67	-0.21	0.93	100	100
AX1 B	11	7	Cal + Qz	32.06					67.94												100	73

Supplementary Material S2: SEM-BSE images and Electron Dispersive Spectroscopy (EDS) mineral analyses for sample AX1A.

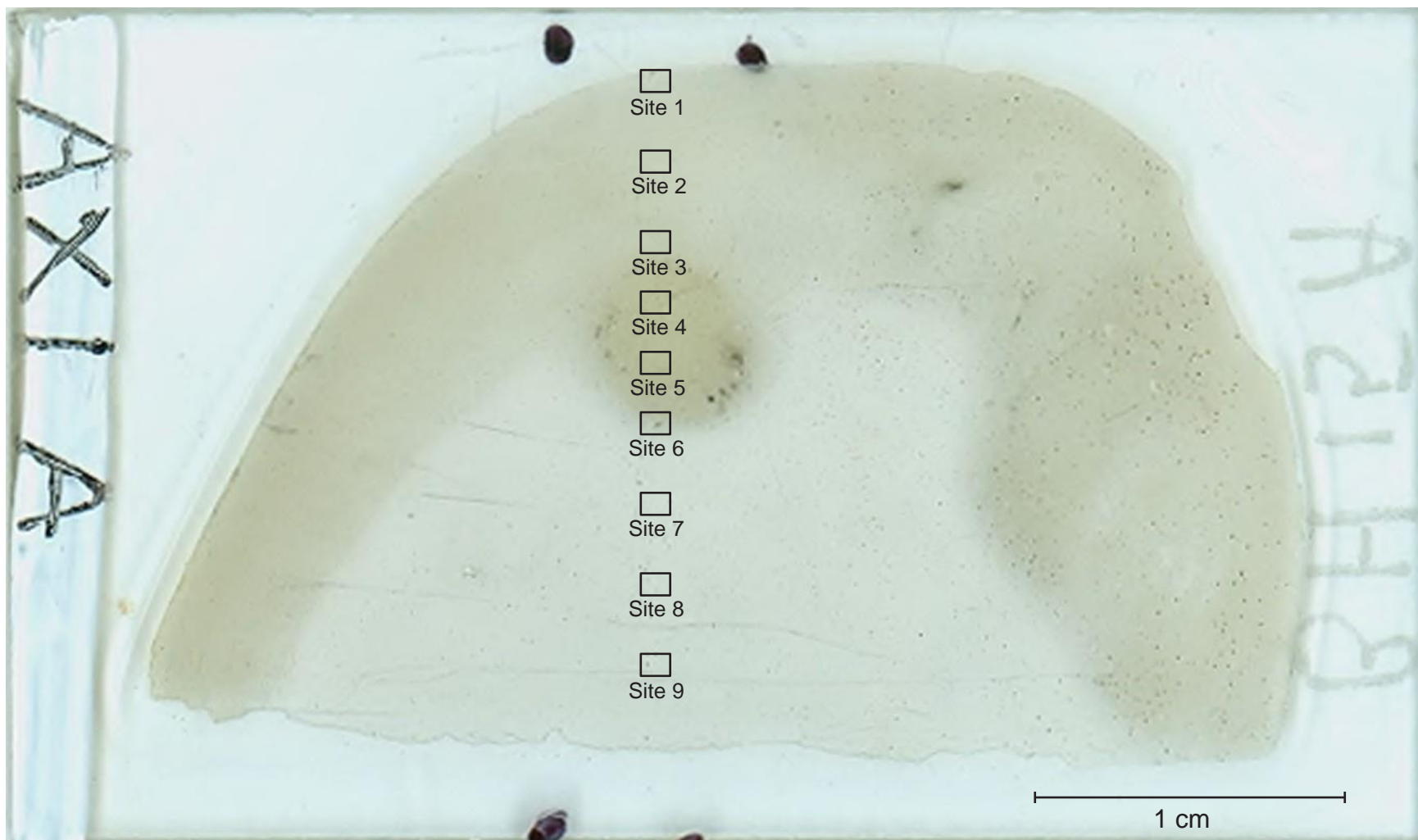


Figure S2.1: AX1 A thin section showing respective sites taken for mineral chemical analyses (EDS) via Scanning Electron Microscope (SEM).

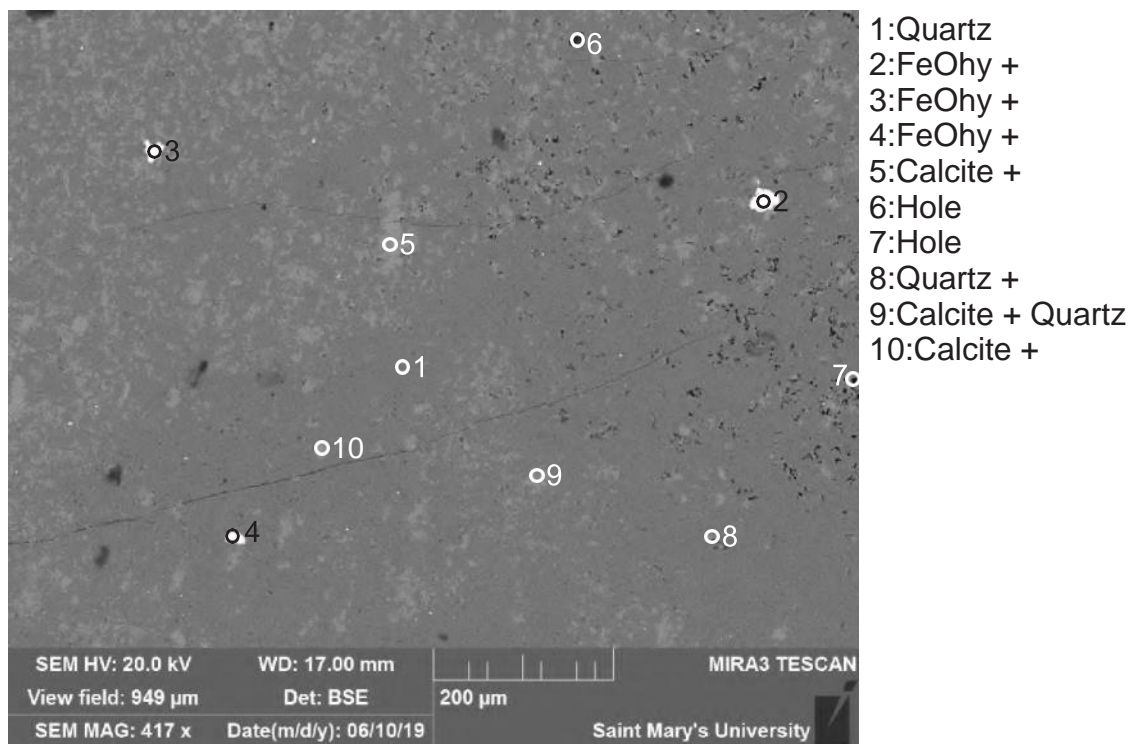


Figure S2.2: AX1 A (SEM) Site 1 (Table S2.1). Scattered blebs of goethite (2-4) and calcite (5,10) in quartz.

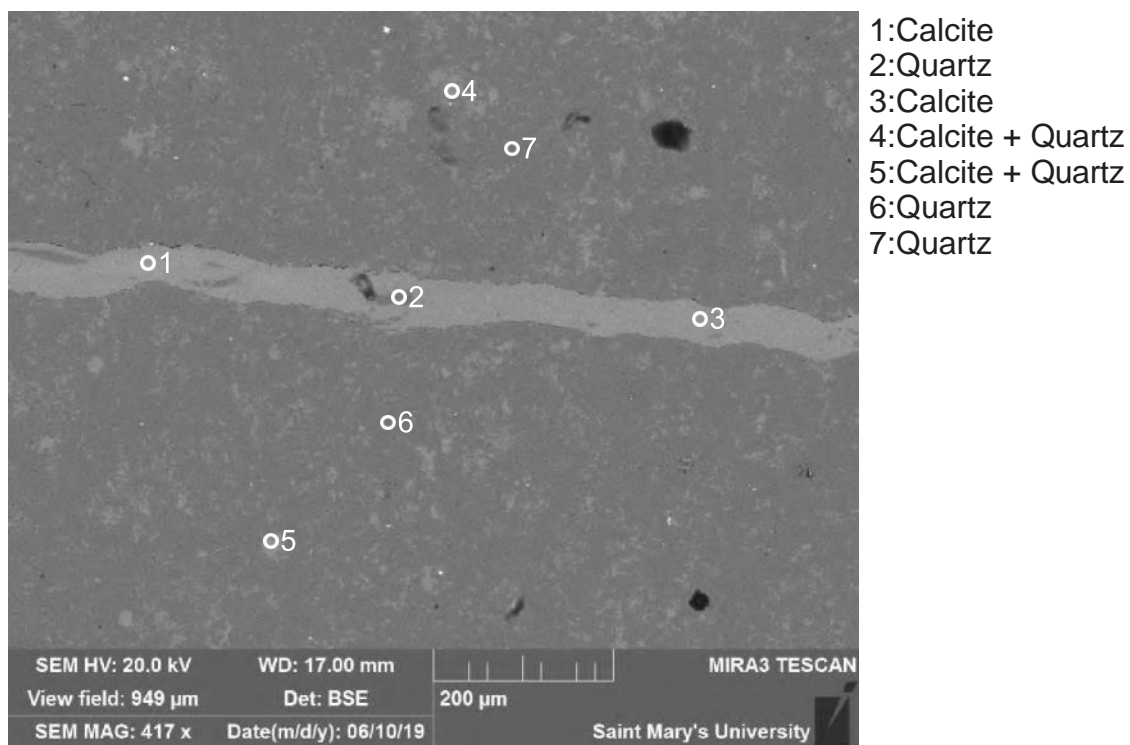


Figure S2.3: AX1 A (SEM) Site 2 (Table S2.1). Similar to Fig. 2 with a vein of calcite (1,3) as well.

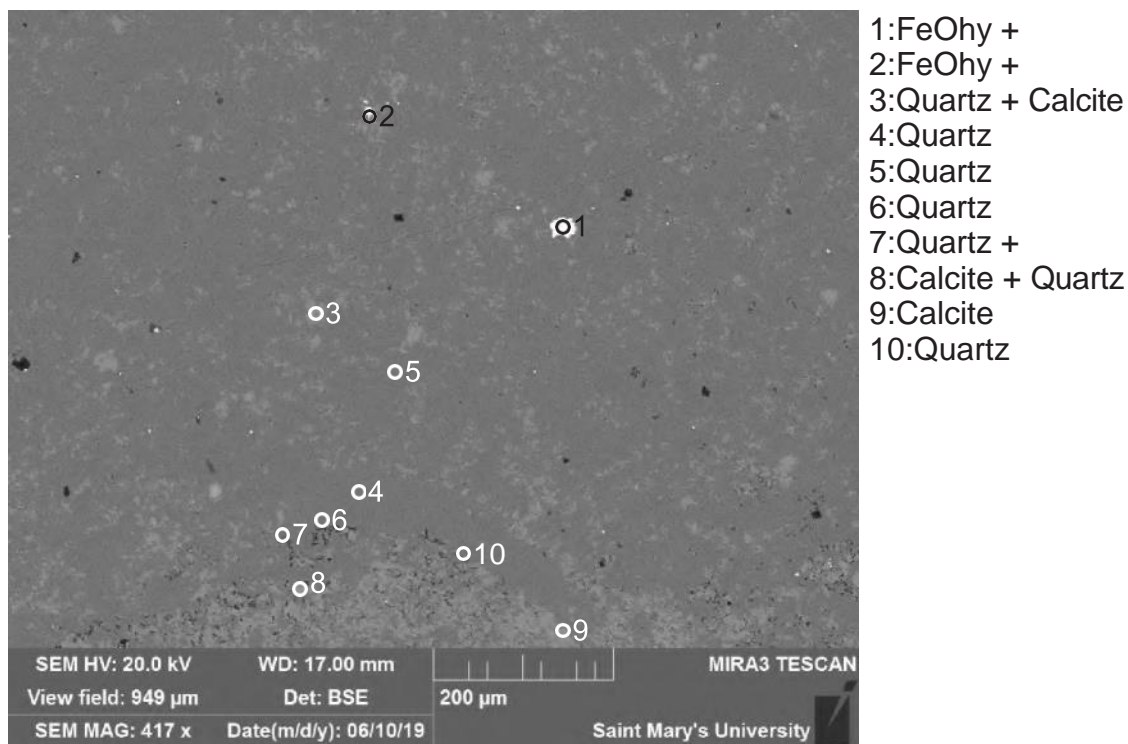


Figure S2.4: AX1 A (SEM) Site 3 (Table S2.1). Similar to Fig. 2.

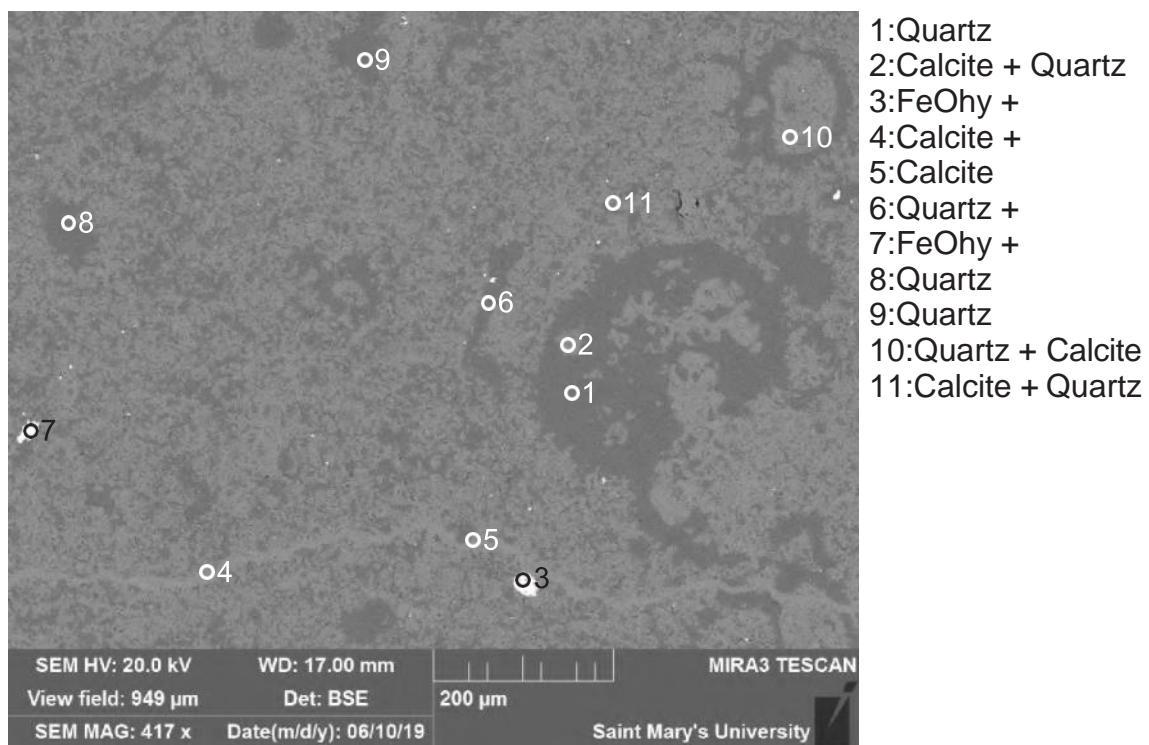


Figure S2.5: AX1 A (SEM) Site 4 (Table S2.1). Similar to Fig. 3, but with more calcite.

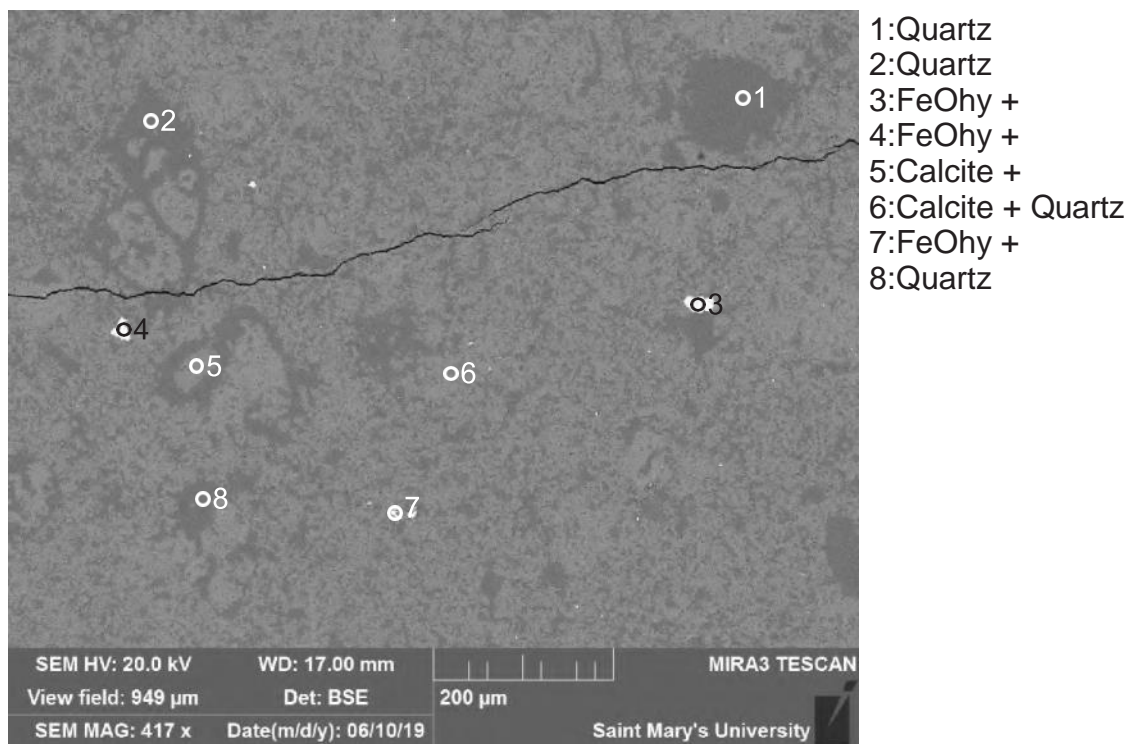


Figure S2.6: AX1 A (SEM) Site 5 (Table S2.1). Abundant calcite, some goethite and some quartz in forms that resemble e.g. foraminifera skeletons.

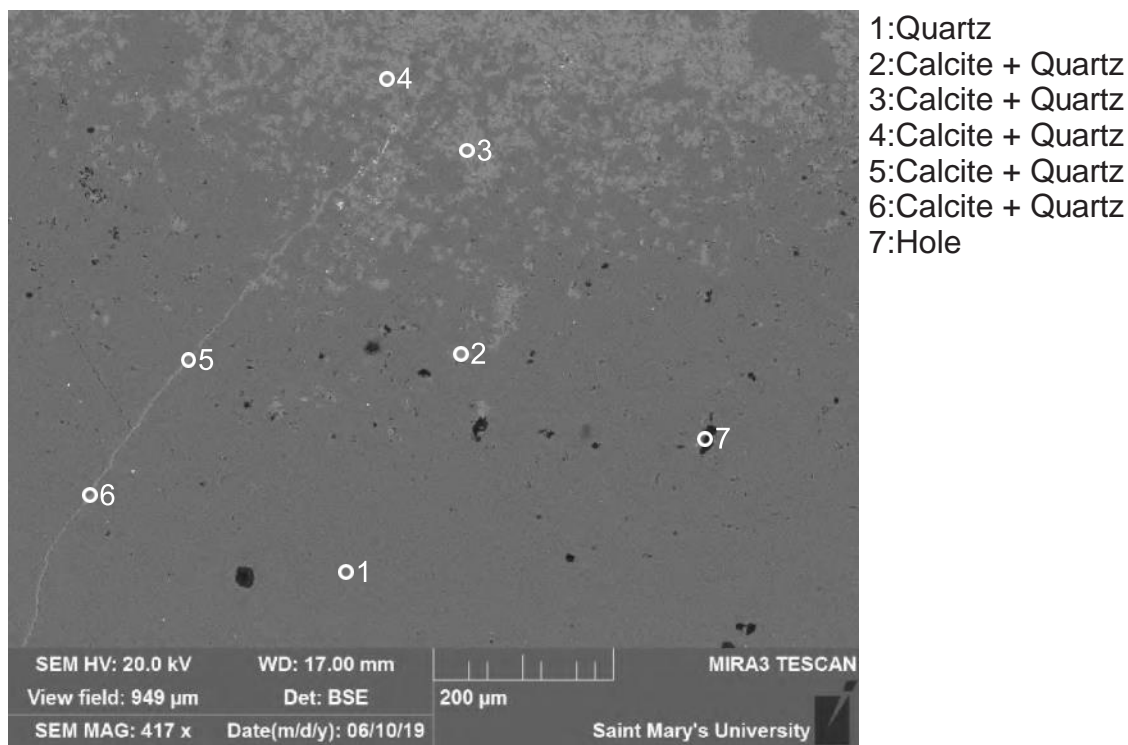
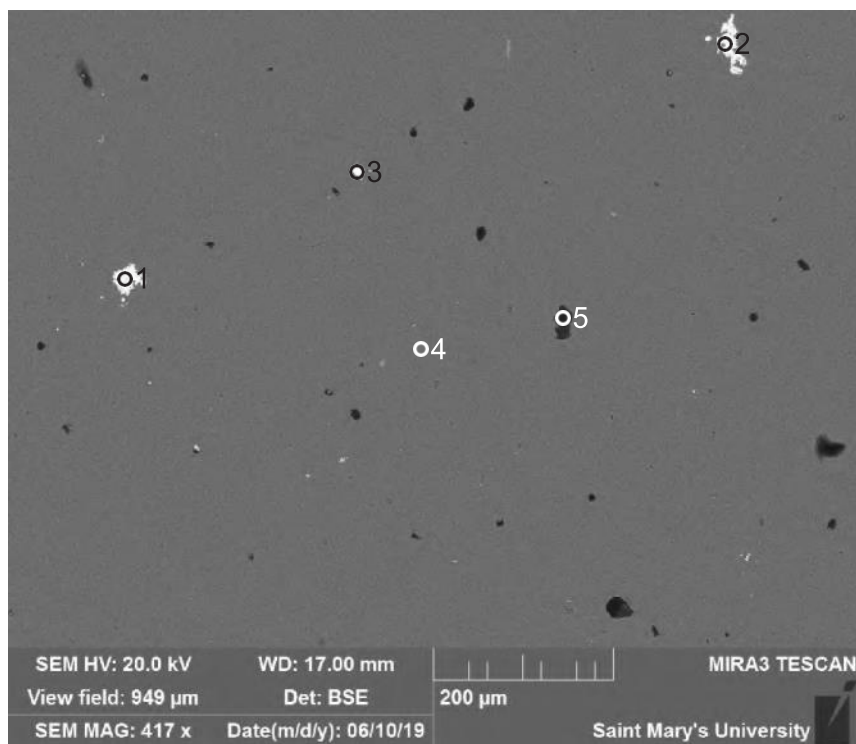
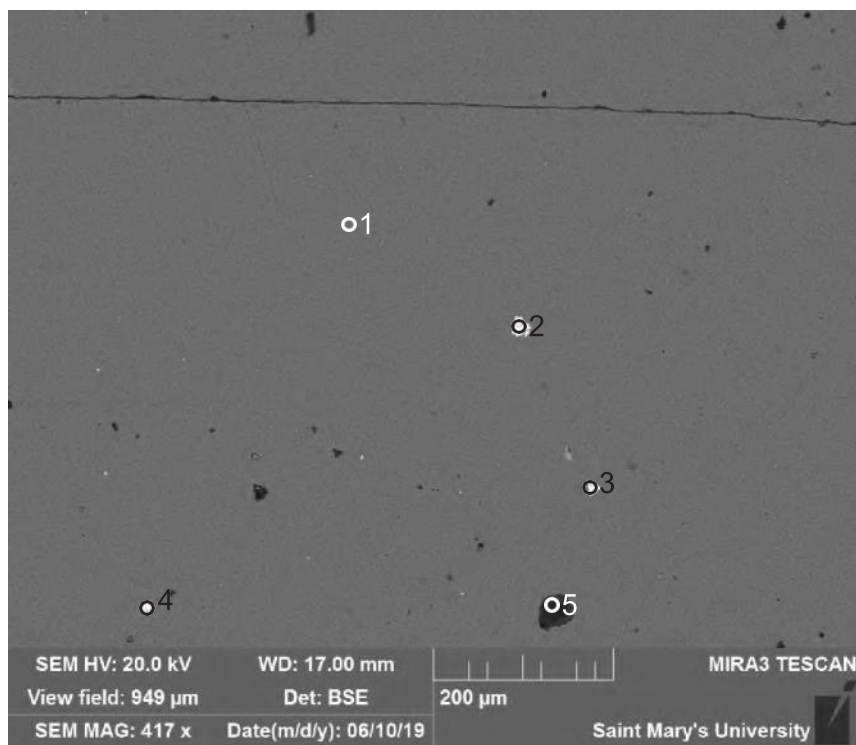


Figure S2.7: AX1 A (SEM) Site 6 (Table S2.1). Similar to Fig. 3. Some porosity (e.g. position 7).



- 1:FeOhy +
- 2:FeOhy +
- 3:FeOhy +
- 4:Quartz
- 5:Hole

Figure S2.8: AX1 A (SEM) Site 7 (Table S2.1). Few blebs of goethite (1-3) in quartz (4). Some porosity (e.g.5).



- 1:Quartz
- 2:FeOhy +
- 3:FeOhy +
- 4:FeOhy +
- 5:Hole

Figure S2.9: AX1 A (SEM) Site 8 (Table S2.1). Few blebs of goethite (1-4), and some porosity.

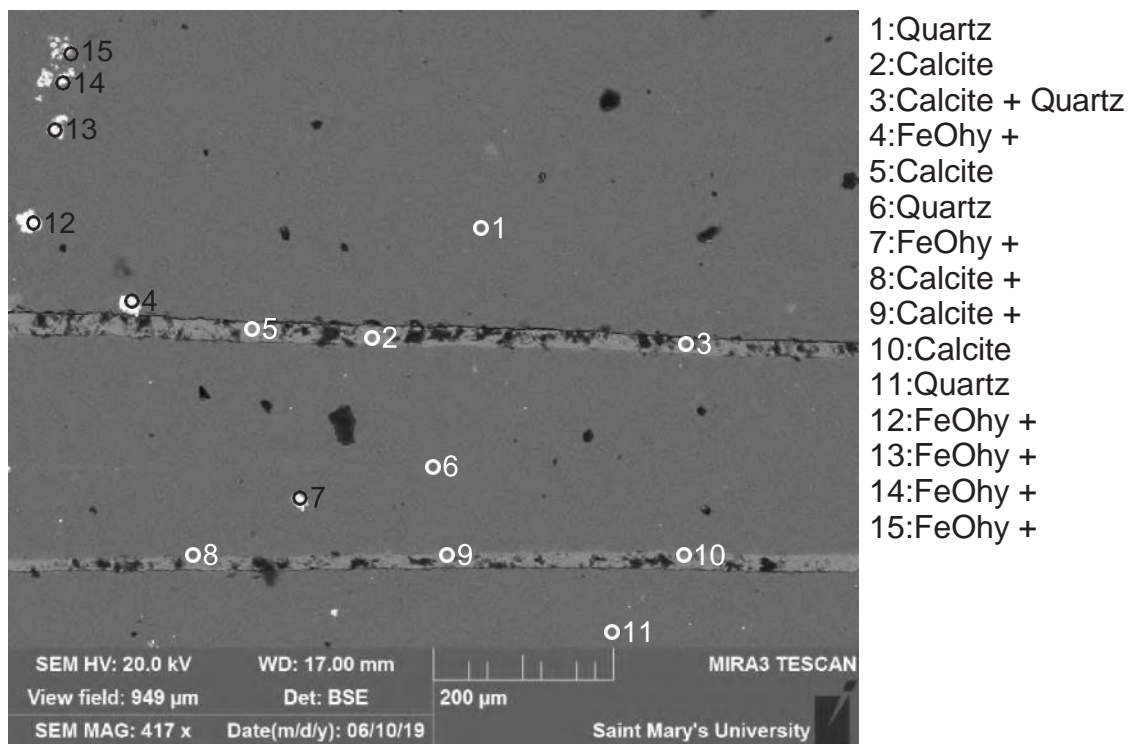


Figure S2.10: AX1 A (SEM) Site 9 (Table S2.1). Several blebs of goethite, some in line (12-15) and two calcite veins with high porosity, all in quartz (1,6,11).

Table S2.1: Scanning Electron Microscope (SEM) mineral chemical analyses (EDS) of AX1 A.

Sample	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	Cl	NiO	CuO	Total	Actual Total
AX1 A	1	1	Qz	100.00														100	122
AX1 A	1	2	FeOhy +	6.52	2.89	0.73	85.71	0.79		1.02					0.52	0.74	1.10	100	83
AX1 A	1	3	FeOhy +	6.35			90.63	1.01		0.81					0.46		0.74	100	78
AX1 A	1	4	FeOhy +	7.18		0.78	86.23	0.67		2.79					0.35		1.99	100	79
AX1 A	1	5	Cal + Qz	5.40					1.46	93.15								100	59
AX1 A	1	6	Hole	49.54		1.22				49.24								100	33
AX1 A	1	7	Hole	76.37						18.12			3.53		1.99			100	20
AX1 A	1	8	Qz +	91.61		1.05	0.65			4.25	1.55			0.88				100	65
AX1 A	1	9	Cal + Qz	15.18		1.82				81.94		1.06						100	65
AX1 A	1	10	Cal +	4.92					0.72	94.35								100	60
AX1 A	2	1	Cal	0.73						55.27								56	50
AX1 A	2	2	Qz	99.58						0.42								100	118
AX1 A	2	3	Cal	0.81					0.44	54.75								56	61
AX1 A	2	4	Cal + Qz	38.55		0.72				60.73								100	71
AX1 A	2	5	Cal + Qz	11.82					0.64	87.53								100	62
AX1 A	2	6	Qz	100.00														100	120
AX1 A	2	7	Qz	100.00														100	119
AX1 A	3	1	FeOhy +	6.03			92.52	0.99		0.45								100	78
AX1 A	3	2	FeOhy +	6.47			89.86	1.15		0.98					0.44		1.10	100	77
AX1 A	3	3	Qz + Cal	73.99						26.01								100	91
AX1 A	3	4	Qz	100.00														100	120
AX1 A	3	5	Qz	100.00														100	119
AX1 A	3	6	Qz	98.63						1.37								100	103
AX1 A	3	7	Qz +	97.65		0.58				1.77								100	85
AX1 A	3	8	Cal + Qz	13.05						86.95								100	62
AX1 A	3	9	Cal	2.37						53.63								56	61
AX1 A	3	10	Qz	95.13		1.36				3.35		0.16						100	106
AX1 A	4	1	Qz	100.00														100	122
AX1 A	4	2	Cal + Qz	38.11						61.89								100	73
AX1 A	4	3	FeOhy +	5.65			91.62	1.00		1.73								100	80
AX1 A	4	4	Cal +	2.04						97.96								100	57
AX1 A	4	5	Cal	1.08					0.41	54.52								56	59

Table S2.1: Scanning Electron Microscope (SEM) mineral chemical analyses (EDS) of AX1 A.

Sample	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	Cl	NiO	CuO	Total	Actual Total
AX1 A	4	6	Qz +	95.97		2.58	0.34			0.43		0.67						100	116
AX1 A	4	7	FeOhy +	5.23		0.74	91.64	1.11		1.28								100	77
AX1 A	4	8	Qz	99.66						0.34								100	114
AX1 A	4	9	Qz	99.66						0.34								100	115
AX1 A	4	10	Qz + Cal	62.67						37.33								100	86
AX1 A	4	11	Cal + Qz	55.13						44.87								100	83
AX1 A	5	1	Qz	100.00														100	116
AX1 A	5	2	Qz	99.68						0.32								100	113
AX1 A	5	3	FeOhy +	6.97		1.05	88.83	0.77		1.49							0.88	100	79
AX1 A	5	4	FeOhy +	6.56		1.05	86.81	0.71		4.87								100	73
AX1 A	5	5	Cal +	4.98			1.92		0.94	92.16								100	57
AX1 A	5	6	Cal + Qz	13.82						86.18								100	61
AX1 A	5	7	FeOhy +	23.68		1.07	70.47			2.92						0.70	1.16	100	85
AX1 A	5	8	Qz	99.65						0.35								100	113
AX1 A	6	1	Qz	99.41		0.59												100	115
AX1 A	6	2	Cal + Qz	28.67						71.33								100	65
AX1 A	6	3	Cal + Qz	23.45						76.55								100	63
AX1 A	6	4	Cal + Qz	33.63						66.37								100	66
AX1 A	6	5	Cal + Qz	32.50						67.50								100	68
AX1 A	6	6	Cal + Qz	7.41					0.88	91.70								100	57
AX1 A	6	7	Hole	72.74		3.95	2.37		1.31	17.22	1.20				1.20			100	29
AX1 A	7	1	FeOhy +	9.00			86.63			0.96			1.02		0.53	0.74	1.13	100	72
AX1 A	7	2	FeOhy +	7.82			89.03	0.60		0.70					0.39		1.45	100	74
AX1 A	7	3	FeOhy +	6.34			92.62			0.71					0.33			100	73
AX1 A	7	4	Qz	100.00														100	114
AX1 A	7	5	Hole	47.14		4.00	2.99		1.77	41.52		0.86			1.72			100	20
AX1 A	8	1	Qz	100.00														100	111
AX1 A	8	2	FeOhy +	11.07			86.34	0.60		0.60					0.33		1.05	100	76
AX1 A	8	3	FeOhy +	7.43			91.04	0.67									0.87	100	75
AX1 A	8	4	FeOhy +	7.07			92.01	0.92										100	72
AX1 A	8	5	Hole	43.97		1.76	3.20		1.65	48.48					0.94			100	18
AX1 A	9	1	Qz	100.00														100	111

Table S2.1: Scanning Electron Microscope (SEM) mineral chemical analyses (EDS) of AX1 A.

Sample	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	Cl	NiO	CuO	Total	Actual Total
AX1 A	9	2	Cal	1.13						54.87								56	55
AX1 A	9	3	Cal + Qz	9.70		1.89				87.30	1.11							100	55
AX1 A	9	4	FeOhy +	7.30			90.69	0.88		0.79					0.34			100	71
AX1 A	9	5	Cal	0.86						55.14								56	53
AX1 A	9	6	Qz	100.00														100	113
AX1 A	9	7	FeOhy +	6.77			91.03	0.62		0.50							1.08	100	72
AX1 A	9	8	Cal +	4.19			0.67			95.14								100	52
AX1 A	9	9	Cal +	2.60					0.84	96.56								100	55
AX1 A	9	10	Cal	0.86						55.14								56	57
AX1 A	9	11	Qz	100.00														100	117
AX1 A	9	12	FeOhy +	6.22			93.15	0.63										100	68
AX1 A	9	13	FeOhy +	5.97			92.88	0.76		0.39								100	70
AX1 A	9	14	FeOhy +	28.01		1.12	69.45	0.62		0.49		0.31						100	74
AX1 A	9	15	FeOhy +	11.74			86.74	1.00		0.53								100	72

Supplementary Material S3: SEM-BSE images and Electron Dispersive Spectroscopy (EDS) mineral analyses for sample AX1C.

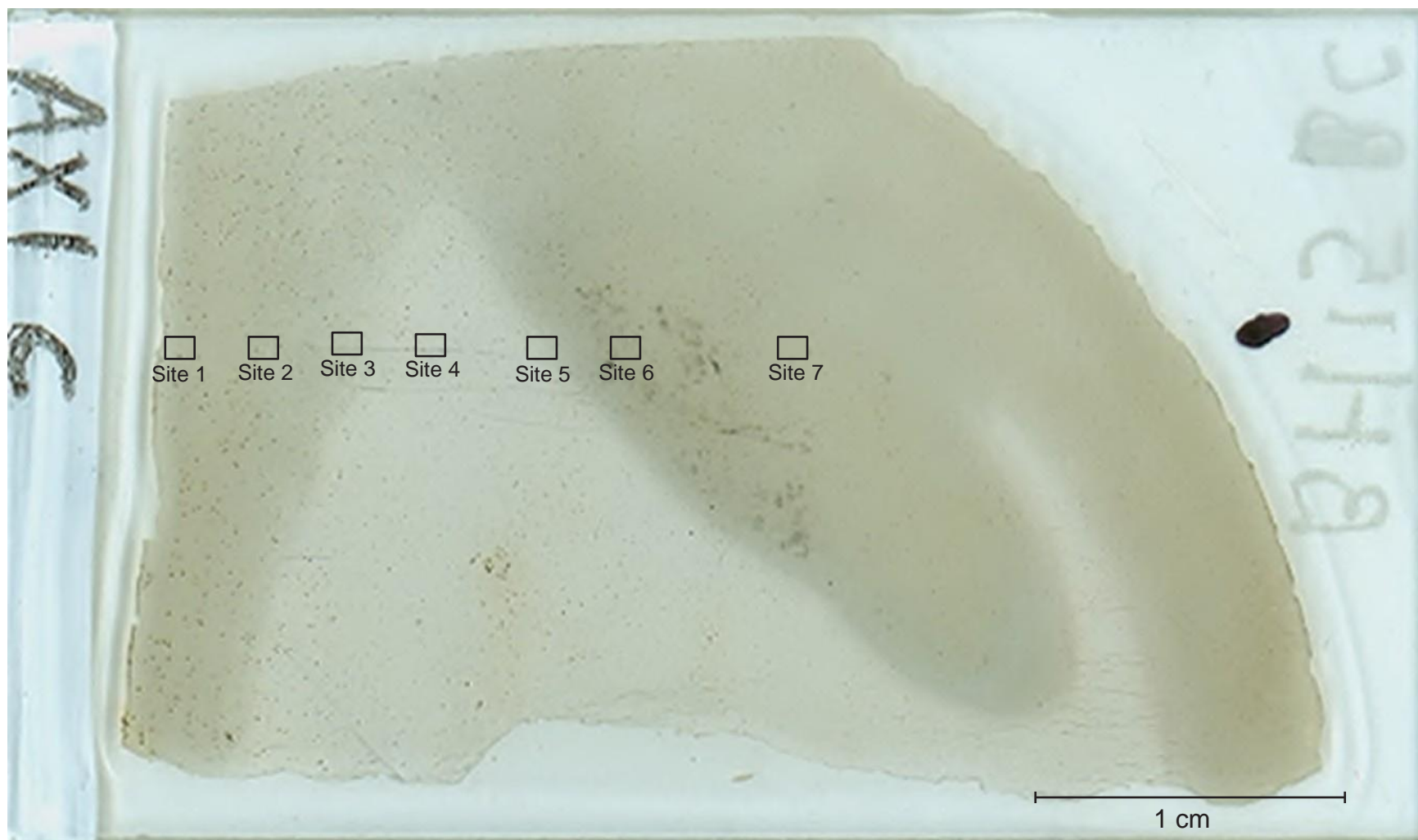


Figure S3.1: AX1 C thin section showing respective sites taken for mineral chemical analyses (EDS) via Scanning Electron Microscope (SEM).

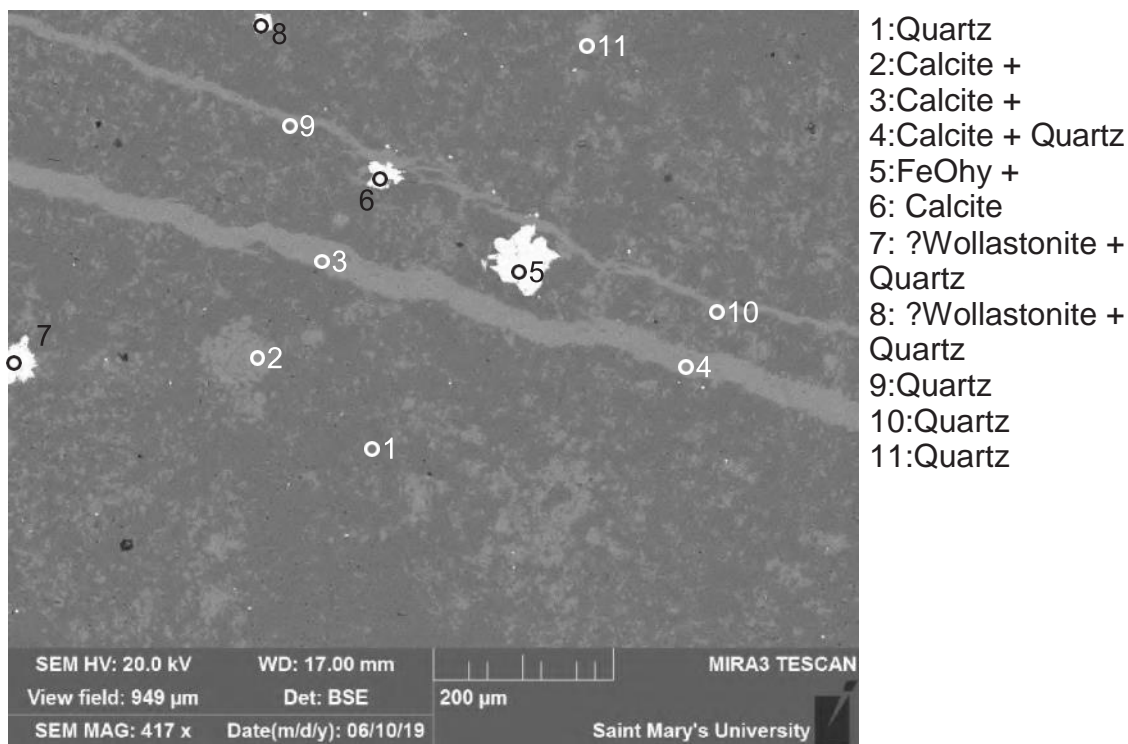


Figure S3.2: AX1 C (SEM) Site 1 (Table S3.1). Mixture of calcite and quartz cut by calcite veins. Two analyzes of wollastonite (7,8) appear to be late mineral blebs.

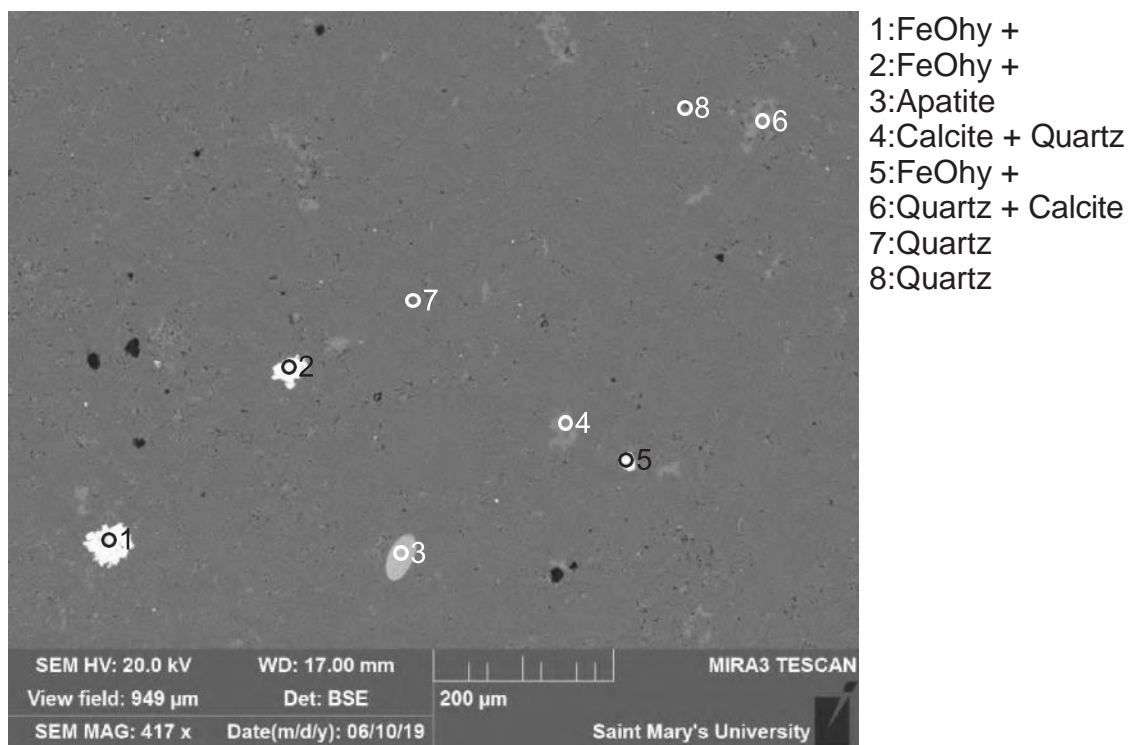


Figure S3.3: AX1 C (SEM) Site 2 (Table S3.1). Scattered blebs of goethite (1-2), calcite (4,6) and apatite (3, ellipse) in quartz (7). The apatite (3) probably fills fossil.

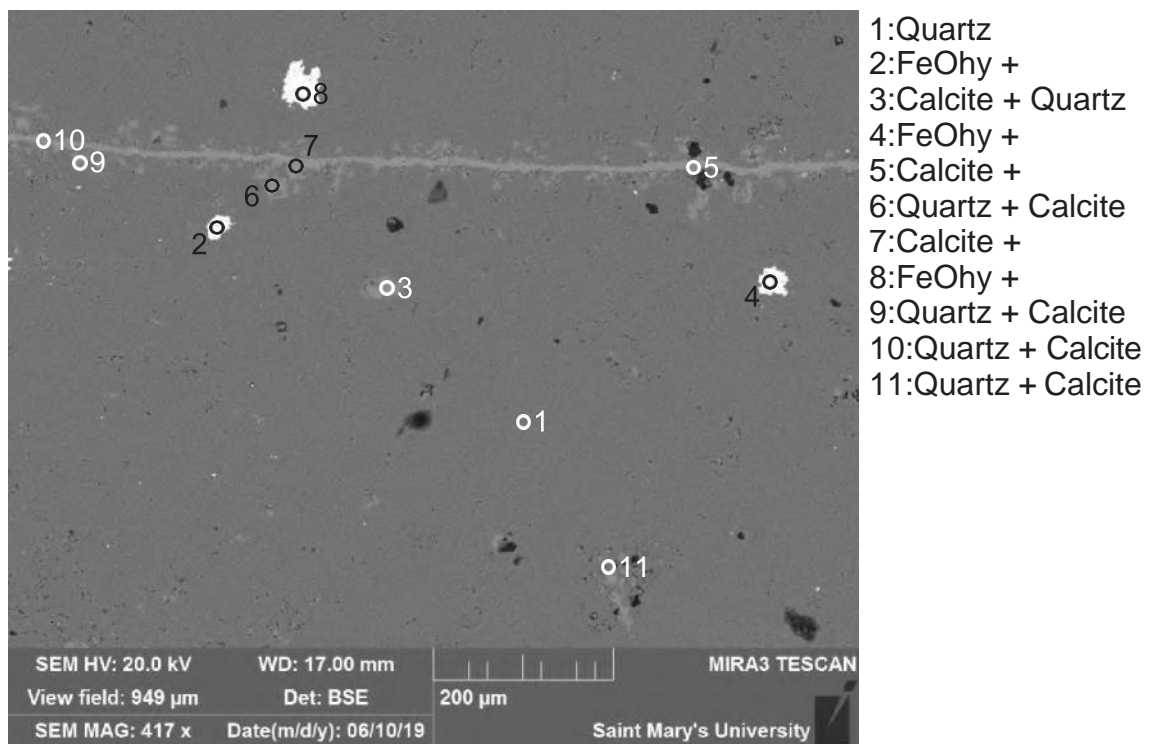


Figure S3.4: AX1 C (SEM) Site 3 (Table S3.1). FeOhy blebs in quartz. Calcite vein cuts quartz and a void (5). Porosity.

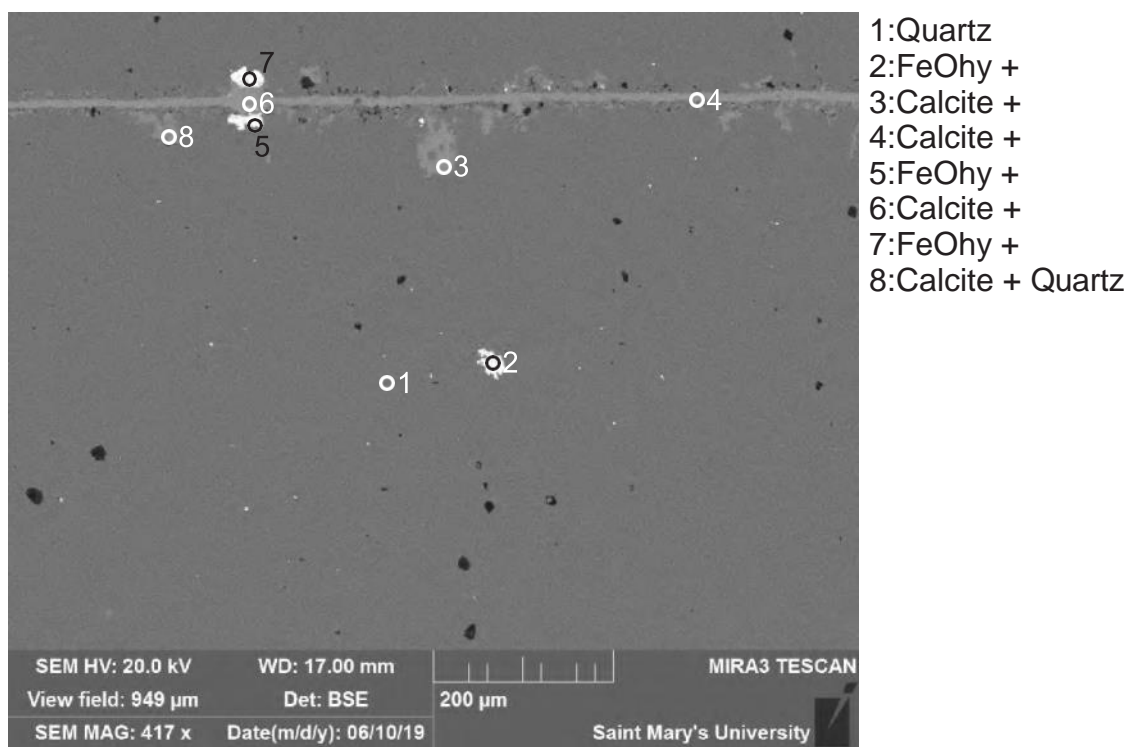


Figure S3.5: AX1 C (SEM) Site 4 (Table S3.1). Similar to figure 4. FeOhy (5,7) appears to postdate calcite.

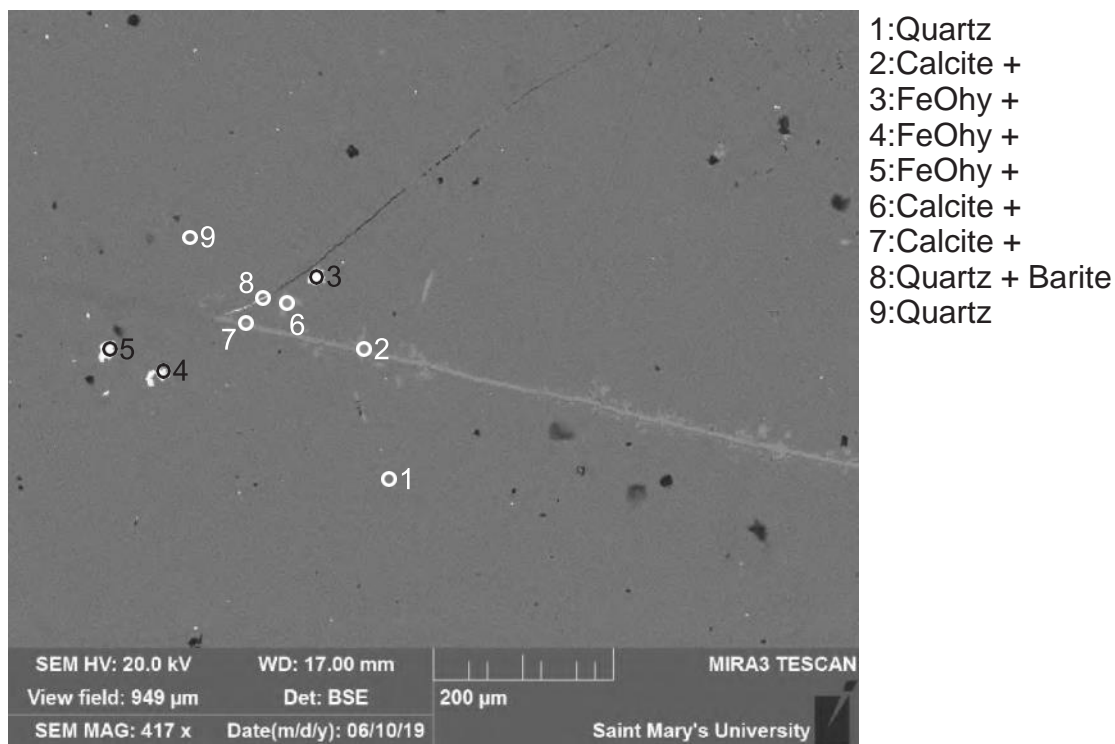


Figure S3.6: AX1 C (SEM) Site 5 (Table S3.1).

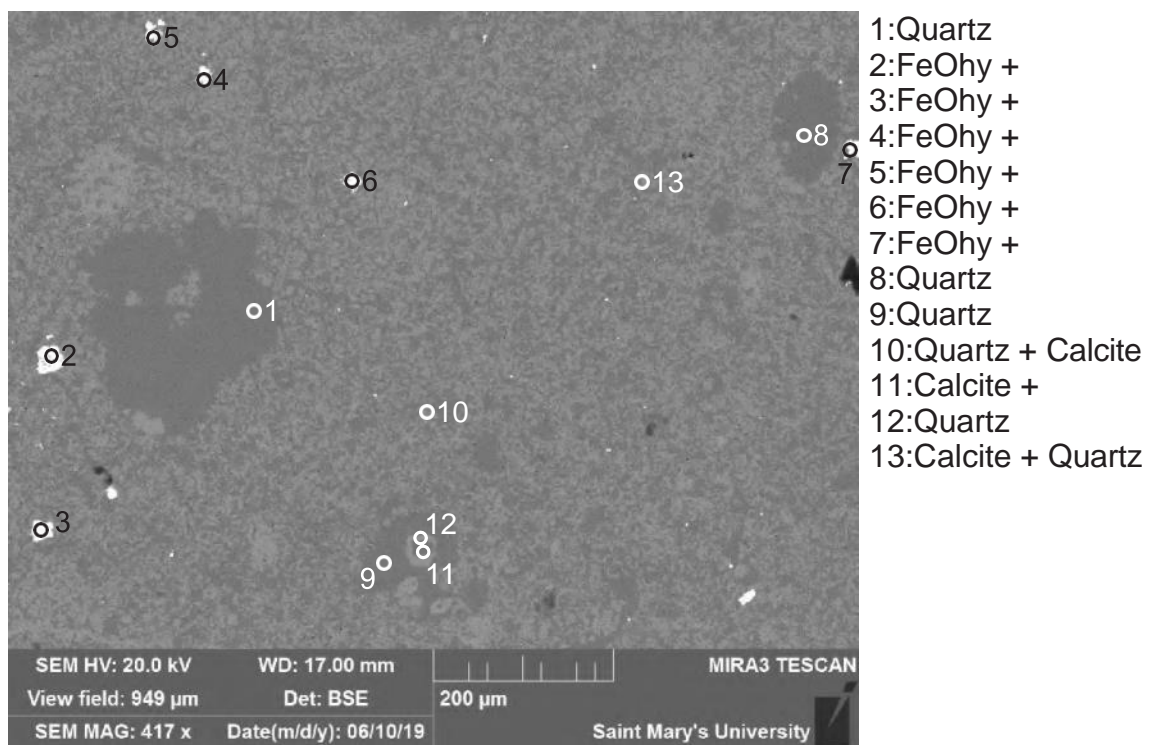
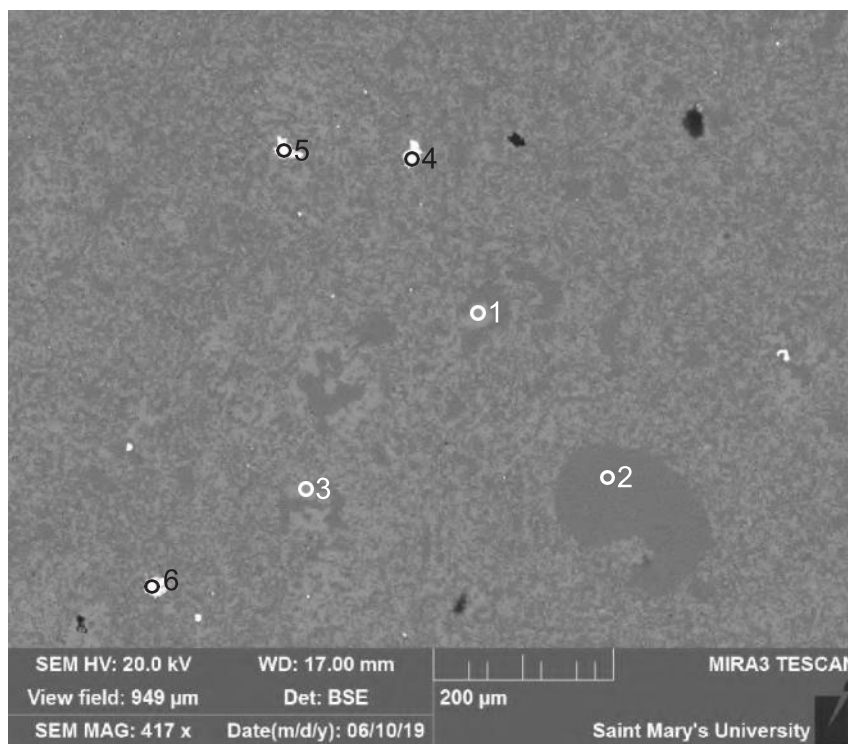


Figure S3.7: AX1 C (SEM) Site 6 (Table S3.1). FeOhy blebs in calcite and quartz mixture. The quartz (8) probably fills fossil.



- 1: Calcite +
- 2: Quartz
- 3: Calcite +
- 4: FeOhy +
- 5: FeOhy +
- 6: FeOhy +

Figure S3.8: AX1 C (SEM) Site 7 (Table S3.1). Similar to Fig. 7. Quartz (2) probably fills fossil.

Table S3.1: Scanning Electron Microscope (SEM) mineral chemical analyses (EDS) of AX1 C.

Site	Position	Mineral	SiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	NiO	CuO	BaO	WO3	Total	Actual Total
1	1	Qz	100.00																100	122
1	2	Cal +	5.92	1.68			1.12	90.79		0.49									100	61
1	3	Cal +	2.95					97.05											100	58
1	4	Cal + Qz	20.18					79.82											100	69
1	5	FeOhy +	9.15		89.29			0.85								0.70			100	79
1	6	Cal	1.10				0.49	54.41											56	58
1	7	?Wo + Qz	78.44		3.99			17.57											100	99
1	8	?Wo + Qz	77.49					22.51											100	96
1	9	Qz	99.79					0.21											100	119
1	10	Qz	99.13	0.62				0.26											100	125
1	11	Qz	89.99					10.01											100	111
2	1	FeOhy +	9.00	0.71	86.87			2.49			0.94								100	78
2	2	FeOhy +	7.13		91.48	0.85		0.54											100	80
2	3	Ap	0.57					48.61	0.96		42.66	1.21	4.62					1.38	100	116
2	4	Cal + Qz	15.36					84.65											100	65
2	5	FeOhy +	6.24		92.37	0.83		0.55											100	82
2	6	Qz + Cal	55.08					44.92											100	86
2	7	Qz	100.00																100	122
2	8	Qz	100.00																100	122
3	1	Qz	100.00																100	125
3	2	FeOhy +	10.57	1.25	86.63			1.22						0.33					100	75
3	3	Cal + Qz	18.88				0.65	80.46											100	66
3	4	FeOhy +	6.99		91.72	0.73		0.56											100	81
3	5	Cal +	2.41					97.59											100	58
3	6	Qz + Cal	66.25					33.75											100	88
3	7	Cal +	2.07					97.93											100	57
3	8	FeOhy +	9.14		90.35			0.50											100	77
3	9	Qz + Cal	86.17					13.83											100	101
3	10	Qz + Cal	81.02					18.98											100	96
3	11	Qz + Cal	87.51					12.49											100	108
4	1	Qz	100.00																100	124
4	2	FeOhy +	8.61		88.62	0.67		0.63						0.31		1.17			100	80
4	3	Cal +	2.47					97.53											100	58
4	4	Cal +	10.11				0.60	89.29											100	63

Table S3.1: Scanning Electron Microscope (SEM) mineral chemical analyses (EDS) of AX1 C.

Site	Position	Mineral	SiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	NiO	CuO	BaO	WO3	Total	Actual Total
4	5	FeOhy +	6.34	0.71	90.57	1.33		1.05											100	77
4	6	Cal +	1.60		0.73		0.84	96.83											100	57
4	7	FeOhy +	12.82	3.59	80.82	0.51		1.21		0.66				0.39					100	79
4	8	Cal + Qz	48.88					51.12											100	80
5	1	Qz	100.00																100	124
5	2	Cal +	5.10				1.04	93.86											100	60
5	3	FeOhy +	8.48	1.17	85.60	2.41		1.07						0.44		0.84			100	78
5	4	FeOhy +	10.30	1.40	84.91			1.02						0.51	0.66	1.20			100	79
5	5	FeOhy +	9.85		87.49	0.88		0.76								1.02			100	75
5	6	Cal +	2.53					97.47											100	57
5	7	Cal +	4.11				1.06	94.84											100	58
5	8	Qz + Brt	68.23					0.63				12.26					18.88		100	132
5	9	Qz	100.00																100	120
6	1	Qz	100.00																100	120
6	2	FeOhy +	9.75	1.22	85.30	0.82		1.76			1.15								100	77
6	3	FeOhy +	7.53	1.07	87.50	0.79		1.25							0.92	0.93			100	79
6	4	FeOhy +	9.13		87.23	0.67		1.69								1.27			100	79
6	5	FeOhy +	5.57		92.15	0.92		1.36											100	77
6	6	FeOhy +	6.18		90.12	0.71		1.54								1.45			100	79
6	7	FeOhy +	8.13	1.02	89.18	0.53		1.14											100	81
6	8	Qz	98.99	0.81						0.19									100	123
6	9	Qz	99.75					0.25											100	124
6	10	Qz + Cal	55.04					44.96											100	86
6	11	Cal +	1.50					98.50											100	61
6	12	Qz	99.05	0.60				0.35											100	124
6	13	Cal + Qz	38.47					61.53											100	75
7	1	Cal +	1.78				0.93	97.29											100	60
7	2	Qz	100.00																100	125
7	3	Cal +	3.66				0.68	95.67											100	61
7	4	FeOhy +	6.38	0.96	88.05	0.91		2.27								1.45			100	79
7	5	FeOhy +	6.20	0.81	89.42	1.19		1.24								1.15			100	79
7	6	FeOhy +	6.11		91.52	1.13		1.23											100	79

Supplementary Material S4: SEM-BSE images and Electron Dispersive Spectroscopy (EDS) mineral analyses for sample AX2.

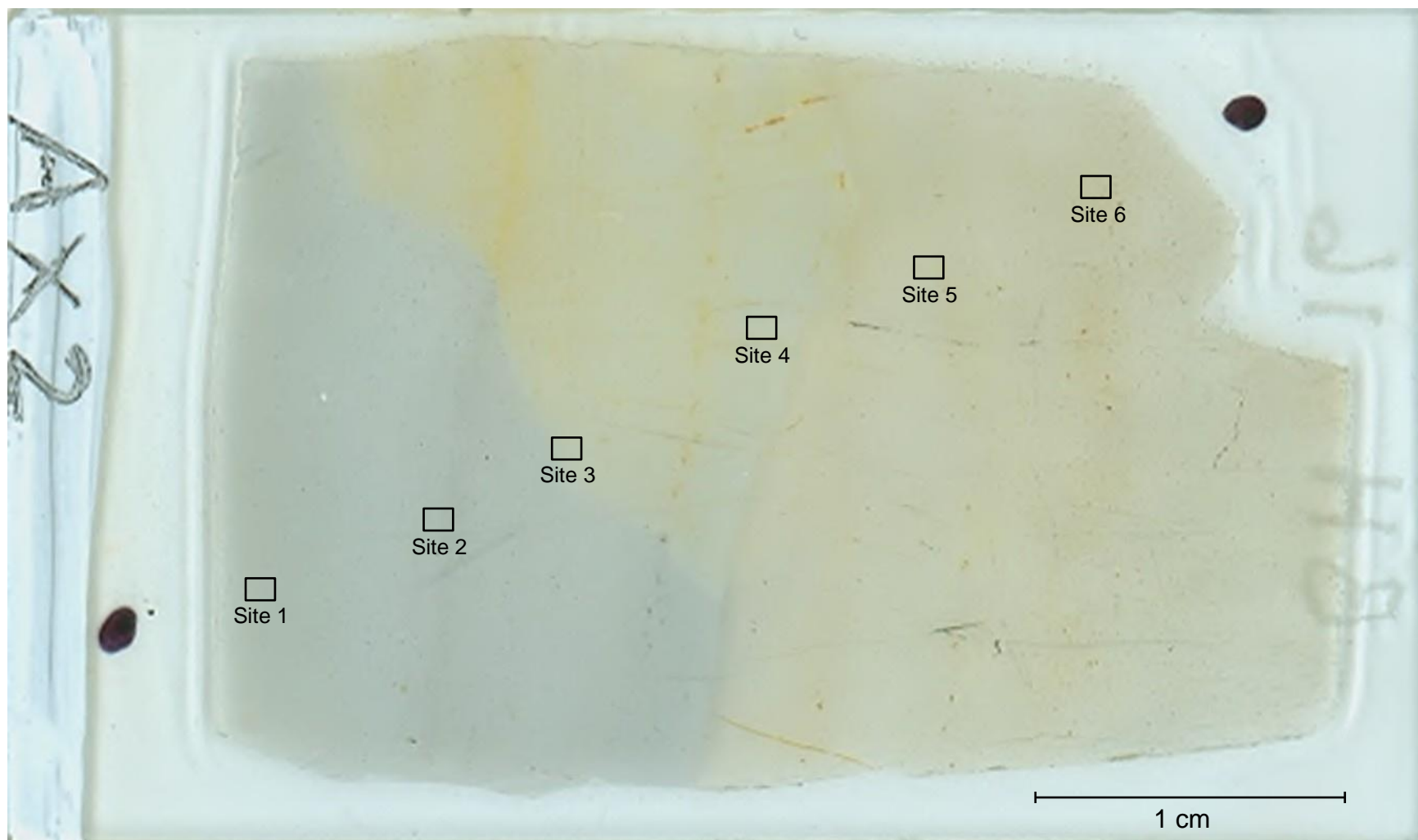
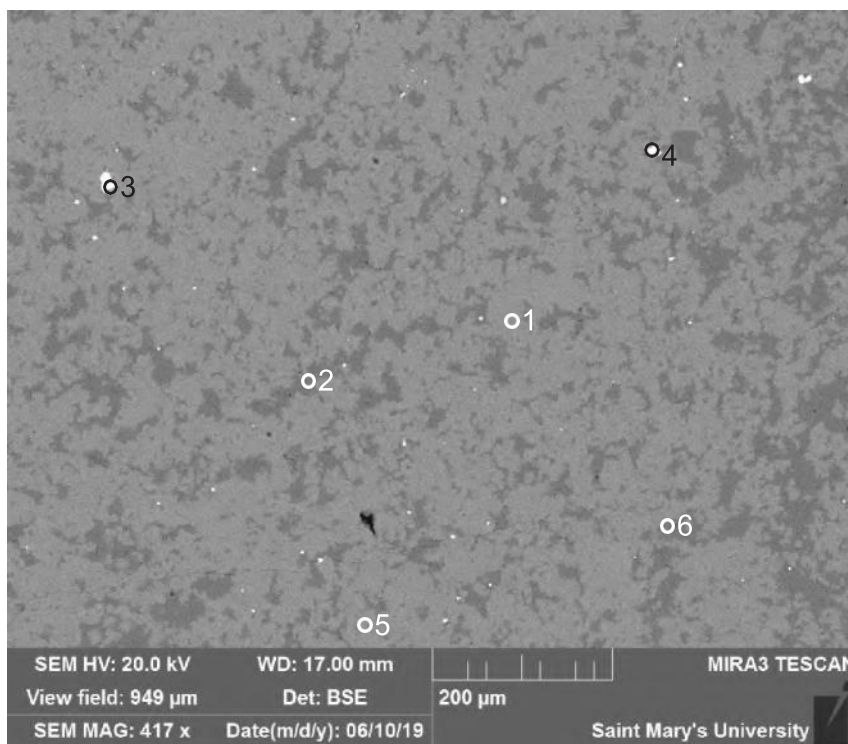
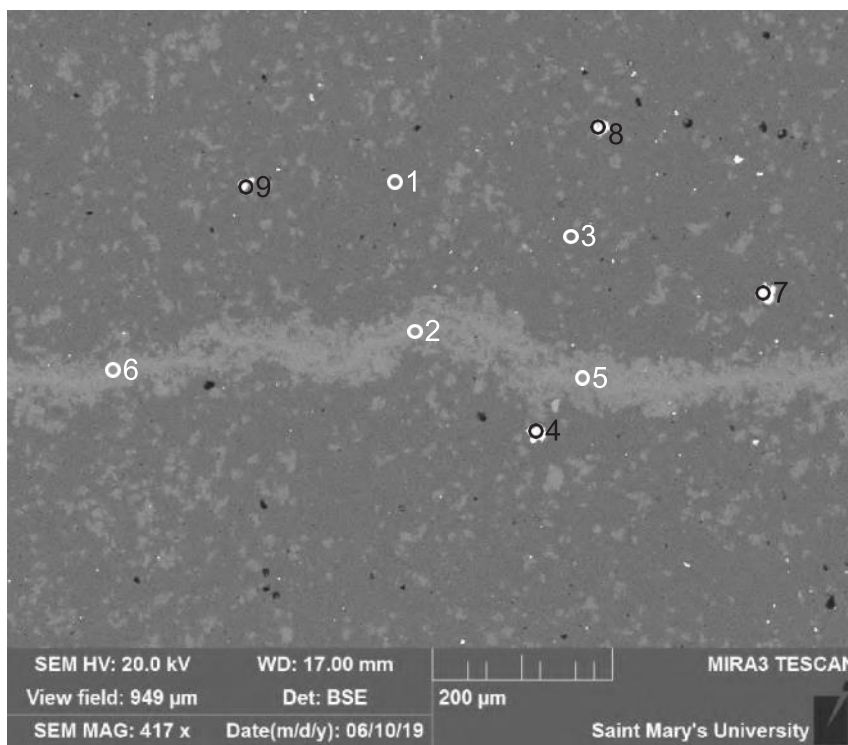


Figure S4.1: AX2 thin section showing respective sites taken for mineral chemical analyses (EDS) via Scanning Electron Microscope (SEM).



- 1: Calcite + Quartz
- 2: Calcite + Quartz
- 3: Pyrite
- 4: Quartz + Calcite
- 5: Calcite + Quartz
- 6: Calcite + Quartz

Figure S4.2: AX2 (SEM) Site 1 (Table S4.1). Mostly calcite mixed with some quartz. A pyrite bleb



- 1: Quartz
- 2: Calcite + Quartz
- 3: Quartz
- 4: Pyrite
- 5: Calcite
- 6: Calcite + Quartz
- 7: Pyrite
- 8: Pyrite + Nickel
- 9: Quartz

Figure S4.3: AX2 (SEM) Site 2 (Table S4.1). Scattered pyrite blebs (4,7,8) in a mixture of quartz (1) and calcite all cut by a calcite vein (2,5,6). There is some porosity.

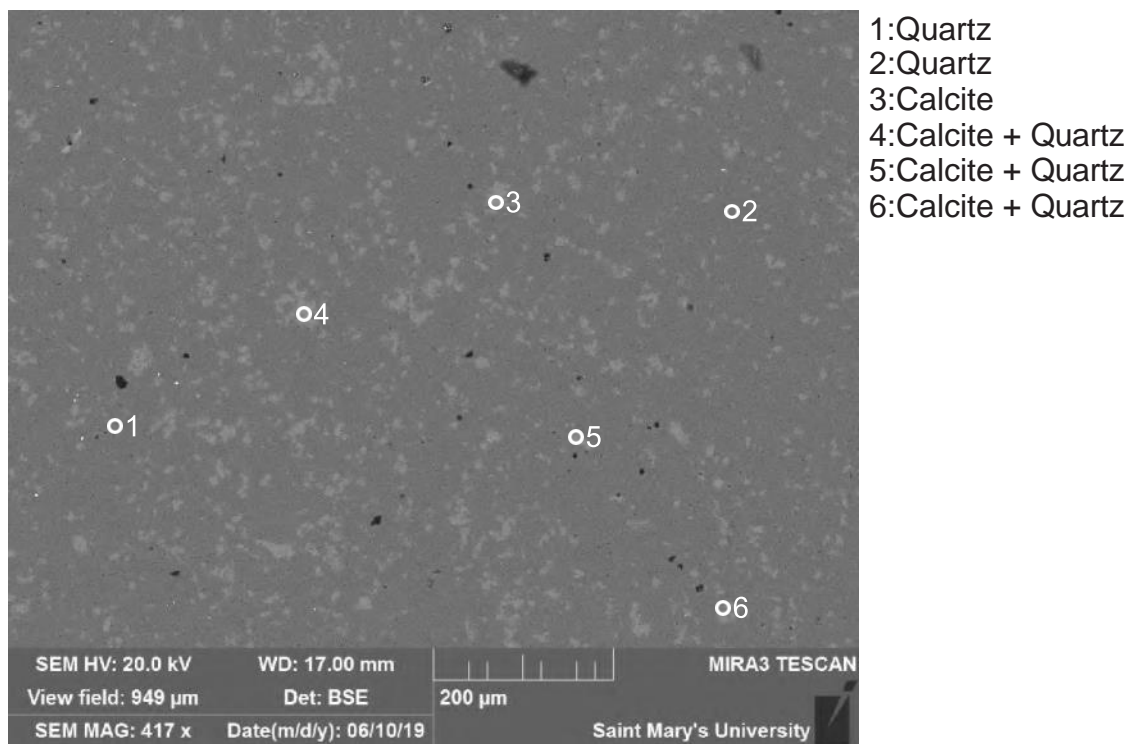


Figure S4.4: AX2 (SEM) Site 3 (Table S4.1). Calcite and quartz mixture.

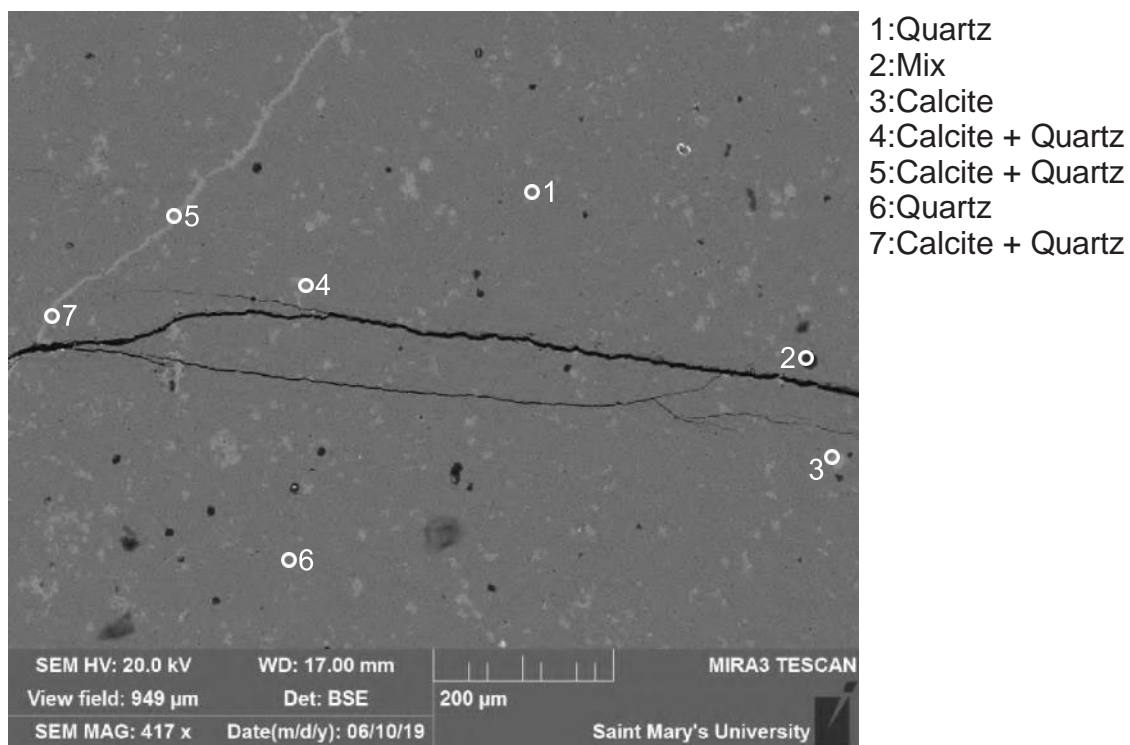


Figure S4.5: AX2 (SEM) Site 4 (Table S4.1). Blebs of calcite in quartz (4,6) cut by calcite veinlet (5,7) and an open fracture.

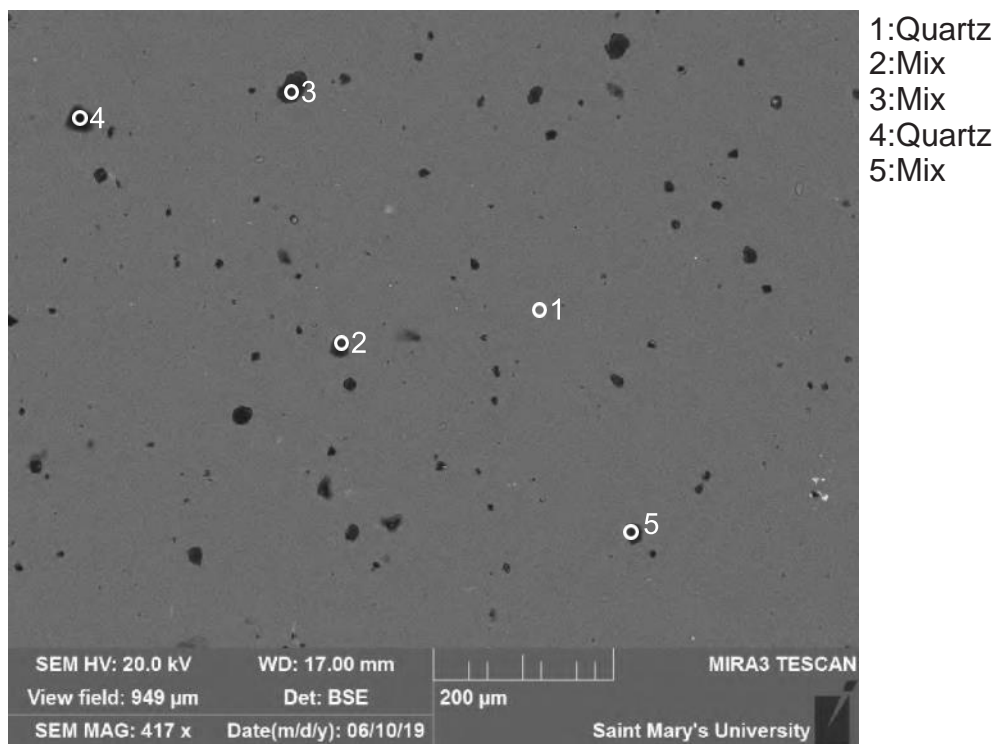


Figure S4.6: AX2 (SEM) Site 5 (Table S4.1). Quartz and high porosity.

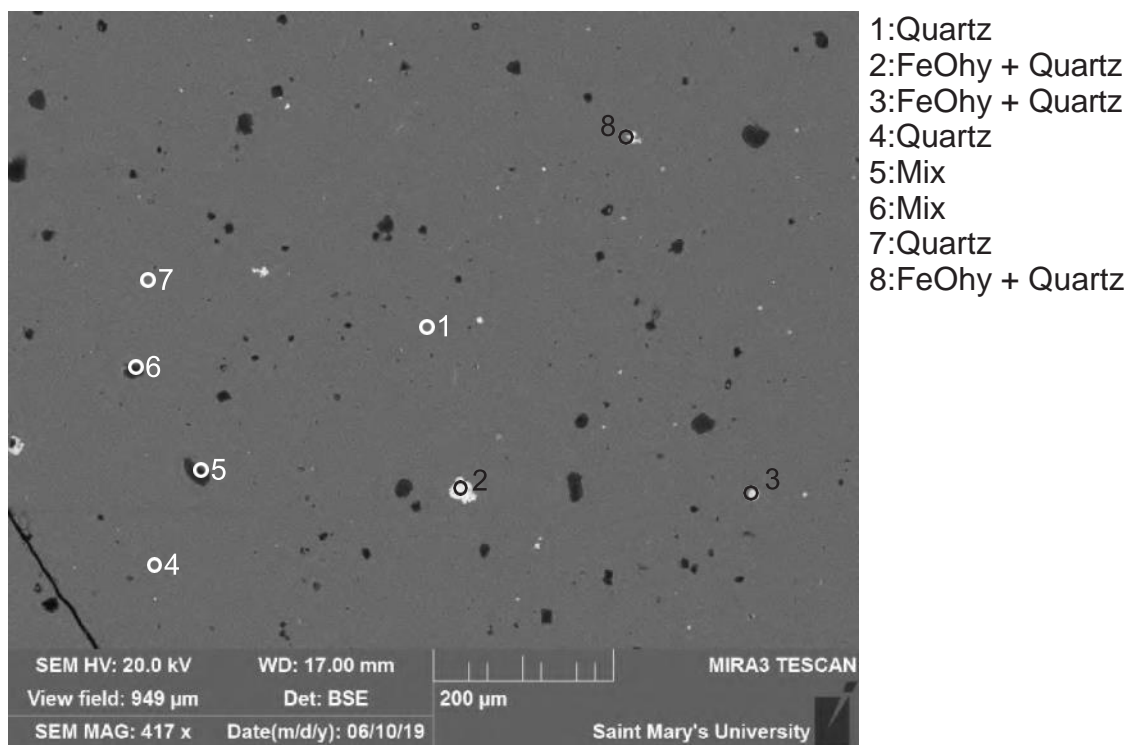


Figure S4.7: AX2 (SEM) Site 6 (Table S4.1). Similar to Fig. 6.

Table S4.1: Scanning Electron Microscope (SEM) mineral chemical analyses (EDS) of AX2.

Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	Cl	NiO	ZnO	Total	Actual Total
1	1	Cal + Qz	13.95					0.64	85.41								100	67
1	2	Cal + Qz	42.03						57.97								100	80
1	3	Py	1.10			29.32	1.02		0.66				67.89				100	213
1	4	Qz + Cal	86.50			0.36			13.14								100	108
1	5	Cal + Qz	21.28					0.76	77.97								100	70
1	6	Cal + Qz	38.69					0.51	60.80								100	80
2	1	Qz	99.39		0.61												100	119
2	2	Cal + Qz	12.37						87.63								100	62
2	3	Qz	98.98		1.02												100	119
2	4	Py	8.25			37.09	0.39		0.65				53.62				100	161
2	5	Cal	0.53					0.78	54.69								56	59
2	6	Cal + Qz	31.21					0.74	68.05								100	69
2	7	Py	0.49			27.72	0.39			0.45			70.95				100	240
2	8	Py + Ni	0.66			28.40			0.90				69.68		0.36		100	218
2	9	Qz	100.00														100	117
3	1	Qz	99.48		0.52												100	114
3	2	Qz	95.40						4.60								100	116
3	3	Cal	1.16					0.67	54.17								56	57
3	4	Cal + Qz	24.37					0.62	75.01								100	66
3	5	Cal + Qz	38.48						61.52								100	75
3	6	Cal + Qz	20.60			1.03		1.08	75.78				1.51				100	70
4	1	Qz	98.49		1.13						0.37						100	112
4	2	Mix	63.63		7.12	3.31		3.40	16.78	3.27	1.23			1.27			100	24
4	3	Cal	1.32						54.68								56	59
4	4	Cal + Qz	48.48			0.78			50.75								100	76
4	5	Cal + Qz	14.30						85.70								100	58
4	6	Qz	98.89						1.11								100	112
4	7	Cal + Qz	16.94					1.02	82.04								100	60
5	1	Qz	100.00														100	113
5	2	Mix	55.56		9.35	13.16		3.81	14.93	1.26	1.14			0.79			100	43
5	3	Mix	67.42		8.77	4.76		4.88	8.12	1.96	1.52		1.69	0.89			100	34
5	4	Qz	97.39						0.40				1.84	0.38			100	71
5	5	Mix	68.40	0.83	5.35	3.83		2.50	15.28	1.80	1.00			1.00			100	36
6	1	Qz	100.00														100	107

Table S4.1: Scanning Electron Microscope (SEM) mineral chemical analyses (EDS) of AX2.

Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	Cl	NiO	ZnO	Total	Actual Total
6	2	FeOhy + Qz	10.22		1.02	85.89			0.98			1.55		0.35			100	72
6	3	FeOhy + Qz	15.57		1.05	81.28			0.93			0.85		0.31			100	75
6	4	Qz	100.00														100	108
6	5	Mix	61.27		6.97	4.48		3.41	17.90	2.14	0.91		2.18	0.75			100	25
6	6	Mix	40.27		5.31	3.40		2.08	25.69	2.01	0.86	18.14	1.72	0.53			100	30
6	7	Qz	100.00														100	106
6	8	FeOhy + Qz	30.71		0.80	65.89			0.63			0.85		0.34		0.78	100	77

Supplementary Material S5: SEM-BSE images and Electron Dispersive Spectroscopy (EDS) mineral analyses for sample AX3.

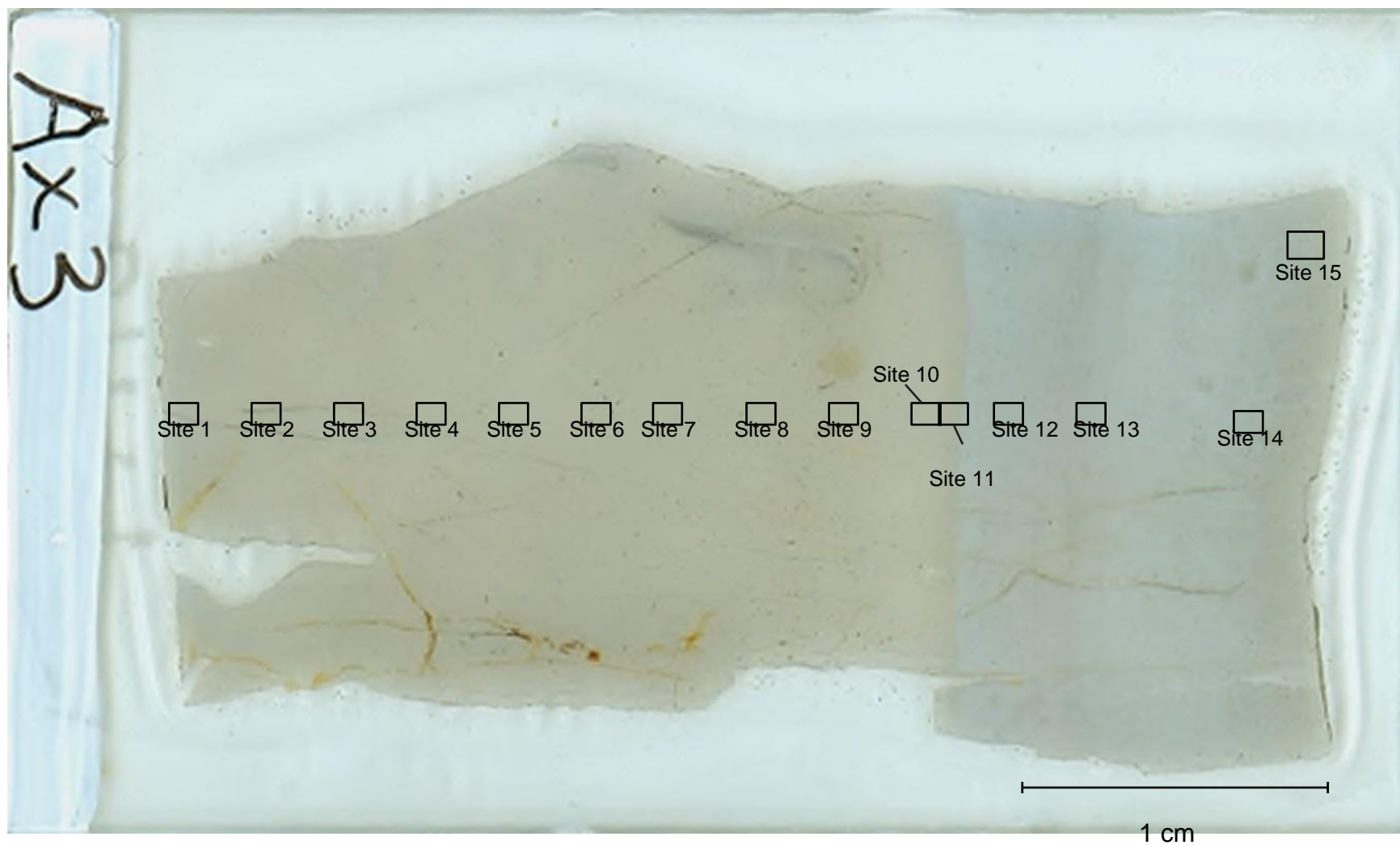


Figure S5.1: AX3 thin section showing respective sites taken for mineral chemical analyses (EDS) via Scanning Electron Microscope (SEM).

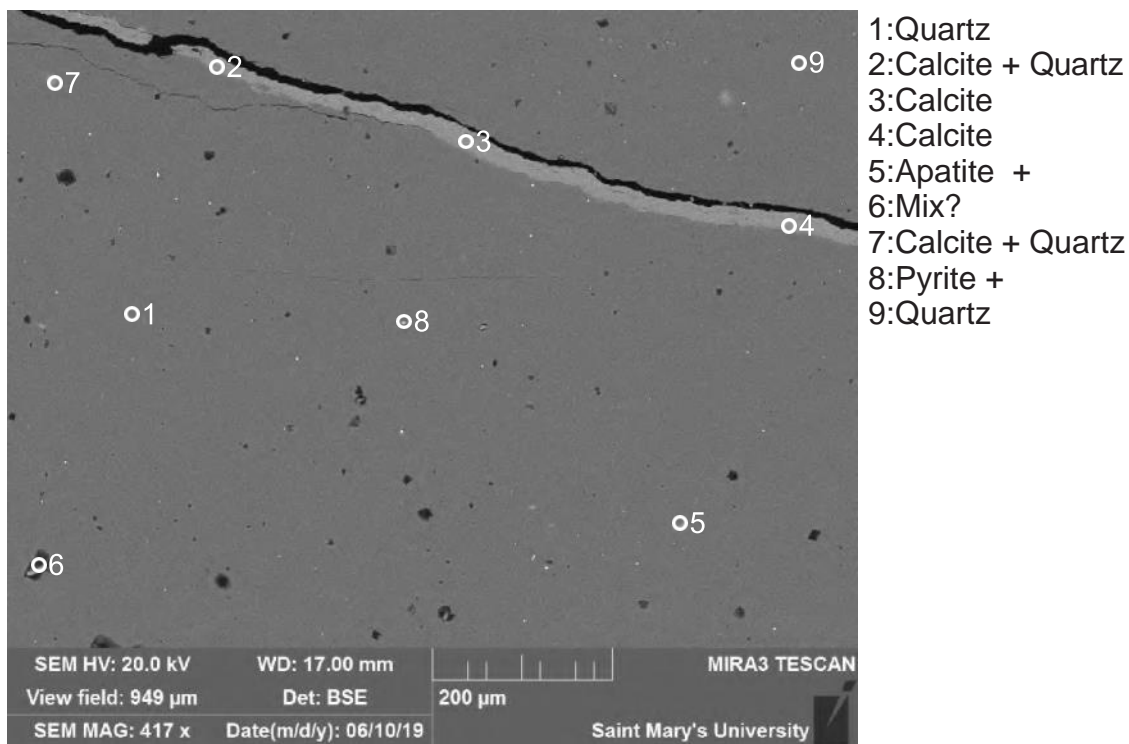


Figure S5.2: AX3 (SEM) Site 1 (Table S5.1). Blebs of apatite (5), and pyrite (8) in quartz, all cut by calcite vein (2-4). Some porosity.

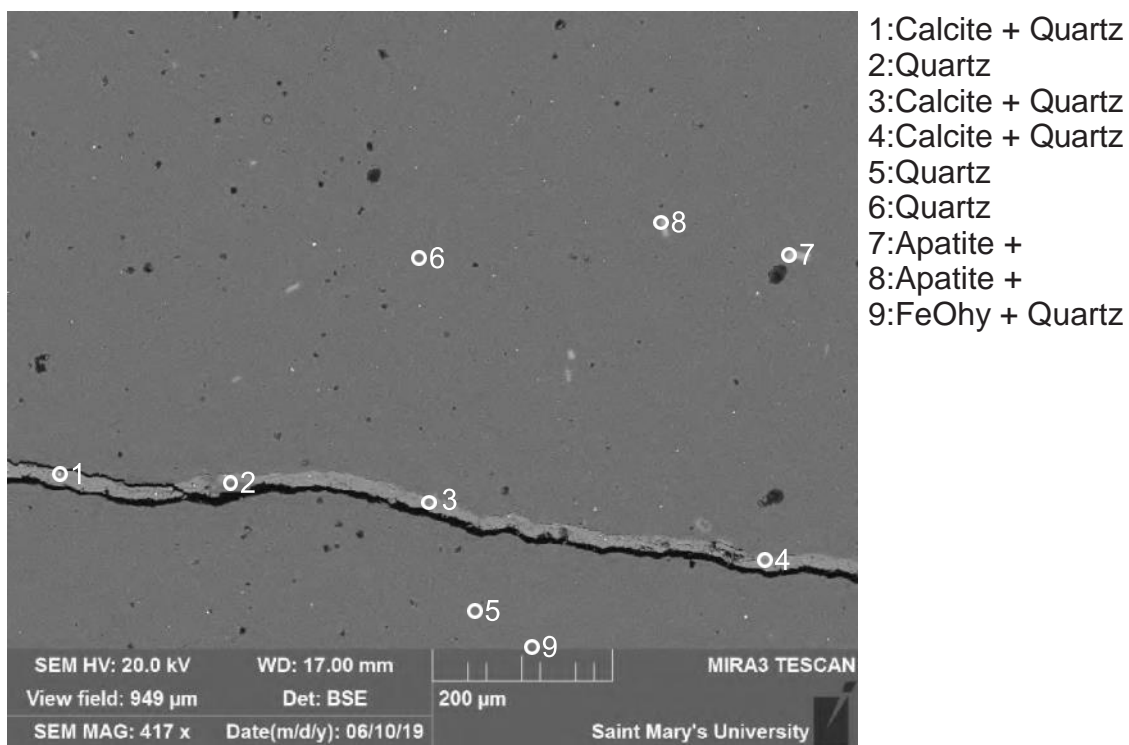
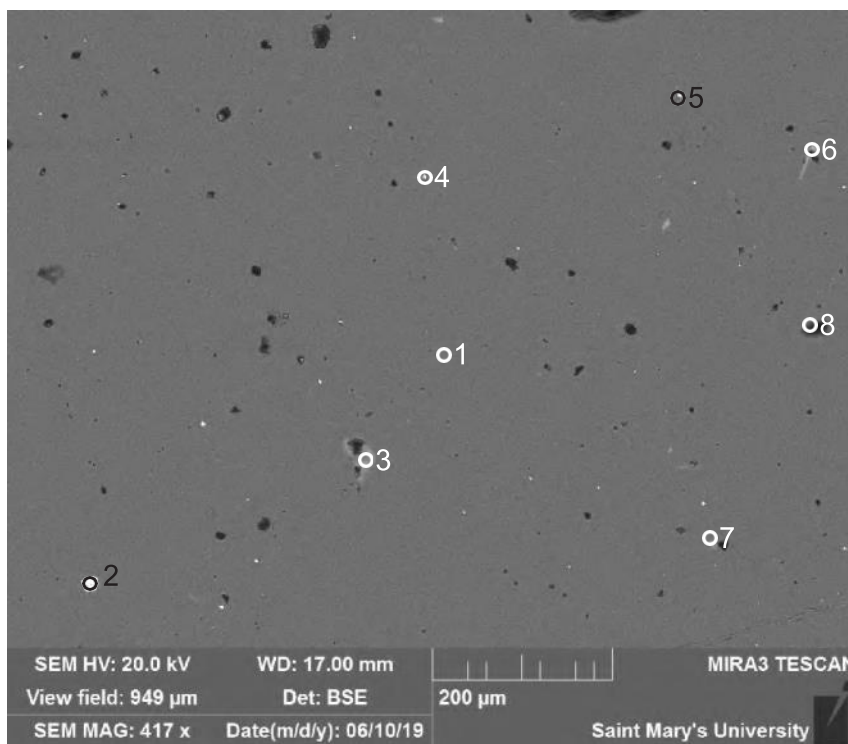
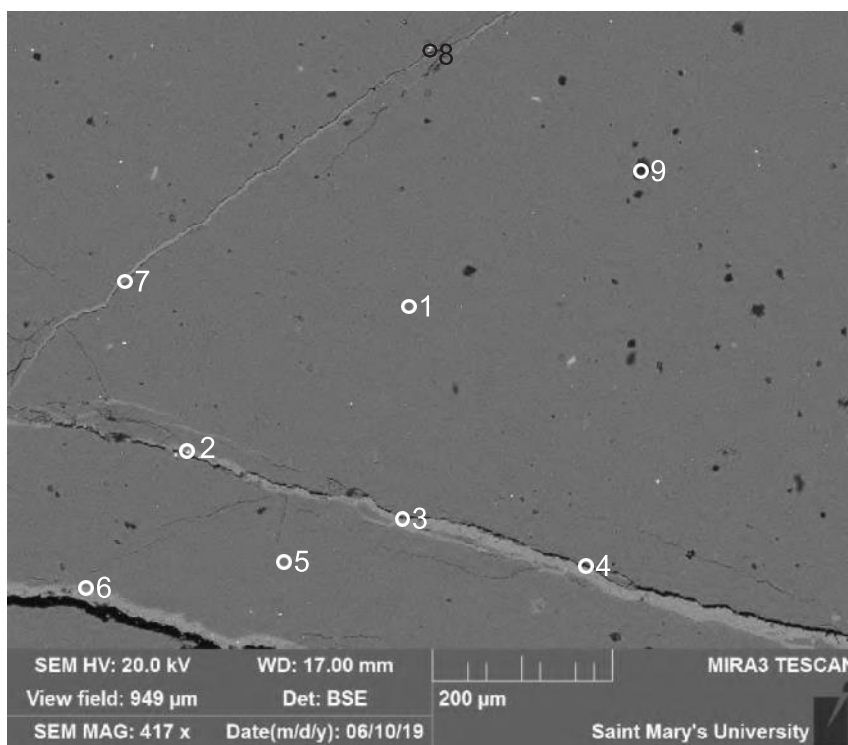


Figure S5.3: AX3 (SEM) Site 2 (Table S5.1). Similar to Fig. 2. Some porosity.



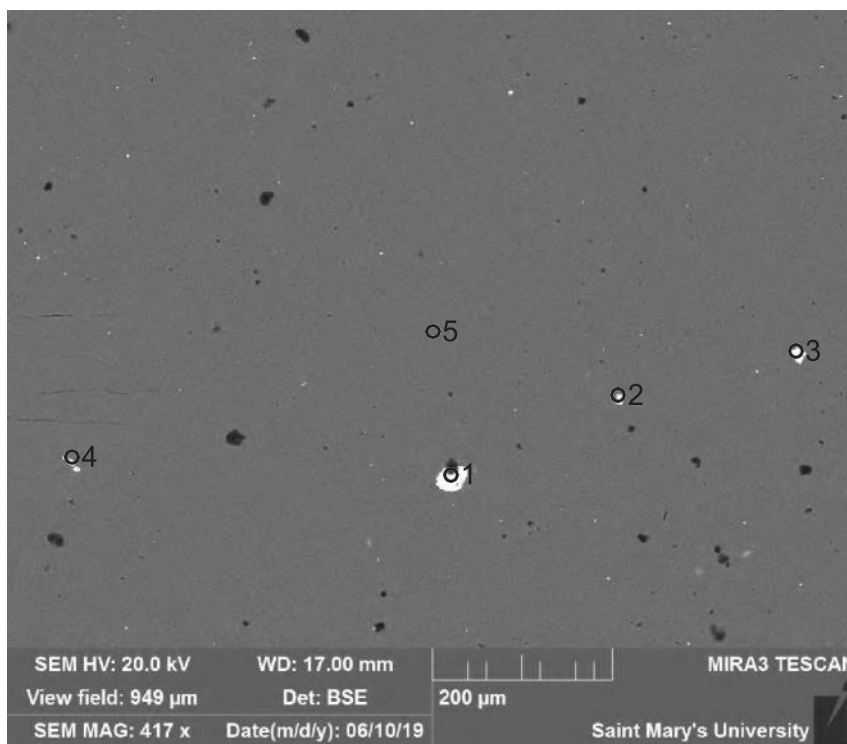
- 1:Quartz
- 2:Pyrite
- 3:Apatite +
- 4:Pyrite +
- 5:Pyrite +
- 6:Apatite +
- 7:Apatite +
- 8:Quartz

Figure S5.4: AX3 (SEM) Site 3 (Table S5.1). Blebs of apatite (3,6,7) associated with voids (3,6), pyrite also associated with void (5) all in quartz. Good porosity.



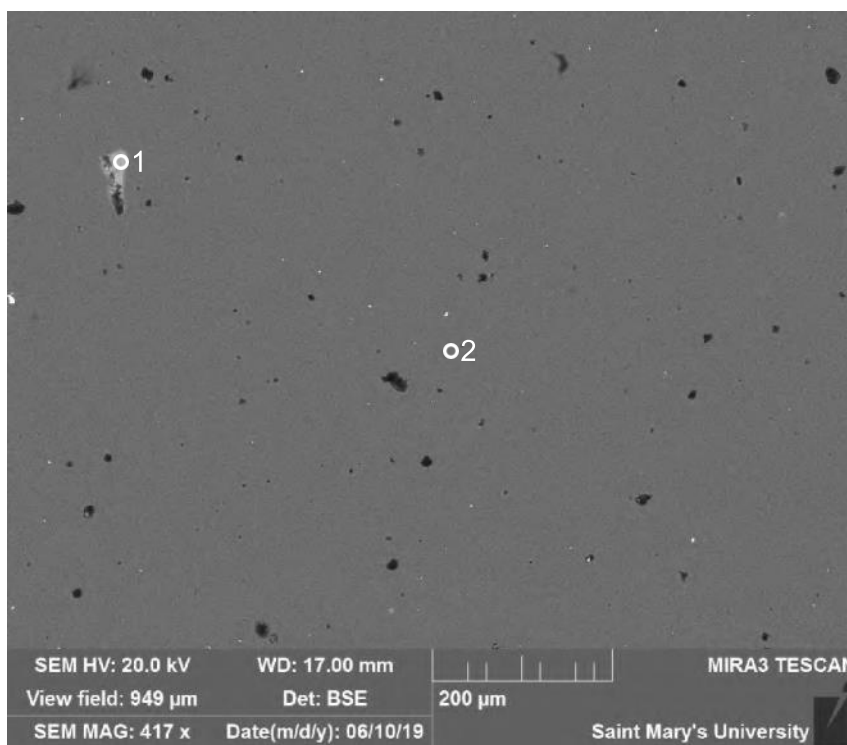
- 1:Quartz
- 2:Pyrite +
- 3:Calcite +
- 4:Calcite
- 5:Quartz
- 6:Calcite + Quartz
- 7:Calcite + Quartz
- 8:Pyrite + Quartz
- 9:Hole

Figure S5.5: AX3 (SEM) Site 4 (Table S5.1). Three calcite veins cutting quartz. Pyrite blebs appear to be associated with the calcite veins (2,8). Inhomogeneous distribution of porosity.



- 1:Pyrite + Cobalt + Nickel +
- 2:Pyrite +
- 3:Pyrite + Cobalt + Nickel +
- 4:Pyrrhotite + Quartz
- 5:Quartz

Figure S5.6: AX3 (SEM) Site 5 (Table S5.1). Scattered blebs of pyrite (1-3) and pyrrhotite (4) in quartz (5). Two pyrite analyses (1,3) contain significant (up to 4%) NiO.



- 1:Apatite +
- 2:Quartz

Figure S5.7: AX3 (SEM) Site 6 (Table S5.1). Apatite (1) filling a void in quartz (2).

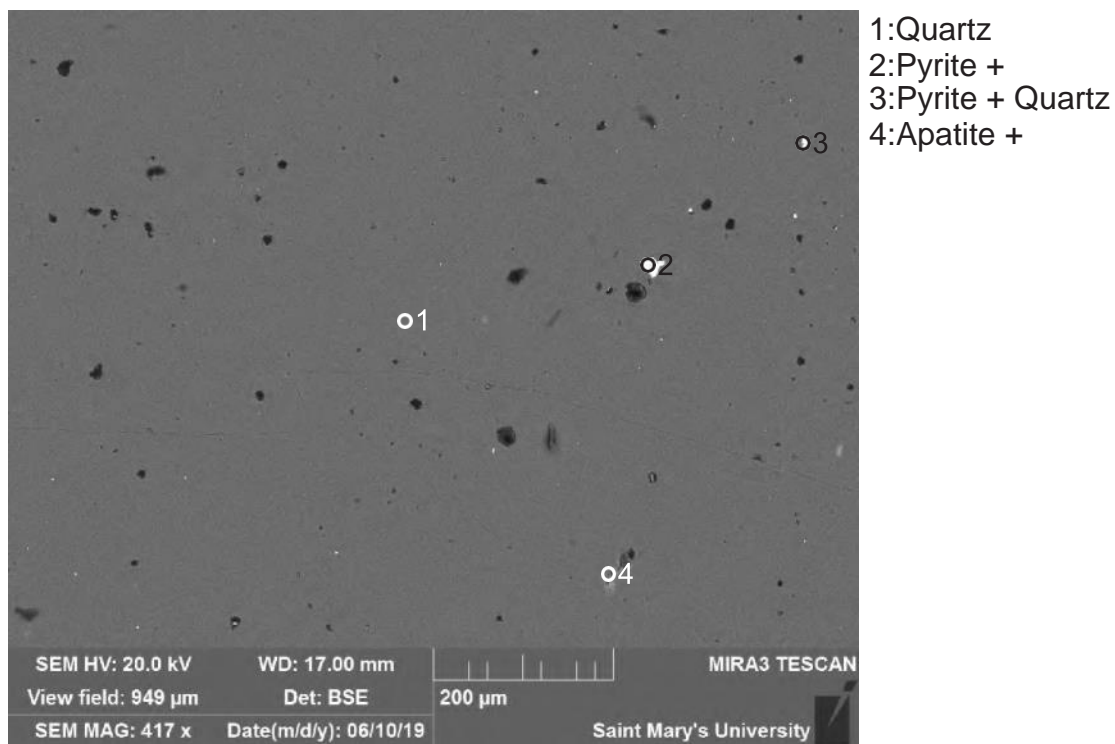


Figure S5.8: AX3 (SEM) Site 7 (Table S5.1). Similar to Fig. 4.

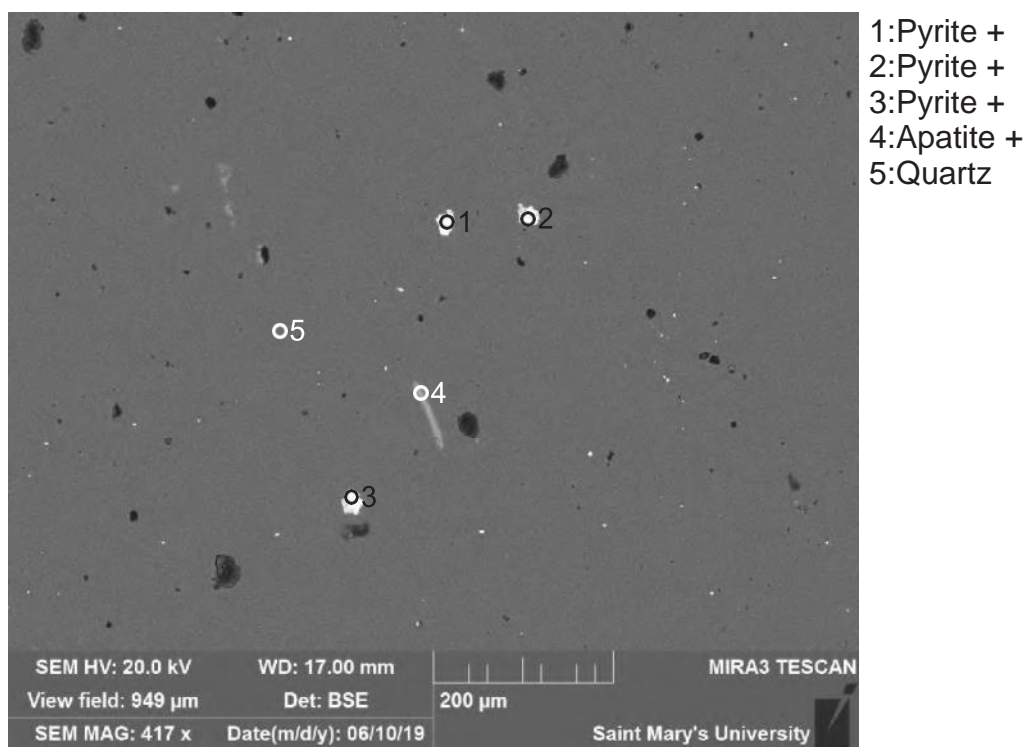


Figure S5.9: AX3 (SEM) Site 8 (Table S5.1). Similar to Fig. 4.

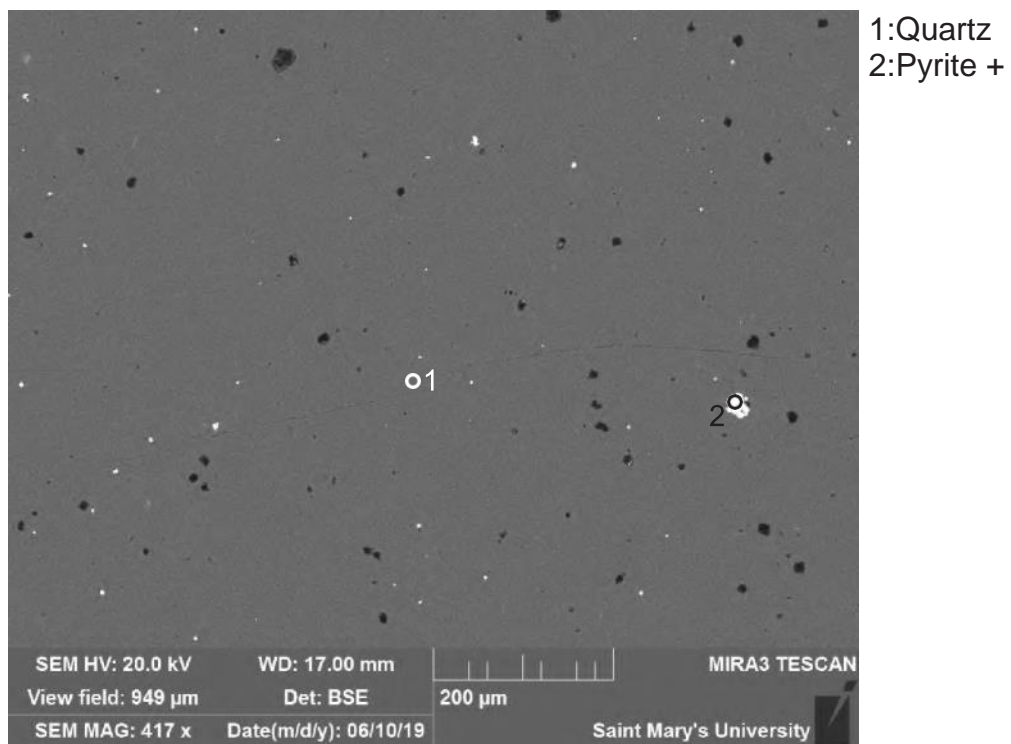


Figure S5.10: AX3 (SEM) Site 9 (Table S5.1). Pyrite (2) bleb in quartz (1).

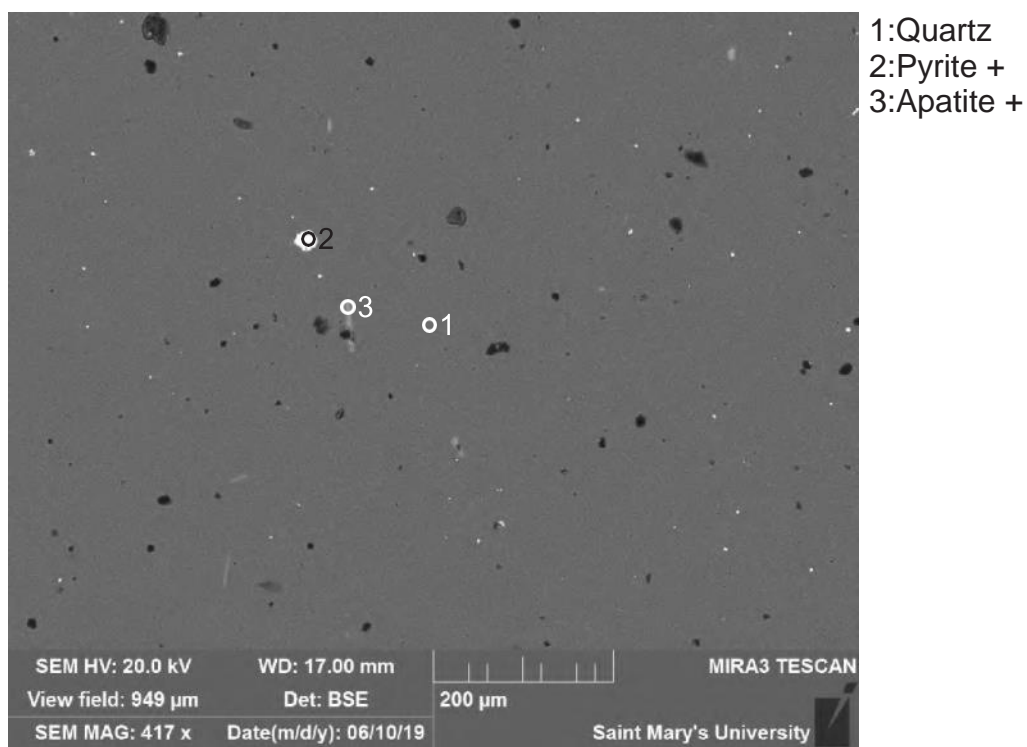


Figure S5.11: AX3 (SEM) Site 10 (Table S5.1). Similar to Fig. 4.

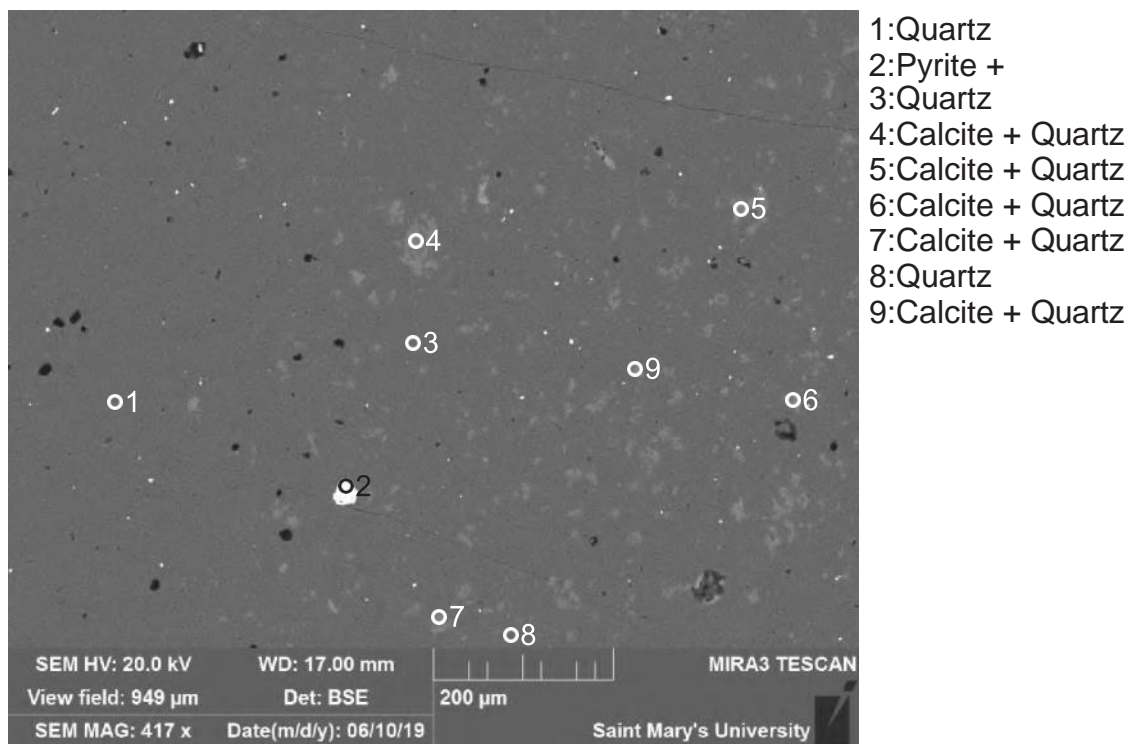


Figure S5.12: AX3 (SEM) Site 11 (Table S5.1). Mixture of quartz and calcite (4-7,9) with a pyrite (2) bleb.

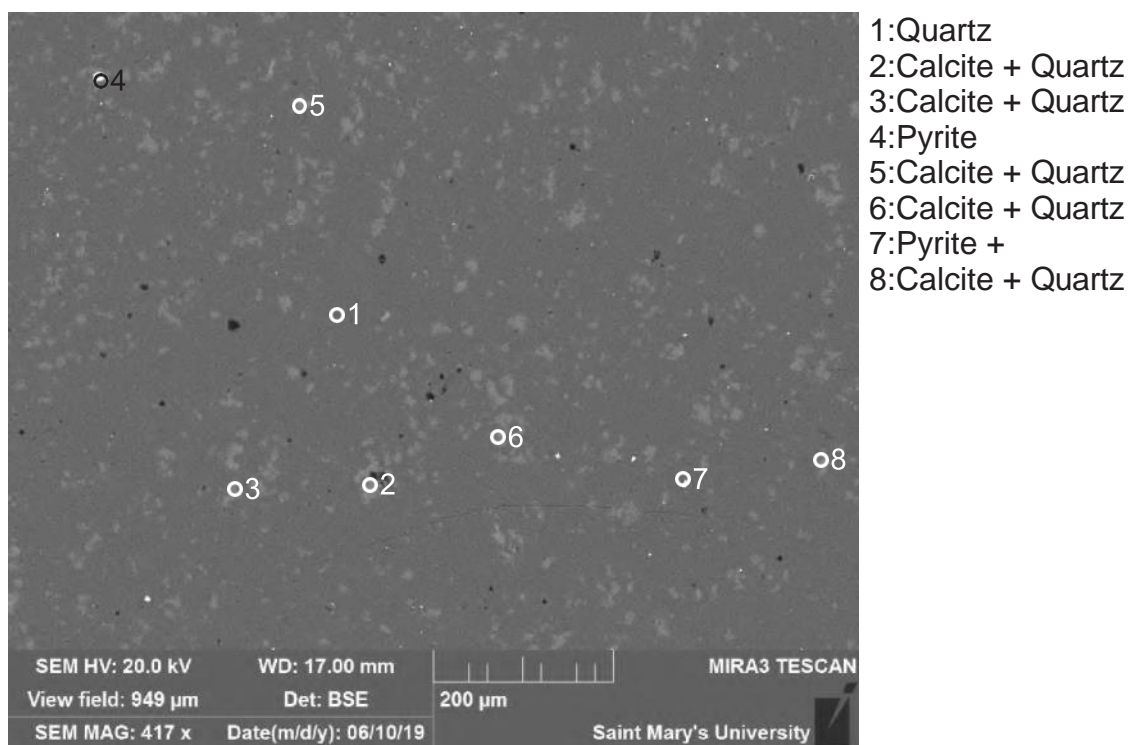
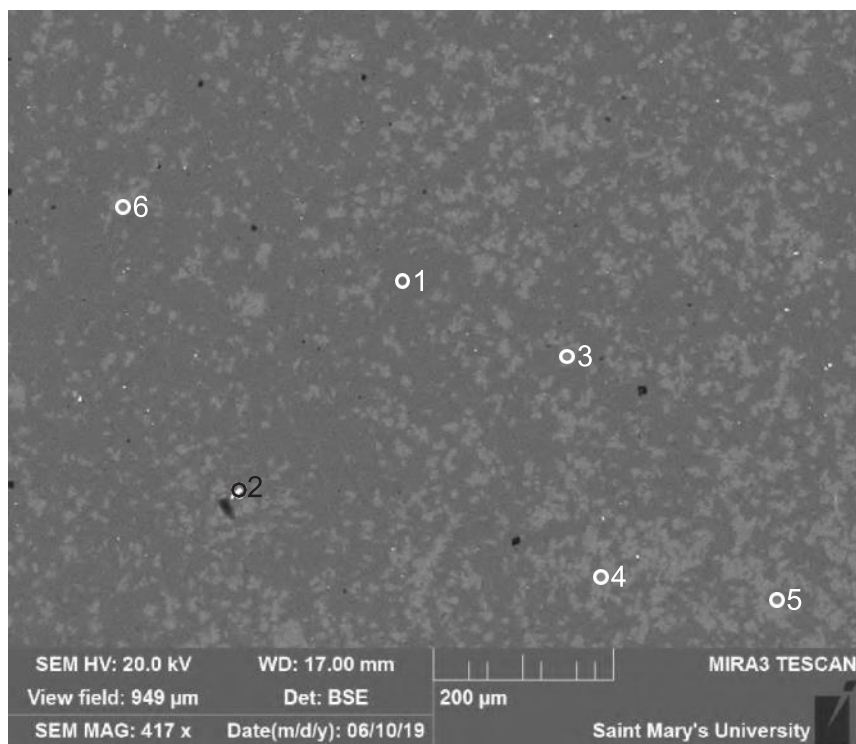
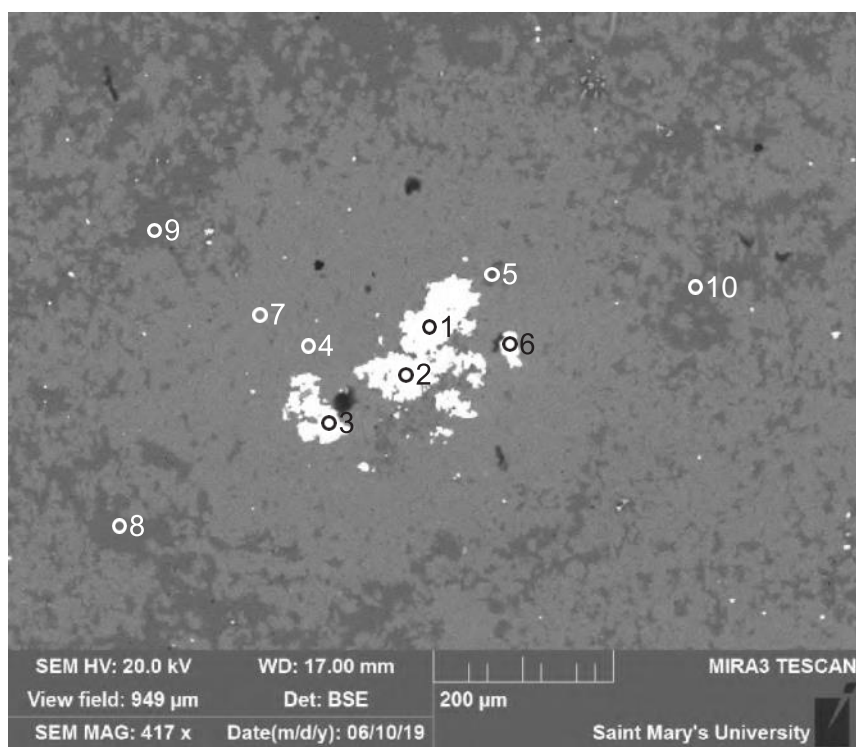


Figure S5.13: AX3 (SEM) Site 12 (Table S5.1). Similar to Fig. 12.



- 1:Quartz
- 2:Zinc oxide + Quartz
- 3:Calcite + Quartz
- 4:Quartz + Calcite
- 5:Calcite + Quartz
- 6:Calcite + Quartz

Figure S5.14: AX3 (SEM) Site 13 (Table S5.1). Mixture of quartz and calcite (3-6) with ZnO in void (2).



- 1:Barite
- 2:Barite
- 3:Barite
- 4:Calcite + Quartz
- 5:Calcite + Quartz
- 6:Barite
- 7:Calcite + Quartz
- 8:Quartz
- 9:Quartz
- 10:Quartz

Figure S5.15: AX3 (SEM) Site 14 (Table S5.1). Barite (1-3,6) crystal aggregate in an almost homogeneous large area of calcite (4,7).

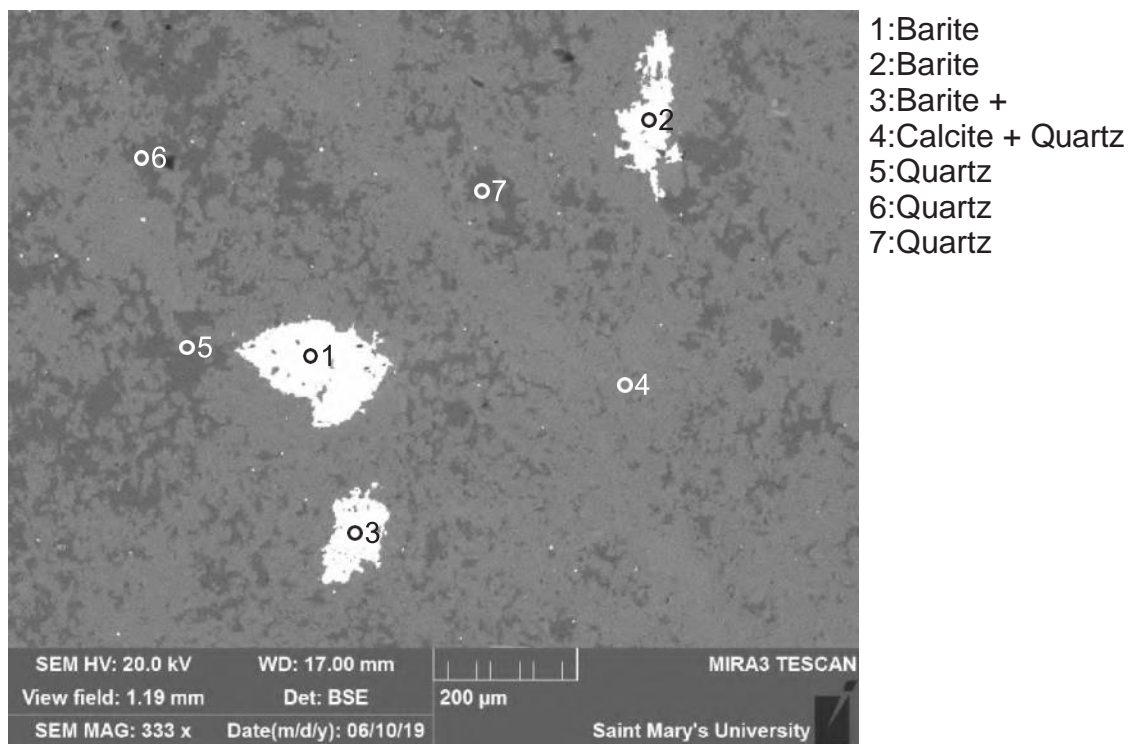


Figure S5.16: AX3 (SEM) Site 15 (Table S5.1). Similar to Fig.15.

Table S5.1: Scanning Electron Microscope (SEM) mineral chemical analyses (EDS) of AX3.

Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	CoO	NiO	CuO	ZnO	As2O3	ZrO2	BaO	WO3	PtO2	Total	Actual Total
1	1	Qz	100.00																						100	116
1	2	Cal + Qz	19.42	2.51	3.43	0.81		0.91	72.09		0.82														100	66
1	3	Cal	0.82					0.65	54.53																100	57
1	4	Cal	0.99					0.60	54.41																100	59
1	5	Ap +	27.58						36.47	0.84		27.98	2.26	4.62	0.24										100	111
1	6	Mix?	49.37	0.54	12.65	13.44	0.37	10.82	10.47	1.89	0.45														100	117
1	7	Cal + Qz	3.90						96.10																100	55
1	8	Py +	18.60			28.87			0.22				51.99					0.32							100	186
1	9	Qz	100.00																						100	118
2	1	Cal + Qz	3.47					2.60	93.92																100	56
2	2	Qz	100.00																						100	118
2	3	Cal + Qz	2.63					1.39	95.98																100	58
2	4	Cal + Qz	2.79					3.07	94.14																100	61
2	5	Qz	100.00																						100	121
2	6	Qz	100.00																						100	117
2	7	Ap +	1.07						47.80	1.11		38.73	2.41	7.12	0.38								1.38		100	109
2	8	Ap +	7.29						46.29	1.08		36.79	2.46	5.71	0.39										100	108
2	9	FeOhy + Qz	25.40			72.07	0.87		0.74						0.31			0.60							100	96
3	1	Qz	100.00																						100	117
3	2	Py	0.53			26.99	0.81			0.30			71.02				0.34								100	218
3	3	Ap +	44.12						28.45	0.57		23.17	0.90	2.78											100	108
3	4	Py +	13.90			30.15							55.95												100	179
3	5	Py +	5.90			51.12			0.55	0.44			41.98												100	132
3	6	Ap +	19.89						38.98	1.08		32.39	2.34	5.03	0.28										100	112
3	7	Ap +	20.05						39.60	0.89		32.35	2.25	4.64	0.24										100	123
3	8	Qz	96.56						0.28	0.63	0.37		1.53		0.63										100	79
4	1	Qz	100.00																						100	115
4	2	Py +	8.09	0.99	0.89	33.96	0.54		13.41		0.24		40.99				0.89								100	119
4	3	Cal +	15.67		3.77	0.88		1.67	76.73		1.28														100	65
4	4	Cal	0.91					0.69	54.40																100	58
4	5	Qz	100.00																						100	115
4	6	Cal + Qz	3.22					0.76	96.02																100	54
4	7	Cal + Qz	5.34					0.95	93.71																100	56
4	8	Py + Qz	23.92			24.15	0.47		0.35				48.99				0.34	0.64						1.14	100	163
4	9	Hole	42.07		8.01	6.76		5.40	8.07				15.53		1.69				12.48						100	18
5	1	Py + Co + Ni +	1.17			31.25				0.92			59.90			4.05	2.72								100	174
5	2	Py +	1.58			36.38				0.56			60.70						0.78						100	183
5	3	Py + Co + Ni +	4.60			37.59			0.55	0.49			53.83			1.80	1.13								100	152
5	4	Po + Qz	15.64			56.23							28.13												100	107
5	5	Qz	100.00																						100	114
6	1	Ap +	0.97		0.97	2.84			43.53	1.34		41.09	2.24	5.43	0.24								1.35		100	101
6	2	Qz	98.44			0.60							0.96												100	115
7	1	Qz	100.00																						100	113
7	2	Py +	1.05		0.42	39.09	0.39			1.55			57.50												100	158
7	3	Py + Qz	46.06			21.02							32.92												100	134
7	4	Ap +	28.55		1.33	1.33			31.12	1.38		30.25	1.72	4.14	0.19										100	115
8	1	Py +	1.32			28.83	0.34		0.27	0.50	0.23		68.52												100	198
8	2	Py +	0.80			27.74	0.24		1.92	0.47			68.84												100	190
8	3	Py +	0.81			29.97			0.59	0.49	0.26		67.88												100	197
8	4	Ap +	2.90		3.14	2.69			40.65	1.22		41.95	2.33	5.13											100	106
8	5	Qz	100.00																						100	112

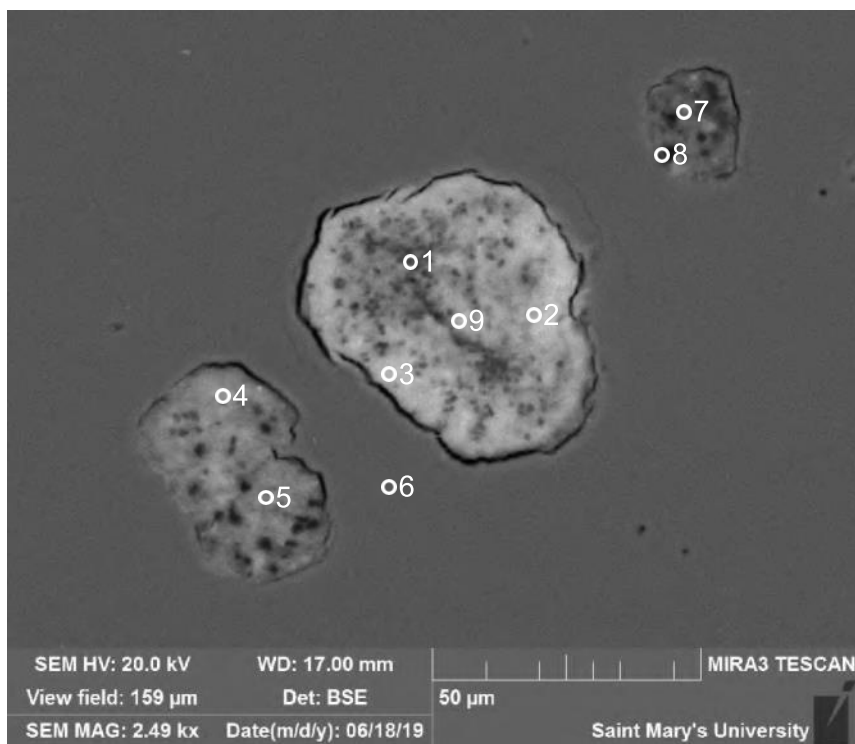
Table S5.1: Scanning Electron Microscope (SEM) mineral chemical analyses (EDS) of AX3.

Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	CoO	NiO	CuO	ZnO	As2O3	ZrO2	BaO	WO3	PtO2	Total	Actual Total
9	1	Qz	99.40			0.60																			100	111
9	2	Py +	3.36		1.05	41.24				0.68	0.32		53.35												100	155
10	1	Qz	100.00																						100	111
10	2	Py +	0.48			26.88				1.37			70.83				0.44								100	203
10	3	Ap +	5.13		0.69	0.61			45.57	0.97		39.12	2.09	5.83											100	99
11	1	Qz	100.00																						100	106
11	2	Py +	0.48			27.39	0.22		1.23	0.39			70.29												100	202
11	3	Qz	100.00																						100	110
11	4	Cal + Qz	40.36					1.18	58.46																100	69
11	5	Cal + Qz	11.77						88.23																100	57
11	6	Cal + Qz	39.83		0.66	0.49		0.67	58.34																100	71
11	7	Cal + Qz	11.05						88.95																100	58
11	8	Qz	100.00																						100	113
11	9	Cal + Qz	2.63			0.76	0.63	0.67	95.30																100	54
12	1	Qz	99.39		0.61																				100	109
12	2	Cal + Qz	20.58		2.97	0.74		4.44	70.47		0.79														100	61
12	3	Cal + Qz	29.29					1.27	69.43																100	63
12	4	Py	0.55			27.44	0.30		0.48	0.33			70.90												100	195
12	5	Cal + Qz	3.28					0.78	95.94																100	51
12	6	Cal + Qz	34.50					0.78	64.72																100	68
12	7	Py +	30.09			25.51			0.53	0.34			43.54												100	148
12	8	Cal + Qz	3.33					1.25	95.42																100	55
13	1	Qz	100.00																						100	107
13	2	ZnO + Qz	24.26		1.12				0.61										74.01						100	133
13	3	Cal + Qz	6.08						93.92																100	55
13	4	Qz + Cal	56.36					0.47	43.17																100	81
13	5	Cal + Qz	18.16					1.35	80.49																100	61
13	6	Cal + Qz	28.05					0.97	70.99																100	60
14	1	Br											36.47			-0.22						63.75			100	102
14	2	Br	4.60		1.17					2.47	1.83		30.22		1.77	-0.01					4.27	53.67			100	107
14	3	Br	2.91						0.46				35.54			0.10						60.99			100	104
14	4	Cal + Qz	25.04		0.68	0.63		1.20	72.46																100	59
14	5	Cal + Qz	12.33					0.92	82.16	1.59	1.08		1.06		0.86										100	49
14	6	Br							0.72				36.44			-0.17						63.02			100	103
14	7	Cal + Qz	13.77					0.64	85.58																100	55
14	8	Qz	99.65						0.35																100	103
14	9	Qz	99.79						0.21																100	101
14	10	Qz	97.52						2.48																100	106
15	1	Br	1.17										36.45									62.38			100	103
15	2	Br	13.60										30.72			-0.10						55.78			100	104
15	3	Br +	13.68						0.64				30.76			-0.07						54.99			100	107
15	4	Cal + Qz	49.58					0.51	49.91																100	75
15	5	Qz	99.73						0.27																100	104
15	6	Qz	99.59						0.41																100	102
15	7	Qz	99.50						0.50																100	106

Supplementary Material S6: SEM-BSE images and Electron Dispersive Spectroscopy (EDS) mineral analyses for sample AX1B (Zoom).

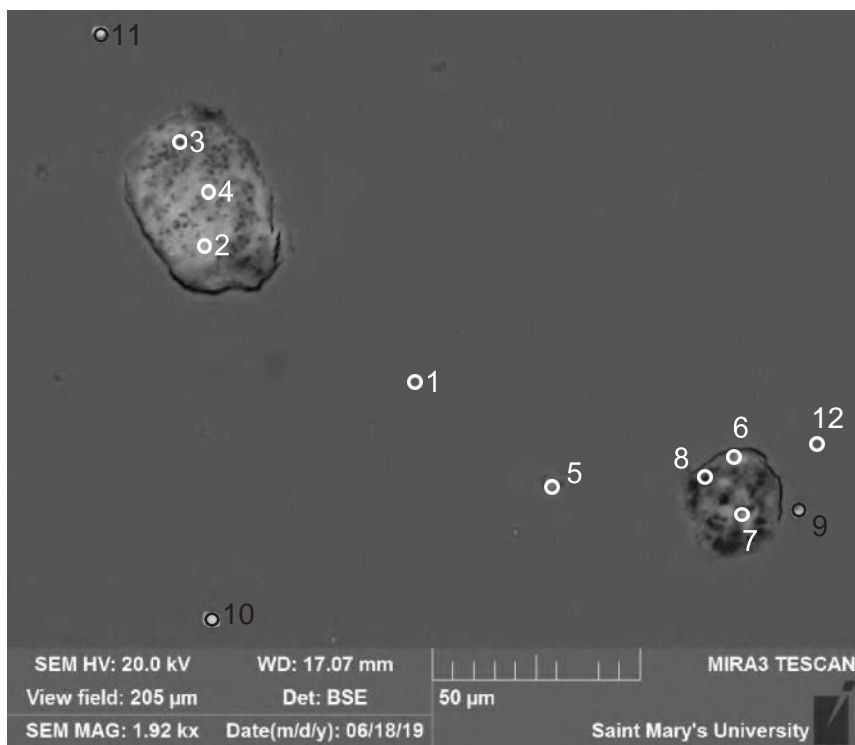


Figure S6.1: AX1B thin section showing respective sites taken for mineral chemical analyses (EDS) via Scanning Electron Microscope (SEM) (zooms in Appendix A1).



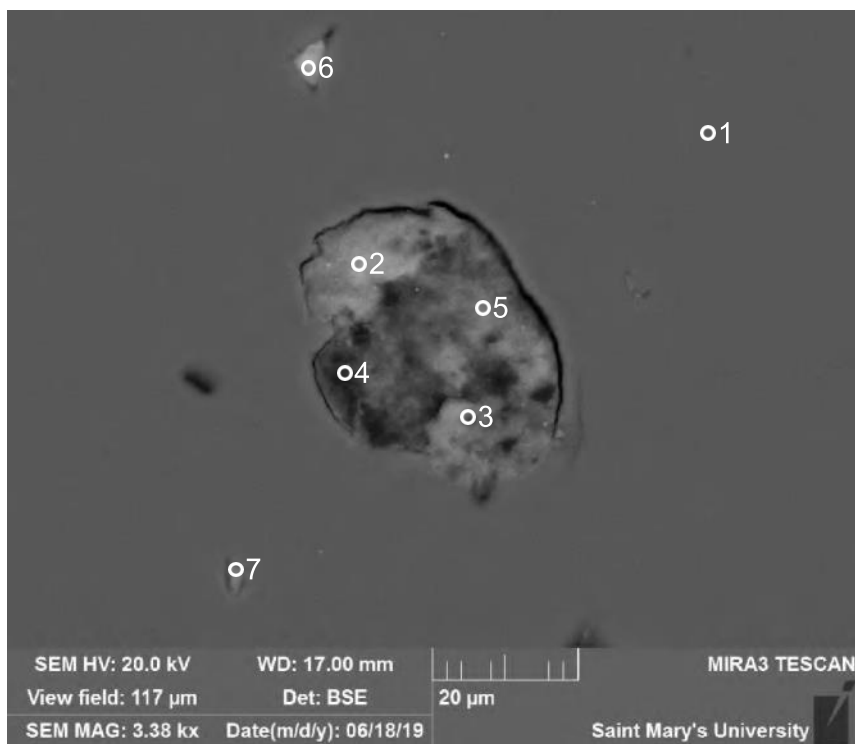
- 1:"Sphalerite" +
- 2:"Sphalerite" +
- 3:"Sphalerite" +
- 4:"Sphalerite" +
- 5:"Sphalerite" +
- 6:Quartz
- 7:"Sphalerite" +
- 8:"Sphalerite" +
- 9:"Sphalerite" +

Figure S6.2: AX1B (SEM) Site 5, Position 4,10 from Appendix S6 (AX1B), (Table A6.1). Voids in silica concretion filled with "sphalerite", clay, and probably calcite.



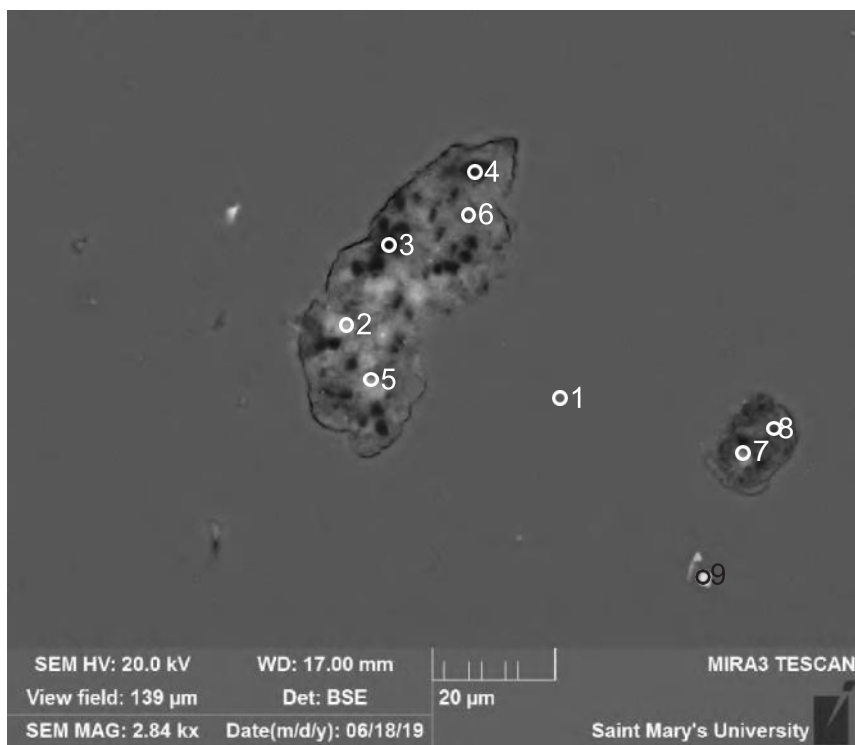
- 1:Quartz
- 2:"Sphalerite" +
- 3:"Sphalerite" +
- 4:"Sphalerite" +
- 5:"Sphalerite" + Quartz +
- 6:"Sphalerite" +
- 7:"Sphalerite" +
- 8:"Sphalerite" +
- 9:FeOhy + Quartz
- 10:FeOhy +
- 11:FeOhy +
- 12:Quartz

Figure S6.3: AX1B (SEM) Site 5, Position 7 from Appendix A6 (AX1B), (Table S6.1). The minerals present in the large voids (2-4,6-8) are similar to those in the voids of Fig. S6.1. However there are also smaller voids (9-11) filled only with goethite.



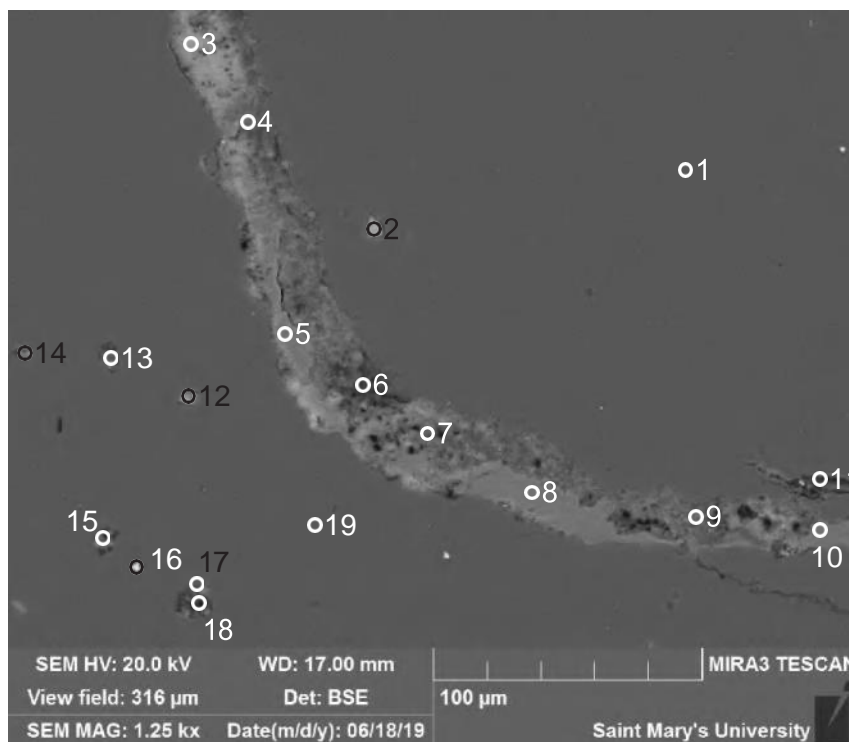
- 1: Quartz
- 2: "Sphalerite" +
- 3: "Sphalerite" +
- 4: "Sphalerite" +
- 5: "Sphalerite" +
- 6: "Sphalerite" +
- 7: "Sphalerite" + Quartz +

Figure S6.4: AX1B (SEM) Site 6, Position 7 from Appendix A6 (AX1B), (Table S6.1). Similar to Fig. A6.1.



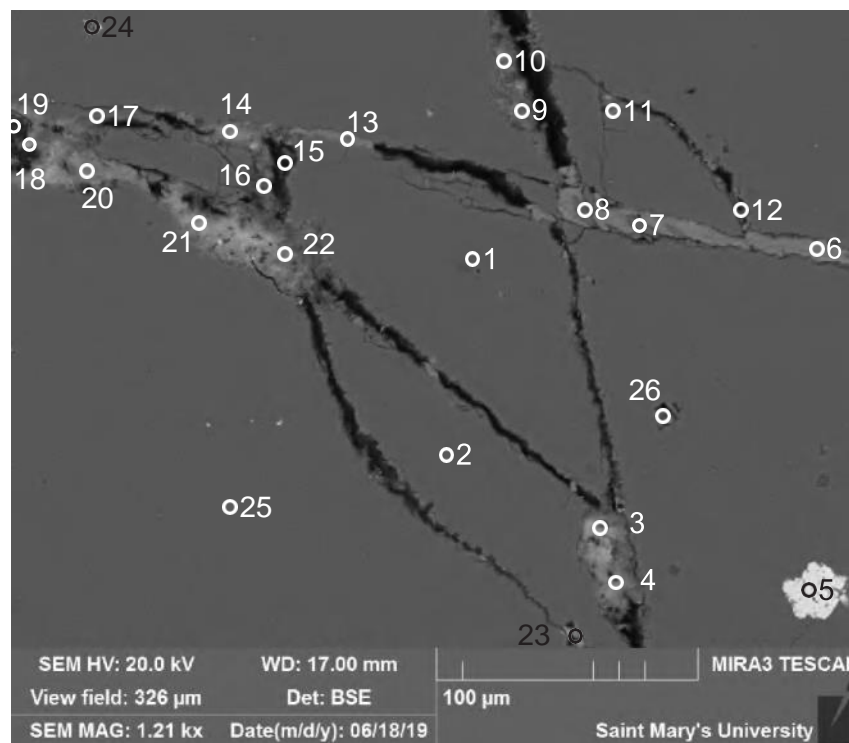
- 1: Quartz
- 2: "Sphalerite" +
- 3: "Sphalerite" +
- 4: "Sphalerite" +
- 5: "Sphalerite" +
- 6: "Sphalerite" +
- 7: "Sphalerite" +
- 8: "Sphalerite" +
- 9: FeOhy + Quartz

Figure S6.5: AX1B (SEM) Site 6, Position 8 from Supplementary Material S6 (AX1B), (Table S6.1). Similar to Fig. S6.1.



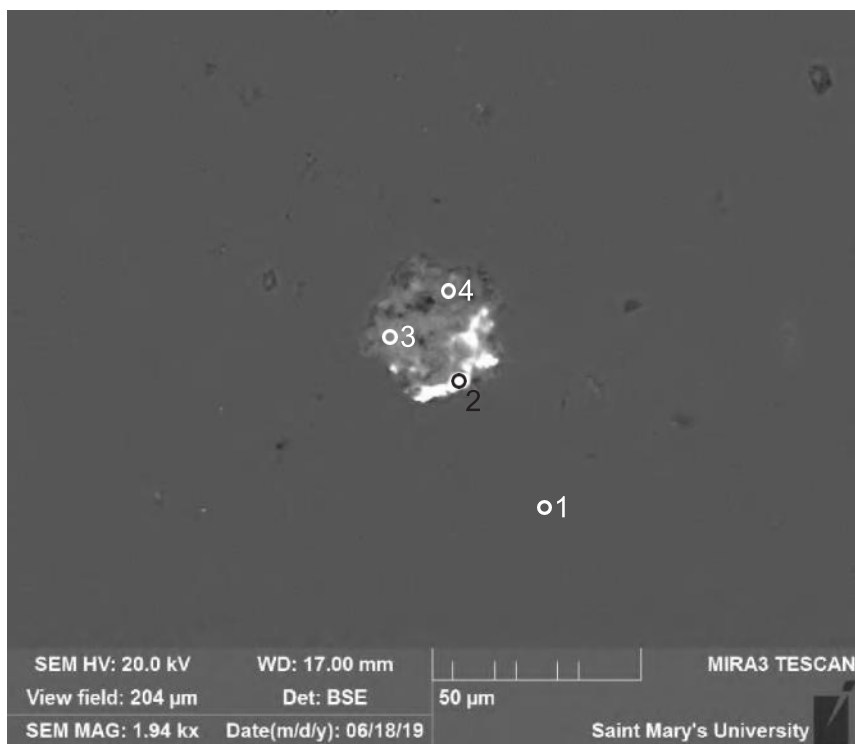
- 1:Quartz
- 2:"Sphalerite" +
- 3:"Sphalerite" + Calcite +
- 4:"Sphalerite" + Calcite +
- 5:Calcite +
- 6:Quartz + "Sphalerite" +
- 7:"Sphalerite" + Quartz +
- 8:Calcite +
- 9:"Sphalerite" + Quartz +
- 10:Calcite +
- 11:Quartz +
- 12:"Sphalerite" + Quartz +
- 13:"Sphalerite" + Quartz +
- 14:"Sphalerite" + Quartz +
- 15:"Sphalerite" + Quartz +
- 16:FeOhy + Quartz +
- 17:"Sphalerite" + Quartz +
- 18:"Sphalerite" + Quartz +
- 19:Quartz

Figure S6.6: AX1B (SEM) Site 7, Position 4,6 from Supplementary Material S6 (AX1B), (Table S6.1). Probably a vein filled with calcite (e.g. 5,10), "sphalerite" (e.g. 3) and clay (e.g. 4,6). Small voids are filled mostly with "sphalerite" (2,12), clay and probably calcite and only one (16) with goethite.



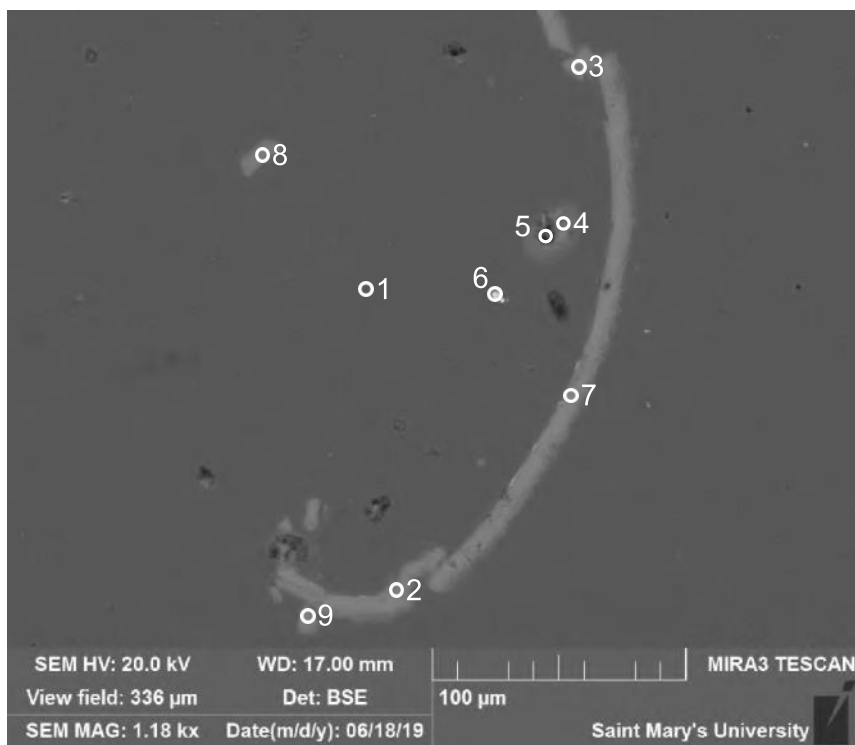
- 1:Quartz
- 2:Quartz
- 3:"Sphalerite" +
- 4:"Sphalerite" +
- 5:FeOhy +
- 6:Calcite +
- 7:Quartz + Calcite
- 8:Quartz + Calcite +
- 9:"Sphalerite" +
- 10:"Sphalerite" +
- 11:Quartz + "Sphalerite"
- 12:Quartz + "Sphalerite" + Calcite
- 13:Quartz + "Sphalerite" + Calcite
- 14:"Sphalerite" + Quartz +
- 15:"Sphalerite" + Quartz +
- 16:"Sphalerite" + Quartz +
- 17:Quartz
- 18:"Sphalerite" + Quartz +
- 19:Quartz + "Sphalerite" +
- 20:Calcite + "Sphalerite"
- 21:"Sphalerite" +
- 22:"Sphalerite" +
- 23:"Sphalerite" + Calcite +
- 24:"Sphalerite" + Quartz +
- 25:Quartz
- 26:"Sphalerite" + Quartz +

Figure S6.7: AX1B (SEM) Site 7, Position 3,5,7 from Supplementary Material S6 (AX1B), (Table S6.1). Network of veinlets. All these veinlets are filled in the same way as in Fig. S6.5 ("sphalerite, calcite, clay). A void (5) is filled with goethite.



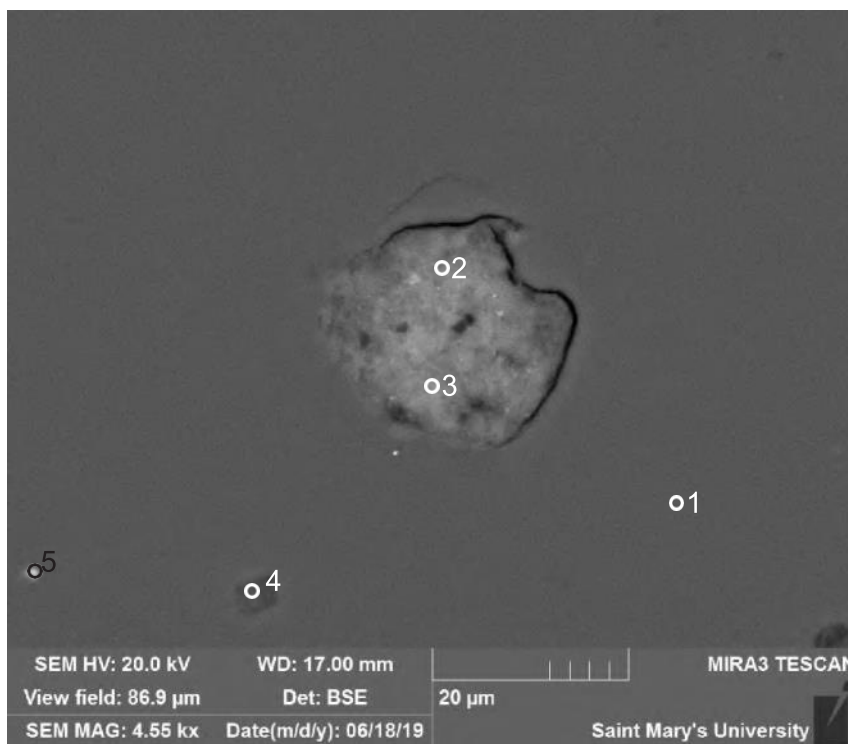
- 1:Quartz
- 2:Barite + "Sphalerite" +
- 3:"Sphalerite" +
- 4:"Sphalerite" +

Figure S6.8: AX1B (SEM) Site 8, Position 4,5 from Supplementary Material S6, (Table S6.1). A void filled with "sphalerite" (4), barite (2), clay and probably some calcite (4).



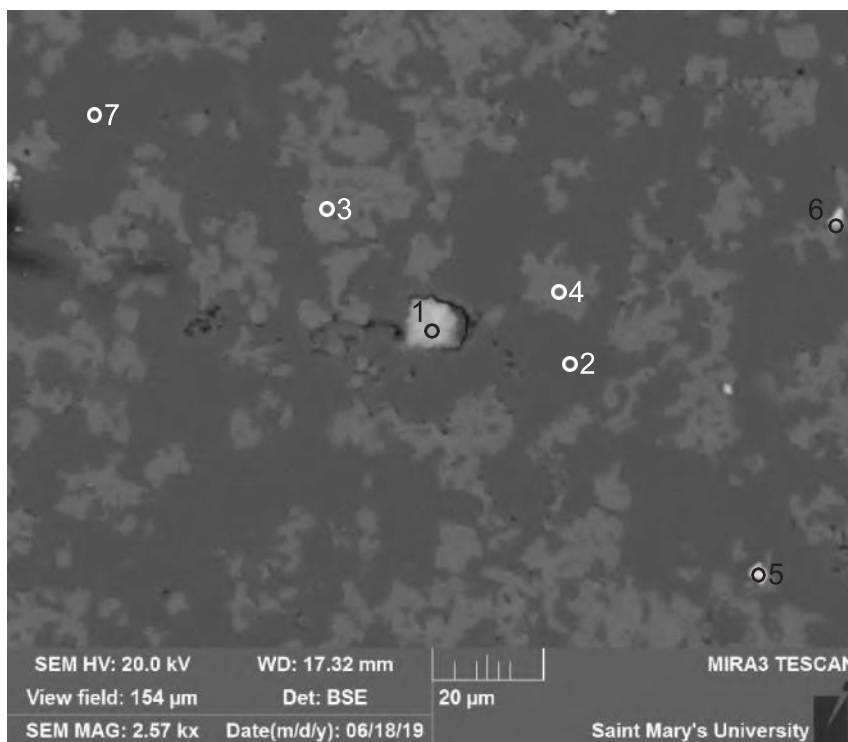
- 1:Quartz
- 2:Apatite + Quartz
- 3:Apatite + Quartz
- 4:Apatite + Quartz
- 5:"Sphalerite" + Apatite +
- 6:FeOhy +
- 7:Apatite + Quartz
- 8:Apatite + Quartz
- 9:Apatite + Quartz

Figure S6.9: AX1B (SEM) Site 9, Position 3,4,7 from Supplementary Material S6 (AX1B), (Table S6.1). Probably a fossil now replaced by apatite (e.g. 7). Voids are filled as is in Fig. S6.2. Small pieces of apatite are also present (4,8,9).



- 1:Quartz
- 2:"Sphalerite" +
- 3:"Sphalerite" +
- 4:"Sphalerite" + Quartz +
- 5:FeOhy + Quartz

Figure S6.9: AX1B (SEM) Site 9, Position 5 from Supplementary Material S6 (AX1B),10 (Table S6.1). Similar to Fig. S6.2.



- 1:"Sphalerite" +
- 2:Quartz
- 3:Calcite + Quartz
- 4:Calcite +
- 5:FeOhy + Quartz + Calcite
- 6:FeOhy + Quartz + Calcite
- 7:Quartz

Figure S6.11: AX1B (SEM) Site 11, Position 6 from Supplementary Material S6 (AX1B), (Table S6.1). Scattered patches of calcite (3,4), and goethite (5,6) and void partly filled with "sphalerite", clay and probably calcite.

Table S6.1: Scanning Electron Microscope (SEM) mineral chemical analyses (EDS) of selected sites and positions of sample AX1B.

Sample	Site + Position from Appendix A1	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	CoO	NiO	CuO	ZnO	As2O3	BaO	PbO	Total	Actual Total
AX1B	5-4,10	1	Sp +	21.71		2.30	1.88		3.48	7.71		0.54		36.33		0.96				25.09				100	40
AX1B	5-4,10	2	Sp +	18.10		2.09	1.37		5.00	8.49				35.53		0.90				27.63	0.09	0.80		100	96
AX1B	5-4,10	3	Sp +	19.97		2.47	1.76		4.26	8.93		0.33		33.41		0.83				27.66	0.37			100	93
AX1B	5-4,10	4	Sp +	24.77		2.93	2.56		4.44	7.05		0.32		29.99		1.26				26.56	0.12			100	60
AX1B	5-4,10	5	Sp +	21.20		2.86	1.74		5.12	7.57				33.21		1.05				27.25				100	52
AX1B	5-4,10	6	Qz	100.00																				100	118
AX1B	5-4,10	7	Sp +	20.93		2.46	1.87		5.10	7.03				32.03		1.46				29.14				100	44
AX1B	5-4,10	8	Sp +	29.53					6.44	9.87				43.52						10.64				100	12
AX1B	5-4,10	9	Sp +	18.02		1.63	1.17		4.85	9.04				34.63		0.78				29.83	0.03			100	87
AX1B	5-7	1	Qz	100.00																				100	117
AX1B	5-7	2	Sp +	22.99	0.50	2.48	1.92		4.38	7.62				32.62		0.75				27.13	-0.38			100	90
AX1B	5-7	3	Sp +	24.92		3.06	1.92		3.90	7.72				35.25		0.99				22.23				100	35
AX1B	5-7	4	Sp +	21.97	0.51	2.27	1.82		4.27	7.85				31.92		0.75				28.65				100	83
AX1B	5-7	5	Sp + Qz +	62.30	0.45	1.87	2.79		0.57	1.26		0.27		14.27		0.24				15.97				100	111
AX1B	5-7	6	Sp +	30.47		2.08	1.46		4.78	8.11				28.23		0.83				24.15	-0.10			100	77
AX1B	5-7	7	Sp +	23.79	0.59	2.08	1.45		4.20	5.71				33.58		0.82				27.55	0.23			100	64
AX1B	5-7	8	Sp +	22.60		2.61			6.74	21.51				32.62						13.91				100	16
AX1B	5-7	9	FeOhy + Qz	77.46			22.54																	100	112
AX1B	5-7	10	FeOhy +	39.11		0.78	58.64			0.77								0.70						100	95
AX1B	5-7	11	FeOhy +	52.01			46.40			0.53								0.46	0.60					100	100
AX1B	5-7	12	Qz	100.00																				100	118
AX1B	6-7	1	Qz	100.00																				100	120
AX1B	6-7	2	Sp +	23.22		2.95	2.08		4.26	9.54		0.35		28.16		0.83				23.85			4.74	100	79
AX1B	6-7	3	Sp +	32.22		3.83	2.18		5.51	7.82				29.51		0.91				18.02				100	24
AX1B	6-7	4	Sp +	25.78			1.77		7.16	10.17				30.10						25.01				100	17
AX1B	6-7	5	Sp +	27.30		3.55	2.91		5.31	9.19				27.04		0.81				23.56	0.31			100	58
AX1B	6-7	6	Sp +	33.73	0.46	2.41	1.61		3.29	6.47		0.34		26.63		0.59				24.39	0.07			100	108
AX1B	6-7	7	Sp + Qz +	63.69	0.41	1.58	1.69		1.26	1.93		0.23		14.33		0.27				14.61	0.00			100	110
AX1B	6-8	1	Qz	100.00																				100	120
AX1B	6-8	2	Sp +	18.15		2.02	1.36		4.46	6.97				34.43		0.71				31.71	0.19			100	79
AX1B	6-8	3	Sp +	26.77		4.77	1.76		7.84	9.98				31.21						17.66				100	18
AX1B	6-8	4	Sp +	23.22		4.19	2.33		6.34	9.30				31.13		1.24				22.24				100	27
AX1B	6-8	5	Sp +	21.56		1.89	1.73		5.52	7.25				31.38		0.67				29.66	0.34			100	70
AX1B	6-8	6	Sp +	26.20		2.80	1.88		4.61	7.40		0.45		29.82		0.56				26.20	0.09			100	43
AX1B	6-8	7	Sp +	14.95		1.84	1.44		4.74	6.59				37.38		0.64				32.49	-0.06			100	47
AX1B	6-8	8	Sp +	14.74		1.53	1.33		8.99	13.41				35.75						24.25				100	31
AX1B	6-8	9	FeOhy + Qz	56.77			41.31	0.43		0.39								0.46	0.64					100	115
AX1B	7-4,6	1	Qz	100.00																				100	120
AX1B	7-4,6	2	Sp +	25.12		2.29	1.64		3.70	7.80		0.38		31.63						26.34	0.05	1.05		100	97
AX1B	7-4,6	3	Sp + Cal +	16.97		2.02	1.48		3.20	33.43		0.33		22.09		0.35				20.14				100	80
AX1B	7-4,6	4	Sp + Cal +	40.98		2.92	2.33		3.82	10.82		0.48		20.83		0.39				17.16	0.28			100	73
AX1B	7-4,6	5	Cal +	2.82						95.12				0.92						1.14				100	60
AX1B	7-4,6	6	Qz + Sp +	74.19		0.93	0.89		1.97	3.29				10.43		0.32				7.99				100	82
AX1B	7-4,6	7	Sp + Qz +	44.51		2.27	1.94		3.65	8.76				22.05						16.82				100	58
AX1B	7-4,6	8	Cal +	2.62						95.42				1.03						0.93				100	60
AX1B	7-4,6	9	Sp + Qz +	40.67		1.26	1.17		4.25	8.25				24.72		0.32				19.60	-0.23			100	78
AX1B	7-4,6	10	Cal +	3.26						95.75										0.98				100	61
AX1B	7-4,6	11	Qz +	96.88					0.31	0.39				1.51						0.91				100	97
AX1B	7-4,6	12	Sp + Qz +	38.35		3.62	2.29	0.47	3.13	6.36		0.44		23.84		0.63				19.04		1.84		100	91
AX1B	7-4,6	13	Sp + Qz +	72.83		0.69	0.56		1.01	2.41				11.47		0.26				10.78				100	108
AX1B	7-4,6	14	Sp + Qz +	65.73		0.80	0.53		1.79	2.78				14.70		0.38				13.13	0.15			100	107
AX1B	7-4,6	15	Sp + Qz +	43.32		1.63	0.86		3.36	6.97				22.85		0.42				20.58	0.00			100	64
AX1B	7-4,6	16	FeOhy + Qz +	43.62			52.37	0.48		0.46				0.87				0.50	0.97	0.73				100	109
AX1B	7-4,6	17	Sp + Qz +	56.47		0.85	0.83		2.01	3.61				18.38		0.41				17.08	0.36			100	69
AX1B	7-4,6	18	Sp + Qz +	63.42			1.54		1.60	2.31				16.02		0.43				14.68				100	88
AX1B	7-4,6	19	Qz	100.00																				100	120
AX1B	7-3,5,7	1	Qz	99.53		0.47																		100	112
AX1B	7-3,5,7	2	Qz	100.00																				100	120
AX1B	7-3,5,7	3	Sp +	24.29		3.53	1.98		4.97	7.68				31.17		0.94				25.57	-0.13			100	64

Table S6.1: Scanning Electron Microscope (SEM) mineral chemical analyses (EDS) of selected sites and positions of sample AX1B.

Sample	Site + Position from Appendix A1	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	CoO	NiO	CuO	ZnO	As2O3	BaO	PbO	Total	Actual Total
AX1B	7-3,5,7	4	Sp +	28.55		3.08	2.08		3.92	7.93		0.37		28.63		0.94				24.58	-0.08			100	65
AX1B	7-3,5,7	5	FeOhy +	6.75			88.46	1.40		0.80				1.27					1.32					100	80
AX1B	7-3,5,7	6	Cal +	5.89					0.62	91.30				1.26						0.92				100	61
AX1B	7-3,5,7	7	Qz + Cal	61.43						38.57														100	89
AX1B	7-3,5,7	8	Qz + Cal +	71.21						25.52				1.76						1.51				100	82
AX1B	7-3,5,7	9	Sp +	24.49		2.21	1.75		7.14	9.90				29.15		0.71				24.66				100	48
AX1B	7-3,5,7	10	Sp +	24.24		2.01	1.70		4.64	7.79				28.14		0.57				23.58		7.33		100	64
AX1B	7-3,5,7	11	Qz + Sp	95.47			0.30			0.68				2.36						1.18				100	107
AX1B	7-3,5,7	12	Qz + Sp + Cal	87.66						8.69				2.09						1.56				100	97
AX1B	7-3,5,7	13	Qz + Sp + Cal	59.40						38.09				1.33						1.18				100	83
AX1B	7-3,5,7	14	Sp + Qz +	43.09		1.67	1.89		3.35	7.19				23.59		0.44				18.77				100	70
AX1B	7-3,5,7	15	Sp + Qz +	95.41										2.01		0.66				1.92				100	85
AX1B	7-3,5,7	16	Sp + Qz +	62.88		0.80	0.67		2.16	3.12				15.82		0.36				14.18				100	90
AX1B	7-3,5,7	17	Qz	100.00																				100	116
AX1B	7-3,5,7	18	Sp + Qz +	59.27		1.02	0.86		1.85	3.18				17.77		0.28				15.87	-0.11			100	104
AX1B	7-3,5,7	19	Qz + Sp +	79.85		0.77	1.52		1.34	3.28			1.78	7.51		0.98				2.97				100	77
AX1B	7-3,5,7	20	Cal + Sp	11.48					0.67	84.79				2.04						1.03				100	61
AX1B	7-3,5,7	21	Sp +	25.86		3.04	2.24		4.26	9.34				29.53		0.51				24.91	-0.07			100	76
AX1B	7-3,5,7	22	Sp +	32.75		3.99	3.48		3.96	10.45		0.38		24.88		0.57				19.48				100	65
AX1B	7-3,5,7	23	Sp + Cal +	46.42			1.47	4.48	0.63	28.46				7.26		0.34	1.92			6.83		2.18		100	74
AX1B	7-3,5,7	24	Sp + Qz +	59.76		1.02	5.74	2.39	1.27	2.41				12.84		0.27	1.14			11.32	-0.04	1.87		100	85
AX1B	7-3,5,7	25	Qz	99.46		0.54																		100	119
AX1B	7-3,5,7	26	Sp + Qz +	72.36			0.96	0.82	0.56	1.40				11.21		0.36				4.72		7.61		100	72
AX1B	8-4,5	1	Qz	100.00																				100	120
AX1B	8-4,5	2	Brt + Sp +	10.44		0.82			1.24	1.16				32.77			0.08			3.98		49.51		100	124
AX1B	8-4,5	3	Sp +	20.30		2.49	1.86		5.56	8.06		0.34		31.43		0.57				21.55		7.86		100	74
AX1B	8-4,5	4	Sp +	24.20		2.53	1.80		7.03	9.08				30.60		0.61				22.69		1.46		100	57
AX1B	9-3,4,7	1	Qz	100.00																				100	121
AX1B	9-3,4,7	2	Ap + Qz	33.65						31.96	0.81		27.95	0.97	4.66									100	115
AX1B	9-3,4,7	3	Ap + Qz	28.42						35.16	0.80		29.63	0.99	5.00									100	113
AX1B	9-3,4,7	4	Ap + Qz	60.84						17.93			15.30	1.77	3.64					0.53				100	109
AX1B	9-3,4,7	5	Sp + Ap +	33.78		2.27	1.13		3.01	7.29			4.31	27.62		0.75				19.84				100	31
AX1B	9-3,4,7	6	FeOhy +	25.97			72.01			0.61									1.41					100	91
AX1B	9-3,4,7	7	Ap + Qz	27.25						35.60	0.84		30.71	1.02	4.58									100	115
AX1B	9-3,4,7	8	Ap + Qz	33.54						33.07	0.62		26.69	1.11	4.97									100	112
AX1B	9-3,4,7	9	Ap + Qz	33.05						33.27	0.66		27.55	1.01	4.47									100	116
AX1B	9-5	1	Qz	100.00																				100	119
AX1B	9-5	2	Sp +	27.55		3.55	2.88		4.60	9.49				28.22		0.62				23.21	-0.11			100	63
AX1B	9-5	3	Sp +	25.45	0.56	3.36	2.54		5.16	9.30		0.43		28.89		0.57				23.76	-0.01			100	72
AX1B	9-5	4	Sp + Qz +	74.62		1.87	1.54		2.06	4.14				7.90		0.34				7.52				100	99
AX1B	9-5	5	FeOhy + Qz	69.66			29.28			0.35						0.20			0.51					100	122
AX1B	11-6	1	Sp +	21.43		2.60	1.71		3.77	6.65		0.44		31.44		0.52				26.12		0.80	4.52	100	96
AX1B	11-6	2	Qz	100.00																				100	113
AX1B	11-6	3	Cal + Qz	34.85					0.68	64.47														100	67
AX1B	11-6	4	Cal +	7.79					1.15	91.06														100	57
AX1B	11-6	5	FeOhy + Qz + Cal	29.95			59.23			9.21									1.61					100	88
AX1B	11-6	6	FeOhy + Qz + Cal	22.25		1.14	65.81	0.48		9.47									0.85					100	83
AX1B	11-6	7	Qz	99.51						0.49														100	111

Supplementary Material S7: SEM-BSE images and Electron Dispersive Spectroscopy (EDS) mineral analyses for sample AX1C (Zoom).

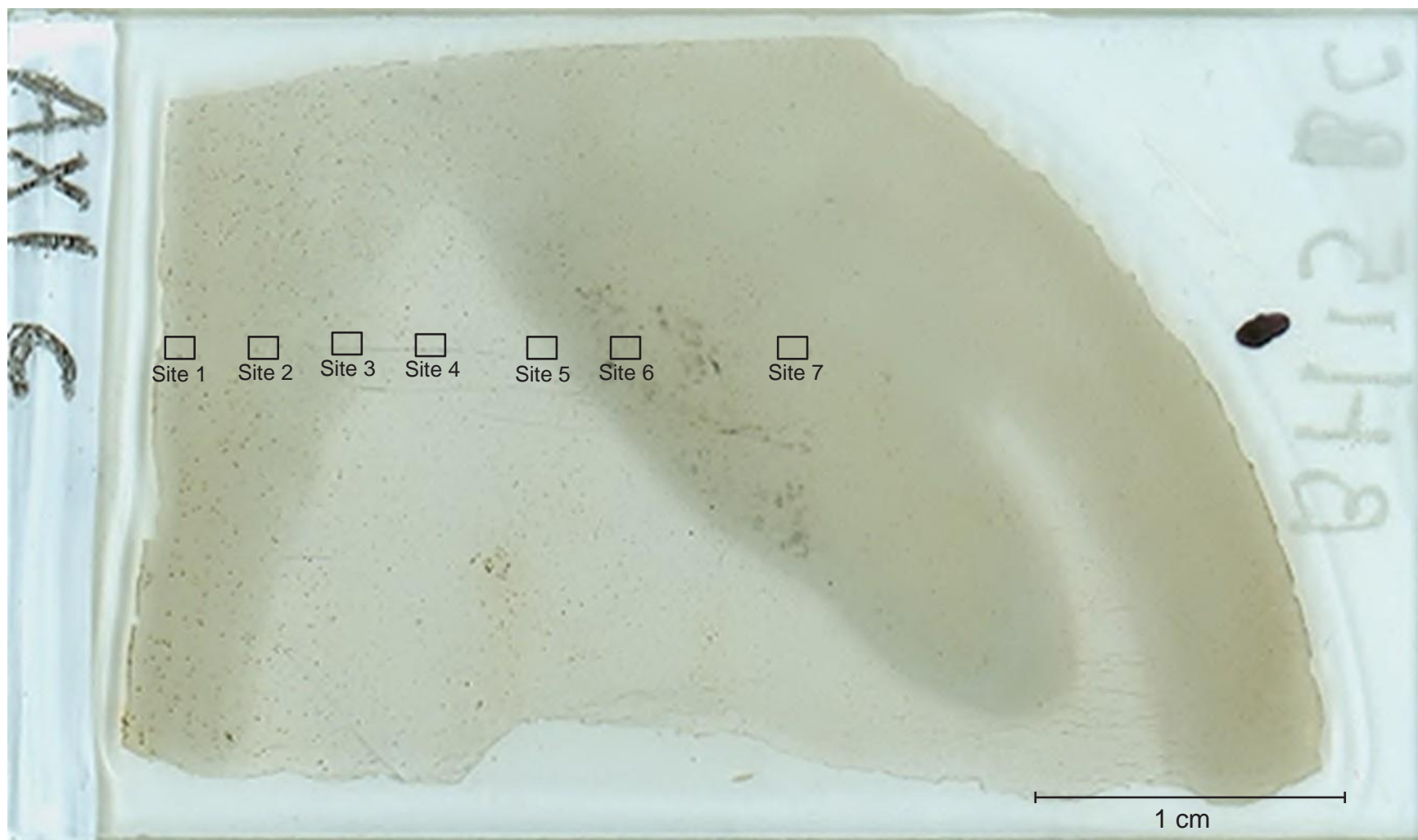


Figure S7.1: AX1 C thin section showing respective sites taken for mineral chemical analyses (EDS) via Scanning Electron Microscope (SEM) (zooms in Supplementary Material S3).

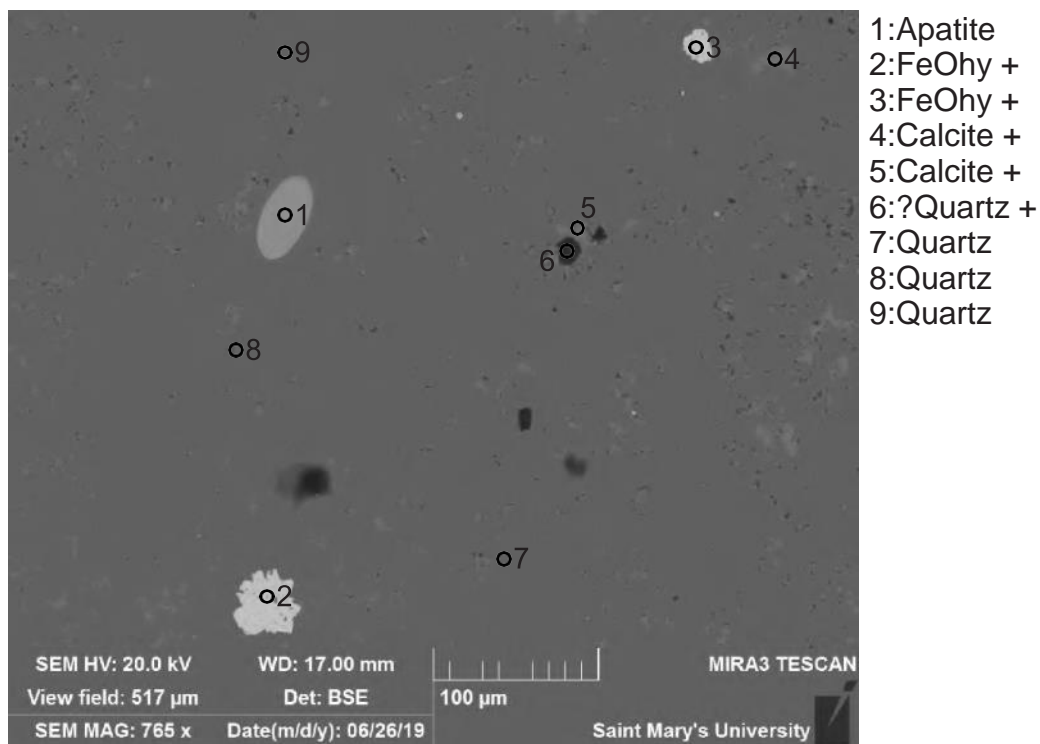


Figure S7.2: AX1 C (SEM) site 2a (Table S14.1).

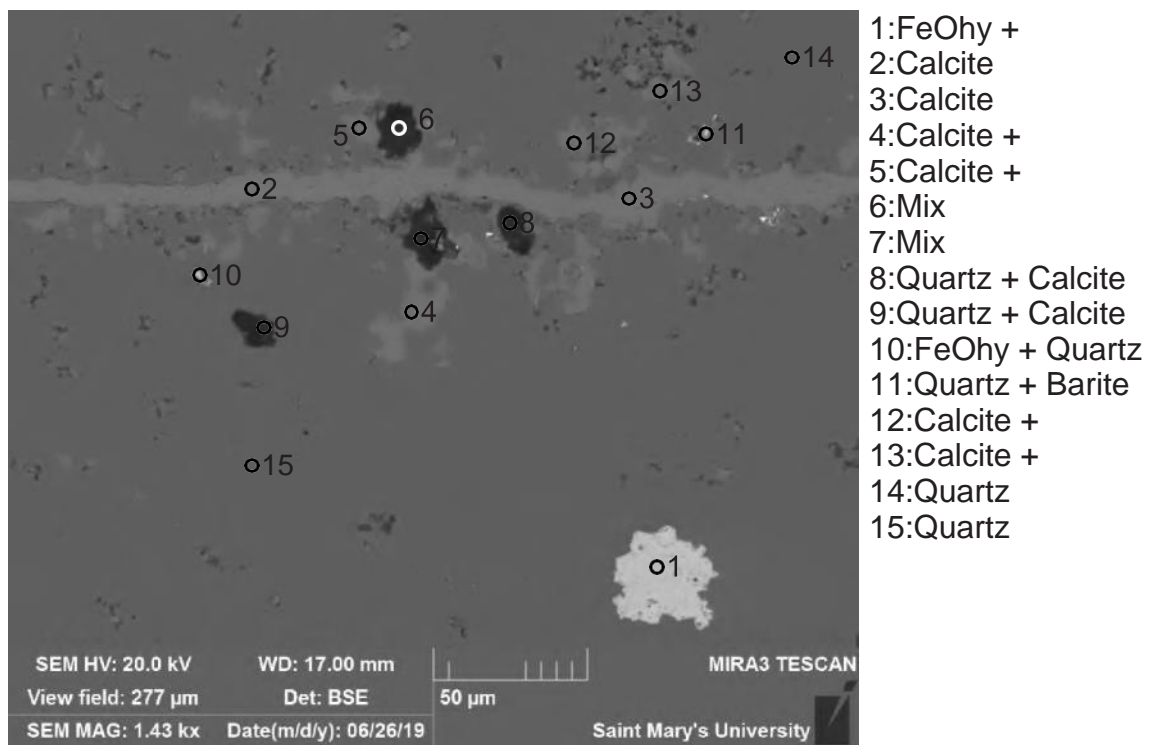


Figure S7.3: AX1 C (SEM) site 3a (Table S14.1).

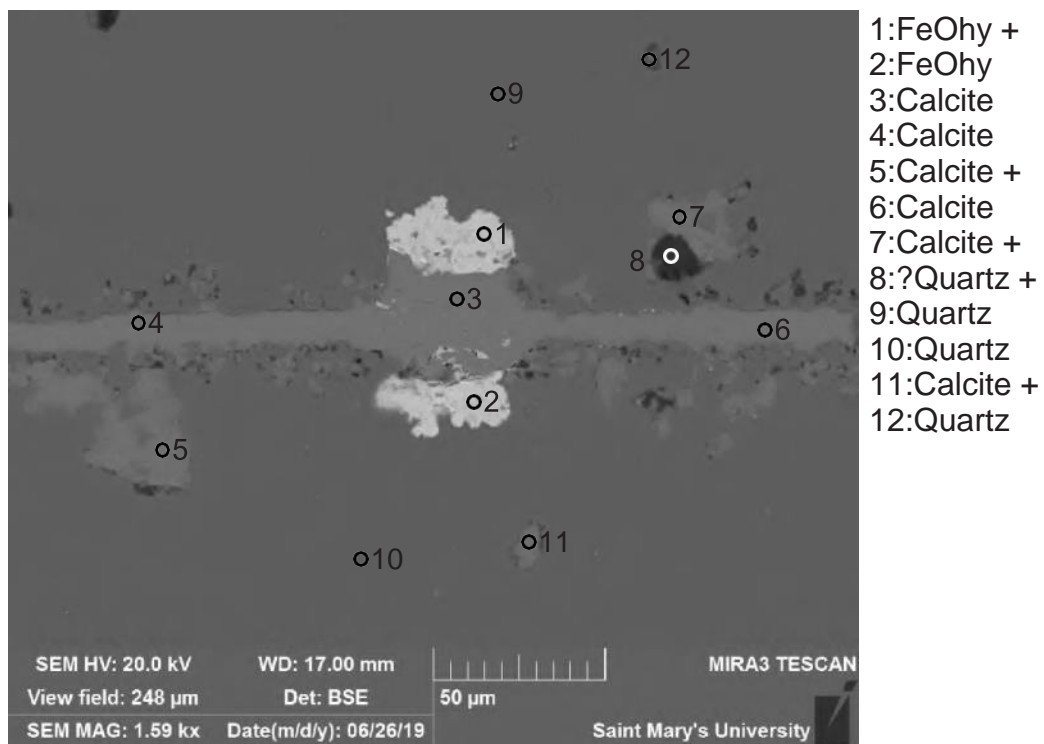


Figure S7.4: AX1 C (SEM) site 4a (Table S14.1).

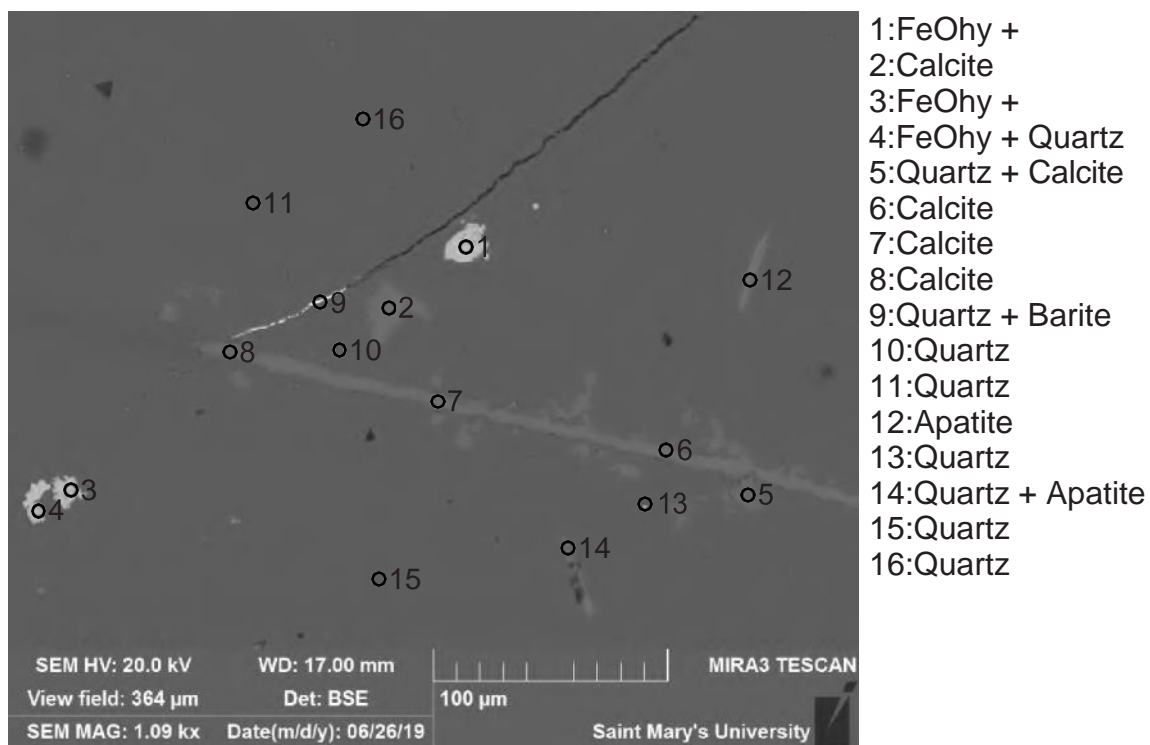


Figure S7.5: AX1 C (SEM) site 5a (Table S14.1).

Table S7.1: Scanning Electron Microscope (SEM) mineral chemical analyses (EDS) of AX1 C,

Sample	Site	Position	Mineral	SiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	Cl	CuO	ZnO	BaO	Total	Actual Total
AX1 C	2a	1	Ap						54.68	1.21		44.11						100	96
AX1 C	2a	2	FeOhy +	6.72		93.28												100	77
AX1 C	2a	3	FeOhy +	7.09		92.91												100	75
AX1 C	2a	4	Cal +	25.87					74.13									100	66
AX1 C	2a	5	Cal +	25.04					74.96									100	66
AX1 C	2a	6	?Qz +	66.65	7.19	3.98		3.03	15.32	1.46	1.28			1.09				100	27
AX1 C	2a	7	Qz	100.00														100	115
AX1 C	2a	8	Qz	100.00														100	117
AX1 C	2a	9	Qz	100.00														100	113
AX1 C	3a	1	FeOhy +	6.77		92.29	0.93											100	75
AX1 C	3a	2	Cal	1.40					54.60									56	55
AX1 C	3a	3	Cal	2.14					53.86									56	56
AX1 C	3a	4	Cal +	16.56					83.44									100	61
AX1 C	3a	5	Cal +	16.27					83.73									100	60
AX1 C	3a	6	Mix	64.69	7.56	4.48		3.52	12.14		1.88		2.75	1.59		1.40		100	21
AX1 C	3a	7	Mix	63.05	8.75	3.62		4.02	17.09		1.66			1.81				100	20
AX1 C	3a	8	Qz + Cal	95.16		1.01			3.83									100	49
AX1 C	3a	9	Qz + Cal	88.40		1.83			9.77									100	21
AX1 C	3a	10	FeOhy + Q	43.47		55.13	0.64		0.75									100	92
AX1 C	3a	11	Qz + Brt	66.03					3.00				11.82				19.15	100	127
AX1 C	3a	12	Cal +	10.08					89.92									100	58
AX1 C	3a	13	Cal +	8.46					91.54									100	59
AX1 C	3a	14	Qz	100.00														100	114
AX1 C	3a	15	Qz	100.00														100	112
AX1 C	4a	1	FeOhy +	5.85		93.32			0.82									100	73
AX1 C	4a	2	FeOhy	7.30		90.32	1.19		1.19									100	73
AX1 C	4a	3	Cal	0.78					55.22									56	55
AX1 C	4a	4	Cal	1.05					54.95									56	55
AX1 C	4a	5	Cal +	8.07					91.93									100	58
AX1 C	4a	6	Cal	1.05					54.95									56	56
AX1 C	4a	7	Cal +	7.95					92.05									100	57
AX1 C	4a	8	?Qz +	67.72	7.65	3.96		3.46	10.14	1.61	1.73		2.05	1.67				100	34
AX1 C	4a	9	Qz	100.00														100	113

Table S7.1: Scanning Electron Microscope (SEM) mineral chemical analyses (EDS) of AX1 C,

Sample	Site	Position	Mineral	SiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	Cl	CuO	ZnO	BaO	Total	Actual Total
AX1 C	4a	10	Qz	100.00														100	113
AX1 C	4a	11	Cal +	11.31					88.69									100	60
AX1 C	4a	12	Qz	100.00														100	109
AX1 C	5a	1	FeOhy +	6.01		91.63	1.72		0.65									100	74
AX1 C	5a	2	Cal	1.27					54.73									56	55
AX1 C	5a	3	FeOhy +	10.00		86.90	0.84		0.95						1.30			100	72
AX1 C	5a	4	FeOhy + Q	26.66		71.69	0.97		0.68									100	84
AX1 C	5a	5	Qz + Cal	68.93					31.07									100	88
AX1 C	5a	6	Cal	2.75					53.25									56	56
AX1 C	5a	7	Cal	2.37					53.63									56	55
AX1 C	5a	8	Cal	2.15					53.85									56	52
AX1 C	5a	9	Qz + Brt	88.80									4.45				6.75	100	94
AX1 C	5a	10	Qz	100.00														100	113
AX1 C	5a	11	Qz	100.00														100	113
AX1 C	5a	12	Ap	19.65					43.76	1.16		33.67	1.76					100	94
AX1 C	5a	13	Qz	99.29		0.71												100	114
AX1 C	5a	14	Qz + Ap	54.61					24.46	0.53		20.40						100	102
AX1 C	5a	15	Qz	100.00														100	114
AX1 C	5a	16	Qz	100.00														100	113

Supplementary Material S8: SEM-BSE images and Electron Dispersive Spectroscopy (EDS) mineral analyses for sample AX2 (Zoom).

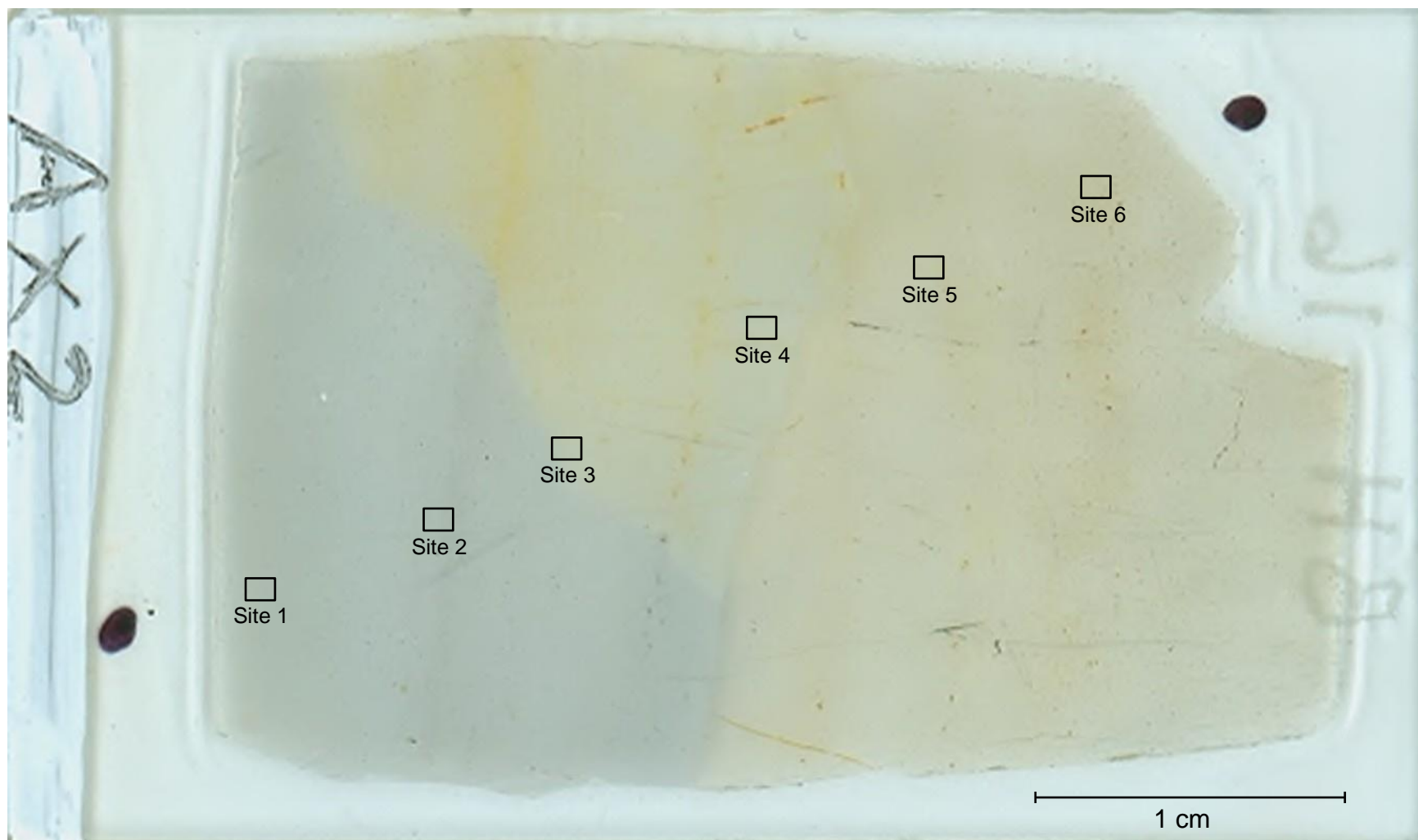
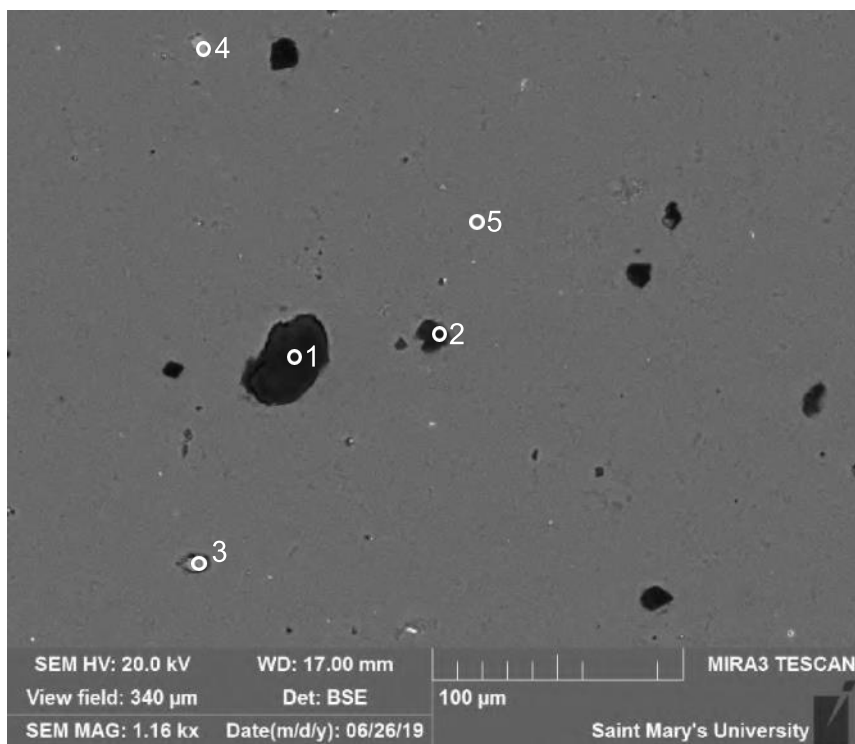
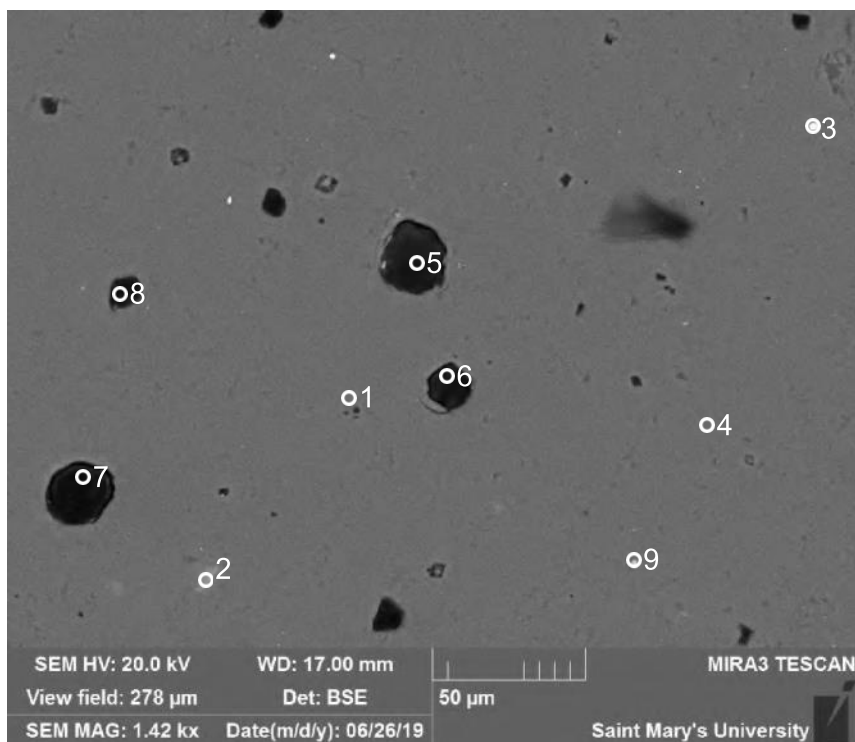


Figure S8.1: AX2 thin section showing respective sites taken for mineral chemical analyses (EDS) via Scanning Electron Microscope (SEM) (zooms in Supplementary Material S4).



- 1:Hole
- 2:Hole
- 3:Quartz +
- 4:Quartz +
- 5:Quartz

Figure S8.1: AX 2 (SEM) Site 5, Position 3 from Supplementary Material S4 (AX 2), (Table S8.1). Porosity (1-2) present in the quartz host (5).



- 1:Quartz
- 2:Quartz + Apatite
- 3:Quartz + FeOhy
- 4:Quartz
- 5:Hole
- 6:Hole
- 7:Hole
- 8:Hole
- 9:Quartz + FeOhy

Figure S8.2: AX 2 (SEM) Site 5, Position 2 from Supplementary Material S4 (AX 2), (Table S8.1). Blebs of goethite (3,9) and apatite (2) in quartz (1). Some porosity (5-7).

Table S8.1: Scanning Electron Microscope (SEM) mineral chemical analyses (EDS) of selected sites and positions of sample AX 2 .

Sample	Site + Position from Appendix A4	Position	Mineral	SiO ₂	TiO ₂	Al ₂ O ₃	FeO	MgO	CaO	Na ₂ O	K ₂ O	P ₂ O ₅	SO ₃	Cl	ZnO	Total	Actual Total
AX 2	5 - 3	1	Hole	65.74	1.10	9.12	3.64	4.59	8.44	2.80	1.40		2.33	0.84		100	43
AX 2	5 - 3	2	Hole	88.79			2.53		7.43		0.68			0.56		100	69
AX 2	5 - 3	3	Qz +	97.54			1.81		0.27		0.38					100	184
AX 2	5 - 3	4	Qz +	91.95			0.39		7.66							100	141
AX 2	5 - 3	5	Qz	100.00												100	161
AX 2	5 - 2	1	Qz	100.00												100	159
AX 2	5 - 2	2	Qz + Ap	58.55					23.15	0.56		17.74				100	144
AX 2	5 - 2	3	Qz + FeOhy	64.39			35.16		0.45							100	141
AX 2	5 - 2	4	Qz	100.00												100	162
AX 2	5 - 2	5	Hole	54.22		10.97	16.21	3.28	13.14	1.32	0.86					100	70
AX 2	5 - 2	6	Hole	88.65			2.46		4.83		0.70		2.25	0.91	0.20	100	69
AX 2	5 - 2	7	Hole	66.34		7.25	2.97	3.10	8.39		1.47		6.11	4.36		100	25
AX 2	5 - 2	8	Hole	88.00	1.12		2.82		6.93		1.12					100	40
AX 2	5 - 2	9	Qz + FeOhy	82.29			17.17			0.54						100	151

Supplementary Material S9: SEM-BSE images and Electron Dispersive Spectroscopy (EDS) mineral analyses for sample AX3 (Zoom).

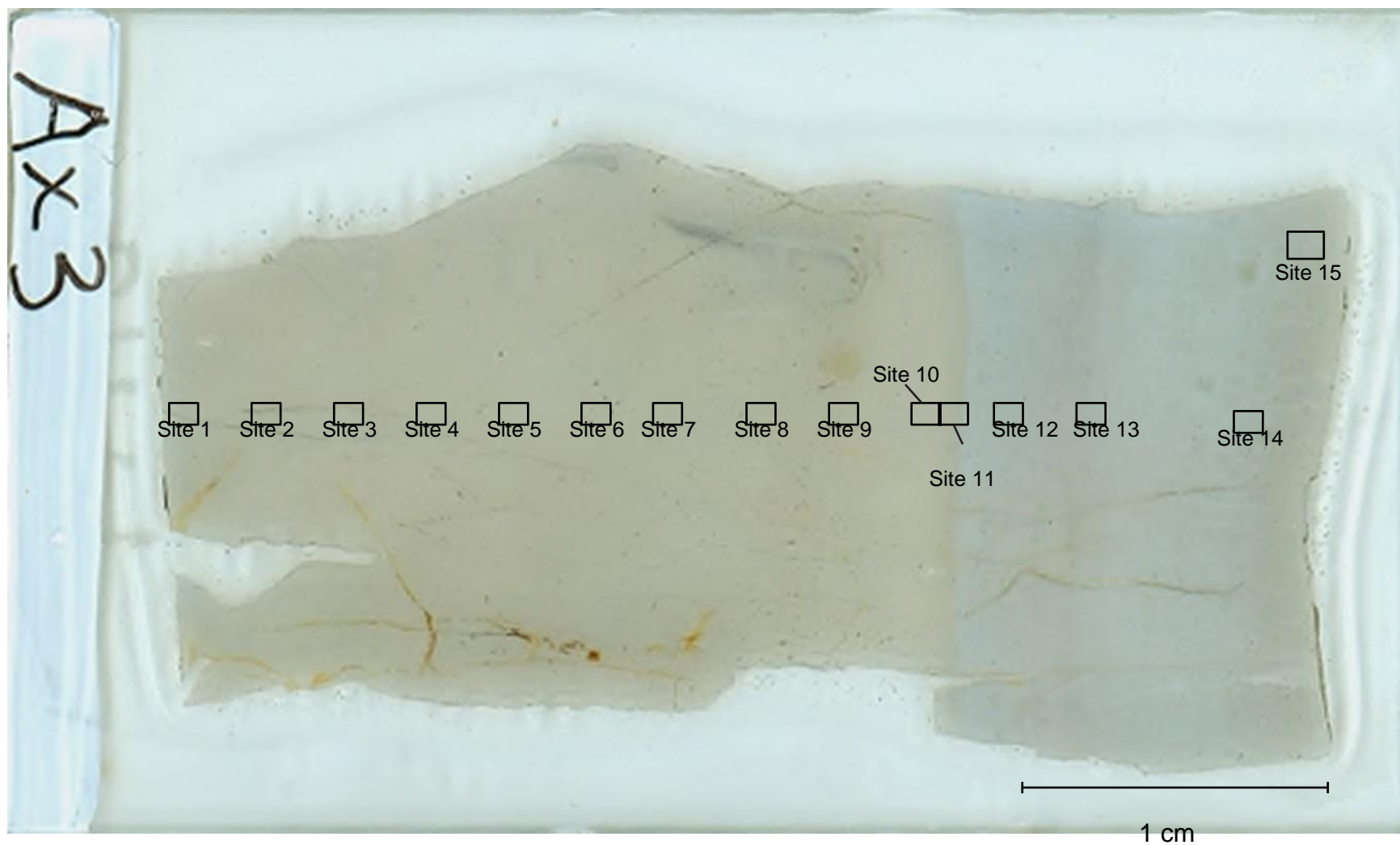
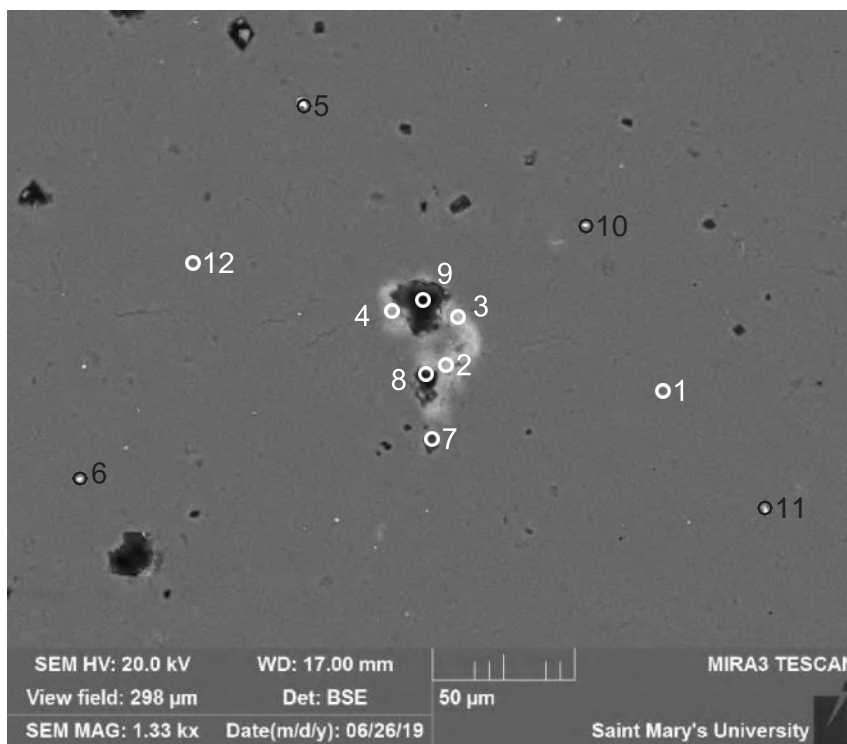
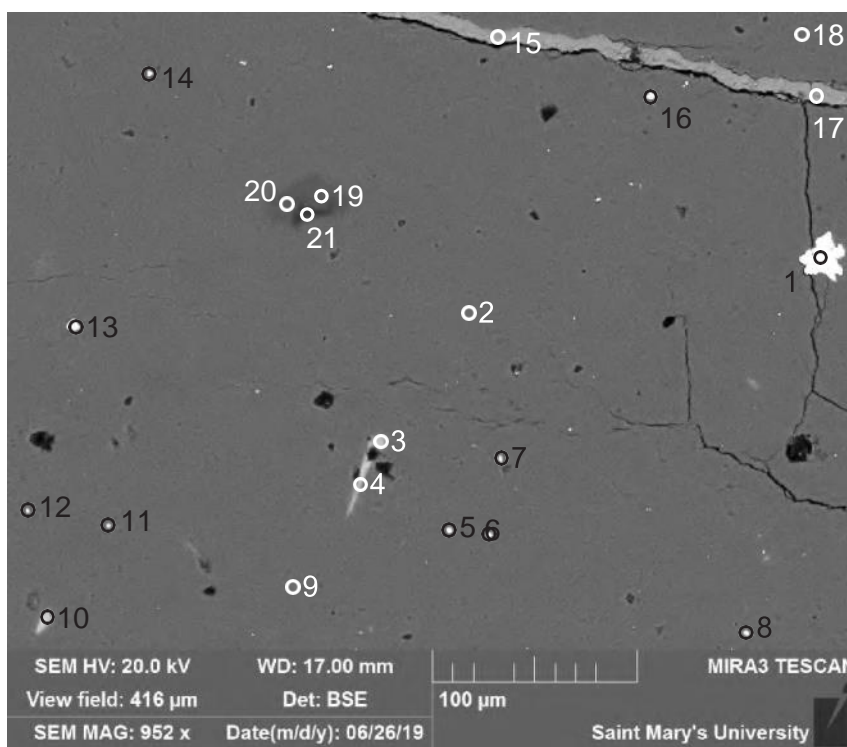


Figure S9.1: AX3 thin section showing respective sites taken for mineral chemical analyses (EDS) via Scanning Electron Microscope (SEM) (zooms in Supplementary Material S5).



- 1:Quartz
- 2:Apatite + Quartz
- 3:Apatite + Quartz
- 4:Apatite + Quartz
- 5:Pyrite + Quartz
- 6:Quartz + Feohy
- 7:Mix
- 8:Hole
- 9:Hole
- 10:TiO₂ + Quartz
- 11:Quartz + Feohy
- 12:Quartz

Figure S9.2: AX 3 (SEM) Site 3, Position 3 from Supplementary Material S5 (AX 3), (Table S9.1).



- 1:Pyrite
- 2:Quartz
- 3:Apatite
- 4:Apatite + Quartz
- 5:Pyrite + Quartz
- 6:Pyrite + Quartz
- 7:Pyrite + Quartz
- 8:Quartz + Feohy
- 9:Quartz
- 10:Apatite
- 11:Pyrrhotite + Quartz
- 12:Pyrite + Quartz
- 13:Pyrite + Quartz
- 14:Pyrite + Quartz
- 15:Calcite
- 16:Pyrite + Quartz
- 17:Calcite
- 18:Quartz
- 19:Quartz
- 20:Quartz
- 21:Quartz

Figure S9.3: AX 3 (SEM) Site 3, Position 6 from Supplementary Material S5 (AX 3), (Table S9.1).

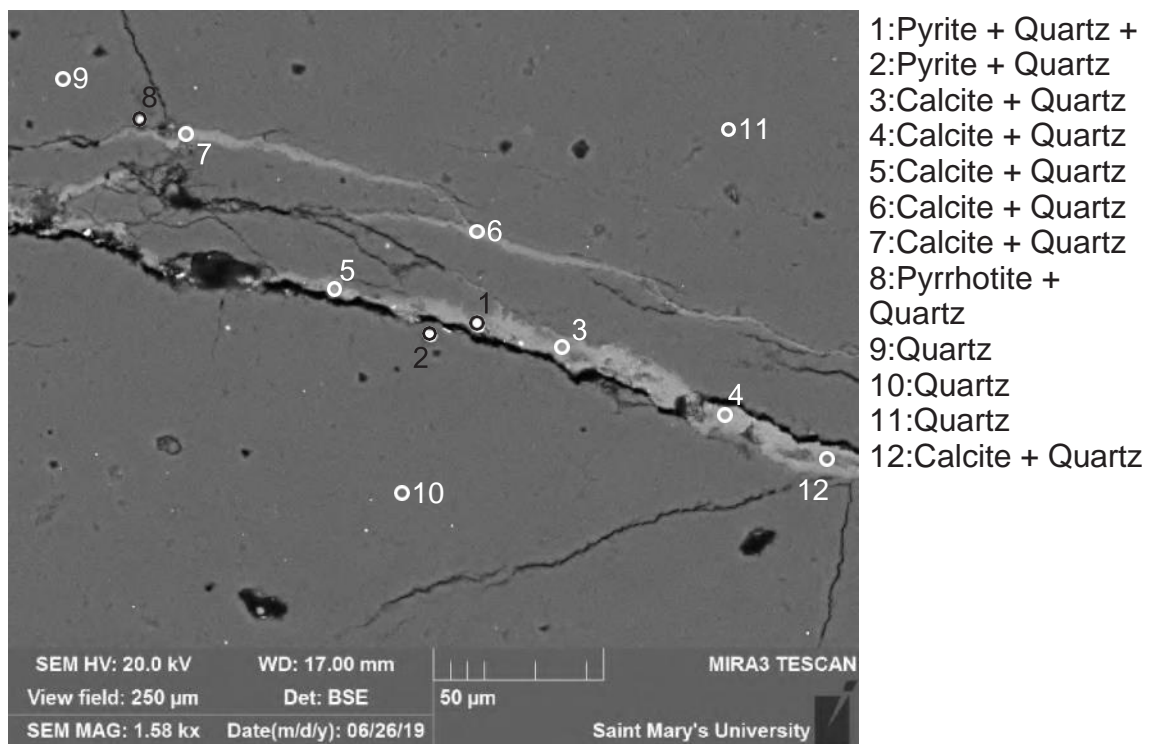


Figure S9.4: AX 3 (SEM) Site 4, Position 6 from Supplementary Material S5 (AX 3), (Table S9.1).

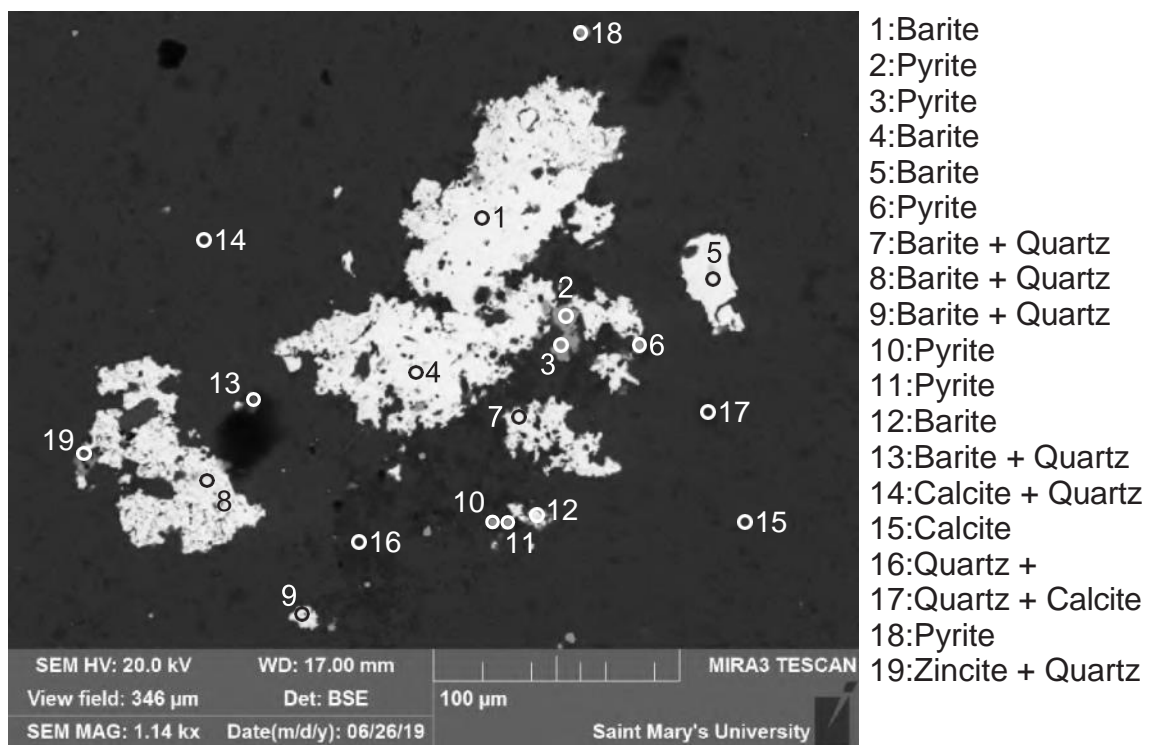


Figure S9.5: AX 3 (SEM) Site 14, Position 1-7 from Supplementary Material S5 (AX 3), (Table S9.1).

Table S9.1: Scanning Electron Microscope (SEM) mineral chemical analyses (EDS) of selected sites and positions of sample AX 3.

Sample	Site + Position from Appendix x A5	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	Cl	CoO	NiO	CuO	ZnO	Rb2O	MoO3	BaO	WO3	Total	Actual Total	
AX3	3 - 3	1	Qz	100.00																				100	118	
AX3	3 - 3	2	Ap + Qz	39.58						33.48	0.72		26.22												100	103
AX3	3 - 3	3	Ap + Qz	29.43						39.40	0.78		30.39												100	105
AX3	3 - 3	4	Ap + Qz	66.56						17.77	0.56		15.11												100	109
AX3	3 - 3	5	Py + Qz	18.59			23.72	0.36						55.78			0.51	1.04							100	184
AX3	3 - 3	6	Qz + Feohy	71.74			27.40											0.63	0.23						100	118
AX3	3 - 3	7	Mix	80.11	0.70	5.51	5.46			2.79		0.47			0.60				1.54		2.81				100	86
AX3	3 - 3	8	Hole	59.47			3.66			13.77			7.04	7.16	0.96				7.94						100	49
AX3	3 - 3	9	Hole	57.93		7.79				7.37									4.53		22.38				100	7
AX3	3 - 3	10	TiO2 + Qz	47.27	52.73																				100	126
AX3	3 - 3	11	Qz + Feohy	71.42			28.58																		100	108
AX3	3 - 3	12	Qz	100.00																					100	116
AX3	3 - 6	1	Py	1.03			35.43							63.54											100	188
AX3	3 - 6	2	Qz	100.00																					100	116
AX3	3 - 6	3	Ap							45.93	1.01		37.99	3.40						4.73			6.93		100	106
AX3	3 - 6	4	Ap + Qz	33.90						34.66	1.10		28.16	2.17											100	108
AX3	3 - 6	5	Py + Qz	28.71			27.95							40.64		1.18	0.81	0.71							100	167
AX3	3 - 6	6	Py + Qz	17.11			25.66	0.44						54.87			0.60	1.30							100	192
AX3	3 - 6	7	Py + Qz	19.00			24.02							56.98											100	202
AX3	3 - 6	8	Qz + Feohy	41.15			56.92	0.65		0.68					0.59										100	107
AX3	3 - 6	9	Qz	100.00																					100	118
AX3	3 - 6	10	Ap							45.98	1.06		38.44	3.33	0.33					4.42			6.44		100	109
AX3	3 - 6	11	Po + Qz	29.29	1.77		48.11	0.77		0.86	0.55			17.02			0.77	0.85							100	115
AX3	3 - 6	12	Py + Qz	29.91			32.19	0.35		0.39				33.24		1.79	1.15	0.99							100	150
AX3	3 - 6	13	Py + Qz	2.93			39.65			0.46				56.96											100	164
AX3	3 - 6	14	Py + Qz	32.16			22.08							44.58			0.40	0.78							100	172
AX3	3 - 6	15	Cal	1.44						54.56															56	56
AX3	3 - 6	16	Py + Qz	11.76			27.30							58.28		1.01	1.00	0.65							100	189
AX3	3 - 6	17	Cal	1.15					0.63	54.21															56	57
AX3	3 - 6	18	Qz	100.00																					100	117
AX3	3 - 6	19	Qz	100.00																					100	111
AX3	3 - 6	20	Qz	100.00																					100	109
AX3	3 - 6	21	Qz	98.20								0.45		0.95	0.40										100	96
AX3	4 - 6	1	Py + Qz +	1.02			23.51			1.16				68.64		1.82	1.76	2.10							100	204
AX3	4 - 6	2	Py + Qz	6.91			21.98							65.75		2.62	1.78	0.95							100	213
AX3	4 - 6	3	Cal + Qz	12.32						87.68															100	61
AX3	4 - 6	4	Cal + Qz	2.87						97.13															100	57
AX3	4 - 6	5	Cal + Qz	5.01			0.83			92.83				1.33											100	58
AX3	4 - 6	6	Cal + Qz	36.11						63.89															100	74
AX3	4 - 6	7	Cal + Qz	19.75					0.86	79.39															100	65
AX3	4 - 6	8	Po + Qz	42.82			39.62			0.89				15.74				0.93							100	117
AX3	4 - 6	9	Qz	100.00																					100	116
AX3	4 - 6	10	Qz	100.00																					100	117
AX3	4 - 6	11	Qz	100.00																					100	117
AX3	4 - 6	12	Cal + Qz	70.03						29.97															100	92
AX3	14 - 1-7	1	Brt											36.10							63.90				100	117
AX3	14 - 1-7	2	Py				27.67	0.60			2.11			69.63											100	230
AX3	14 - 1-7	3	Py				28.44	0.34		0.28				70.94											100	232
AX3	14 - 1-7	4	Brt											36.37							63.63				100	117
AX3	14 - 1-7	5	Brt							0.80				35.75							63.45				100	119
AX3	14 - 1-7	6	Py	1.84			27.10	0.34		1.77				68.95											100	221

Table S9.1: Scanning Electron Microscope (SEM) mineral chemical analyses (EDS) of selected sites and positions of sample AX 3.

Sample	Site + Position from Appendix x A5	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	Cl	CoO	NiO	CuO	ZnO	Rb2O	MoO3	BaO	WO3	Total	Actual Total
AX3	14 - 1-7	7	Brt + Qz	1.48						0.65				35.23								62.64		100	117
AX3	14 - 1-7	8	Brt + Qz	2.52										35.54								61.95		100	117
AX3	14 - 1-7	9	Brt + Qz	2.73						5.90	0.88			32.51								57.99		100	114
AX3	14 - 1-7	10	Py	0.74			27.01	0.34		0.84				70.66				0.41						100	228
AX3	14 - 1-7	11	Py	1.72			25.04	0.31		0.71				69.48		1.07	1.20	0.47						100	228
AX3	14 - 1-7	12	Brt							1.51				35.26								60.78	2.45	100	119
AX3	14 - 1-7	13	Brt + Qz	4.35						3.21	2.08	0.68		32.83	1.36							55.48		100	95
AX3	14 - 1-7	14	Cal + Qz	19.86					1.09	79.05														100	67
AX3	14 - 1-7	15	Cal	3.70						52.30														56	63
AX3	14 - 1-7	16	Qz +	82.46		7.61	0.41			2.80		5.66							1.06					100	120
AX3	14 - 1-7	17	Qz + Cal	93.86						6.14														100	118
AX3	14 - 1-7	18	Py	1.02			26.85	0.33		5.53				66.27										100	205
AX3	14 - 1-7	19	Znc + Qz	41.75			0.57			11.02				0.91					43.92			1.82		100	93

Supplementary Material S10: Summary table of all EDS analyses organized by mineral type.

Supplementary Table S10: All EDS analyses by mineral

Sample	Locality	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	Cr2O3	CoO	NiO	CuO	ZnO	As2O3	ZrO2	Ag2O	Rb2O	MoO3	BaO	PbO	La2O3	Ce2O3	Nd2O3	W2O3	PtO2	Total	Actual Total
AX1C	1	2a	6	7Oz +	66.65		7.19	3.96		3.03	15.32	1.46	1.28			1.09																		100	27	
AX1C	1	4a	8	7Oz +	67.72		7.65	3.96		3.46	10.14	1.61	1.73		2.05	1.67																		100	34	
AX1C	1	1	7	7Wg + Oz	76.44			3.99			17.57																							100	99	
AX1C	1	1	8	7Wg + Oz	77.49						22.51																							100	96	
ARK2	1	5	2	Ap	0.95						46.28			43.76		7.61																	1.41	100	121	
AX1C	1	2	3	Ap	0.57						48.61	0.96		42.66	1.21	4.62																1.38	100	116		
AX1C	1	2a	1	Ap							54.68	1.21		44.11																				100	96	
AX1C	1	5a	12	Ap	19.65						43.76	1.16		33.67	1.76																			100	94	
AX3	1	3 - 6	3	Ap							45.93	1.01		37.99	3.40											4.73							6.93	100	106	
AX3	1	3 - 6	10	Ap							45.98	1.06		38.44	3.33		0.33								4.42							6.44	100	109		
SK4a	2	10	3	Ap	1.09						51.14	1.13		39.28	1.59	5.78																		100	102	
SK5	2	2	22	Ap	0.50						49.71	0.84		39.52	1.63	6.36																	1.44	100	103	
SK5	2	2	26	Ap	0.83						49.65	1.01		39.68	1.52	5.85																	1.46	100	103	
SK5	2	2	27	Ap	0.75						50.27	1.04		39.52	1.64	5.40																	1.38	100	101	
SK5	2	8	18	Ap							53.45	1.32		35.41	1.72	7.64	0.46																	100	68	
SK5	2	13	22	Ap	1.02					0.57	48.36	1.15		39.67	1.95	6.74	0.54																	100	67	
SK5	2	18	3	Ap	0.96						50.06	0.88		40.90	1.32	5.87																		100	76	
ARK2	1	2	7	Ap +	1.17					0.82	47.55	1.29		38.42	2.44	5.64	1.28																1.39	100	114	
AX3	1	1	5	Ap +	27.58						36.47	0.84		27.98	2.26	4.62	0.24																	100	111	
AX3	1	2	7	Ap +	1.07						47.80	1.11		38.73	2.41	7.12	0.38																	100	109	
AX3	1	2	8	Ap +	7.29						46.29	1.08		36.79	2.46	5.71	0.39															1.38	100	108		
AX3	1	3	3	Ap +	44.12						28.45	0.57		23.17	0.90	2.78																		100	108	
AX3	1	3	6	Ap +	19.89						38.98	1.08		32.39	2.34	5.03	0.28																	100	112	
AX3	1	3	7	Ap +	20.05						39.60	0.89		32.35	2.25	4.64	0.24																	100	123	
AX3	1	6	1	Ap +	0.97		0.97	2.84			43.53	1.34		41.09	2.24	5.43	0.24																1.35	100	101	
AX3	1	7	4	Ap +	28.55		1.33	1.33			31.12	1.38		30.25	1.72	4.14	0.19																	100	115	
AX3	1	8	4	Ap +	2.90		3.14	2.69			40.65	1.22		41.95	2.33	5.13																		100	106	
AX3	1	10	3	Ap +	5.13		0.69	0.61			45.57	0.97		39.12	2.09	5.83																		100	99	
SK5	2	2	24	Ap +	0.64						50.05	1.12		39.67	1.57	5.61																	1.34	100	100	
SK5	2	2	25	Ap +	1.28						50.35	1.02		39.39	1.62	6.33																		100	100	
AX1B	1	9	3	Ap + Oz	55.28						22.61	0.81		18.94	0.63	2.54																		100	111	
AX1B	1	9	4	Ap + Oz	46.52						25.18	0.52		22.85	0.76	4.16																		100	118	
AX1B	1	9	7	Ap + Oz	59.98						18.50	1.61		16.21	1.82	2.79						0.70												100	100	
AX1B	1	9-3,4	2	Ap + Oz	33.65						31.96	0.81		27.95	0.97	4.66																		100	115	
AX1B	1	9-3,4	3	Ap + Oz	28.42						35.16	0.80		29.63	0.99	5.00																		100	113	
AX1B	1	9-3,4	4	Ap + Oz	60.84						17.93			15.30	1.77	3.64						0.53												100	109	
AX1B	1	9-3,4	7	Ap + Oz	27.25						35.60	0.84		30.71	1.02	4.58																		100	115	
AX1B	1	9-3,4	8	Ap + Oz	33.54						33.07	0.62		26.69	1.11	4.97																		100	112	
AX1B	1	9-3,4	9	Ap + Oz	33.05						33.27	0.66		27.55	1.01	4.47																		100	116	
AX3	1	3 - 3	2	Ap + Oz	39.58						33.48	0.72		26.22																				100	103	
AX3	1	3 - 3	3	Ap + Oz	29.43						39.40	0.78		30.39																				100	105	
AX3	1	3 - 3	4	Ap + Oz	66.56						17.77	0.58		15.11																				100	109	
AX3	1	3 - 6	4	Ap + Oz	33.90						34.66	1.10		28.16	2.17																			100	108	
SK5	2	1	2	Ap + Oz	4.84						48.60			38.12	1.60	6.84																		100	103	
SK5	2	1	4	Ap + Oz	47.65				1.15		28.81			19.43	1.00	1.96																		100	102	
SK5	2	2	23	Ap + Oz	5.07						49.91	0.72		38.24	1.53	4.52																		100	92	
SK5	2	2	28	Ap + Oz	41.28			2.01			31.63	0.42		23.65	1.01																			100	99	
SK5	2	4	14	Ap + Oz	30.06						34.39	0.66		28.98	1.46	4.46																		100	104	
SK5	2	6	7	Ap + Oz	59.04						21.21	0.48		15.97	0.92	2.37																		100	103	
SK5	2	12	11	Ap + Oz	1.80						50.92	1.12		38.17	1.57	5.62	0.80																	100	49	
SK5	2	14	10	Ap + Oz	16.59					0.36	40.61	0.85		34.43	1.65	5.24	0.28																	100	100	
SK5	2	14	21	Ap + Oz	2.43					0.48	48.70	0.93		40.07	2.01	5.10	0.30																	100	100	
SK5	2	14	30	Ap + Oz	3.89					0.78	49.54	0.90		36.40	1.97	6.26	0.27																	100	90	
SK5	2	16	10	Ap + Oz	5.13						52.94	0.84		34.30	1.56	5.00	0.22																	100	90	
SK5	2	17	14	Ap + Oz	4.97						49.52	0.84		37.14	1.34	6.19																		100	95	
SK5	2	18	2	Ap + Oz	1.10						50.23	0.78		40.25	1.52	5.77	0.34																	100	86	
SK5	2	18	4	Ap + Oz	20.98						39.55	0.74		32.63	1.17	4.94																		100	90	
SK5	2	22	25	Ap + Oz	1.52						49.32	1.26		38.16	1.94	7.28	0.52																	100	95	
ARK2	1	3	2	Ap + Oz +	25.55					0.57	37.40	0.81		28.51	1.99	4.52	0.67																			

Supplementary Table S10: All EDS analyses by mineral

Sample	Locality	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	Cr2O3	CoO	NiO	CuO	ZnO	As2O3	ZrO2	Ag2O	Rb2O	MoO3	BaO	PbO	Li2O3	Cu2O3	Ni2O3	VO3	PtO2	Total	Actual Total	
SK4a	2	5	21	Brt + Cal + Oz	2.18						2.21				36.58													59.11							100	106	
SK4a	2	5	22	Brt + Cal + Oz	4.82			0.89			0.47				31.04								0.06						57.63							100	106
SK4a	2	5	25	Brt + Cal + Oz	6.55						11.06				29.49														52.90							100	106
SK4a	2	5	27	Brt + Cal + Oz	3.89						13.40				30.16														52.58							100	98
SK4a	2	5	28	Brt + Cal + Oz	1.98						26.51				25.49														46.04							100	85
SK4a	2	5	29	Brt + Cal + Oz	2.60					0.57	15.66				28.49														52.77							100	99
SK4a	2	5	30	Brt + Cal + Oz	1.91						5.95				34.14														58.01							100	106
SK4a	2	9	11	Brt + Cal + Oz	3.17						31.71				22.11														43.19							100	82
SK4a	2	11	10	Brt + Cal + Oz	6.06						36.45				20.46														37.14							100	84
SK4a	2	11	14	Brt + Cal + Oz	1.44						6.78				33.99														57.84							100	116
SK5	2	21	5	Brt + Cal + Oz	1.80						21.52				29.30														47.42							100	93
SK5	2	21	6	Brt + Cal + Oz	3.87						3.66				34.19														58.27							100	104
SK5	2	21	7	Brt + Cal + Oz	11.11						16.80				26.62														45.57							100	89
SK5	2	21	9	Brt + Cal + Oz	7.93						21.79	0.56			26.01														43.97							100	91
SK5	2	21	11	Brt + Cal + Oz	5.96						13.42				29.83														50.84							100	96
SK5	2	21	12	Brt + Cal + Oz	7.87						23.63				23.65														44.89							100	85
SK5	2	21	13	Brt + Cal + Oz	8.49						6.32				31.06														53.92							100	105
SK5	2	21	15	Brt + Cal + Oz	3.22						9.45				32.33														55.09							100	101
SK5	2	21	16	Brt + Cal + Oz	2.67						4.33				33.87														59.13							100	104
SK5	2	21	19	Brt + Cal + Oz	6.51						26.92				23.25														43.38							100	81
SK5	2	21	20	Brt + Cal + Oz	7.46						16.57				27.53														48.45							100	94
SK5	2	21	22	Brt + Cal + Oz	23.74						42.65				11.44														22.17							100	76
SK5	2	21	25	Brt + Cal + Oz	20.66					0.66	26.74				19.55														32.37							100	81
SK5	2	21	26	Brt + Cal + Oz	13.53						25.03				22.86														38.63							100	86
SK5	2	21	27	Brt + Cal + Oz	22.43					0.70	49.31				9.16														18.40							100	72
SK5	2	21	31	Brt + Cal + Oz	20.91						40.12				13.52														25.40							100	76
SK5	2	22	1	Brt + Cal + Oz	11.22						10.31				29.63														48.85							100	91
SK5	2	22	2	Brt + Cal + Oz	1.48						19.85	0.52			29.21														48.85							100	85
SK5	2	22	3	Brt + Cal + Oz	4.33						17.57				28.14														49.76							100	79
SK5	2	22	4	Brt + Cal + Oz	3.08						24.55				26.74														45.70							100	76
SK5	2	22	26	Brt + Cal + Oz	1.64						32.21				23.63														42.01							100	76
AX3	1	14 - 1	7	Brt + Oz	1.48						0.85				35.23														62.64							100	117
AX3	1	14 - 1	8	Brt + Oz	2.52										35.54														61.95							100	77
AX3	1	14 - 1	9	Brt + Oz	2.73						5.90	0.88			32.51														57.99							100	114
AX3	1	14 - 1	13	Brt + Oz	4.35						3.21	2.08	0.68		32.83		1.36												55.48							100	95
SK5	2	20	4	Brt + Oz +	18.03			0.91			5.72		0.29		27.52														47.52							100	102
AX1B	1	8	5	Brt + Sp +	15.76			1.01	1.27		2.62				32.73														35.94							100	112
AX1B	1	8-4,5	2	Brt + Sp +	10.44			0.82			1.24	1.16			32.77														3.98							100	124
ARK2	1	1	8	Cal	0.91	0.00	0.00	0.00	0.00	0.00	0.84	54.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	56	61	
ARK2	1	1	9	Cal	0.86	0.00	0.00	0.00	0.00	0.00	0.90	54.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	56	60	
ARK2	1	1	11	Cal	1.28	0.00	0.00	0.00	0.00	0.88	53.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	56	61	
ARK2	1	1	12	Cal	0.58	0.00	0.00	0.00	0.00	1.01	54.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	56	60	
ARK2	1	1	13	Cal	0.90	0.00	0.00	0.00	0.00	0.96	54.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	56	60	
ARK2	1	1	16	Cal	0.88	0.00	0.00	0.00	0.00	1.00	54.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	56	58	
ARK2	1	4	1	Cal	1.00	0.00	0.00	0.00	0.00	0.65	54.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	56	57	
ARK2	1	4	2	Cal	0.83	0.00	0.00	0.00	0.00	0.83	54.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	56	59	
ARK2	1	4	3	Cal	0.95	0.00	0.00	0.00	0.00	1.00	54.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	56	58	
ARK2	1	8	2	Cal	4.92	0.00	0.00	0.00	0.00	0.96	50.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	56	58	
ARK2	1	8	3	Cal	2.38	0.00	0.00	0.00	2.97	0.77	49.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	56	55	
ARK2	1	8	6	Cal	2.23	0.00	0.00	0.00	1.85	0.00	1.13	50.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	56	58	
ARK2	1	8	11	Cal	1.96	0.00	0.00	0.00	0.00	0.78	53.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	56	54	
AX1A	1	2	1	Cal</																																	

Supplementary Table S10: All EDS analyses by mineral

Sample	Locality	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	CO2	CoO	NO	CrO	ZrO	As2O3	ZnO	Ag2O	Rb2O	MnO3	BaO	PbO	LaxO3	Ca2O3	Nd2O3	VO3	PO2	Total	Actual Total
SK4a	2	4	13	Cal	0.85	0.00	0.00	0.00	0.00	0.00	55.15	0.00	0.00	0.00	0.00	0.00	0.00		0.00			0.00			0.00			0.00		0.00	0.00	0.00			56	55
SK4a	2	5	12	Cal	0.88	0.00	0.00	0.00	0.00	0.00	55.12	0.00	0.00	0.00	0.00	0.00	0.00		0.00			0.00			0.00			0.00		0.00	0.00	0.00			56	57
SK4a	2	5	23	Cal	0.93	0.00	0.00	0.00	0.00	0.00	55.07	0.00	0.00	0.00	0.00	0.00	0.00		0.00			0.00			0.00			0.00		0.00	0.00	0.00			56	57
SK4a	2	5	37	Cal	0.91	0.00	0.00	0.00	0.00	0.41	54.67	0.00	0.00	0.00	0.00	0.00	0.00		0.00			0.00			0.00			0.00		0.00	0.00	0.00			56	55
SK4a	2	5	40	Cal	0.00	0.00	0.00	0.00	0.00	0.39	55.61	0.00	0.00	0.00	0.00	0.00	0.00		0.00			0.00			0.00			0.00		0.00	0.00	0.00			56	58
SK4a	2	6	1	Cal	0.00	0.00	0.00	0.00	0.00	0.53	55.47	0.00	0.00	0.00	0.00	0.00	0.00		0.00			0.00			0.00			0.00		0.00	0.00	0.00			56	52
SK4a	2	6	5	Cal	1.09	0.00	0.00	0.00	0.00	0.30	54.91	0.00	0.00	0.00	0.00	0.00	0.00		0.00			0.00			0.00			0.00		0.00	0.00	0.00			56	57
SK4a	2	7	15	Cal	0.94	0.00	0.00	0.00	0.00	0.39	54.67	0.00	0.00	0.00	0.00	0.00	0.00		0.00			0.00			0.00			0.00		0.00	0.00	0.00			56	57
SK4a	2	8	2	Cal	0.98	0.00	0.00	0.00	0.00	0.00	55.02	0.00	0.00	0.00	0.00	0.00	0.00		0.00			0.00			0.00			0.00		0.00	0.00	0.00			56	55
SK4a	2	9	1	Cal	0.98	0.00	0.00	0.00	0.00	0.48	54.54	0.00	0.00	0.00	0.00	0.00	0.00		0.00			0.00			0.00			0.00		0.00	0.00	0.00			56	50
SK4a	2	10	2	Cal	0.90	0.00	0.00	0.00	0.00	0.00	55.10	0.00	0.00	0.00	0.00	0.00	0.00		0.00			0.00			0.00			0.00		0.00	0.00	0.00			56	55
SK4a	2	10	5	Cal	0.92	0.00	0.00	0.00	0.00	0.57	54.50	0.00	0.00	0.00	0.00	0.00	0.00		0.00			0.00			0.00			0.00		0.00	0.00	0.00			56	57
SK4a	2	11	2	Cal	0.00	0.00	0.00	0.00	0.00	0.85	55.15	0.00	0.00	0.00	0.00	0.00	0.00		0.00			0.00			0.00			0.00		0.00	0.00	0.00			56	57
SK4a	2	11	3	Cal	1.16	0.00	0.00	0.00	0.00	0.77	54.04	0.00	0.00	0.00	0.00	0.00	0.00		0.00			0.02			0.00			0.00		0.00	0.00	0.00			56	57
SK4a	2	11																																		

Supplementary Table S10: All EDS analyses by mineral

Sample	Locality	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	Cr2O3	CoO	NiO	CuO	ZnO	As2O3	ZrO2	Ag2O	Rb2O	MoO3	BaO	PbO	Li2O3	Cu2O3	Nd2O3	VO3	PbO2	Total	Actual Total
AX1C	1	3a	5	Cal +	16.27						83.73																							100	60	
AX1C	1	3a	12	Cal +	10.08						89.92																							100	58	
AX1C	1	3a	13	Cal +	8.46						91.54																							100	59	
AX1C	1	4a	5	Cal +	8.07						91.93																							100	58	
AX1C	1	4a	7	Cal +	7.95						92.05																							100	57	
AX1C	1	4a	11	Cal +	11.31						88.69																							100	60	
AX3	1	4	3	Cal +	15.67		3.77	0.88		1.67	76.73		1.28																					100	65	
AX1B	1	7-4.6	5	Cal +	2.82						95.12				0.92							1.14												100	60	
AX1B	1	7-4.6	8	Cal +	2.62						95.42				1.03							0.93												100	60	
AX1B	1	7-4.6	10	Cal +	3.26						95.75											0.98												100	61	
AX1B	1	7-3.5	6	Cal +	5.89					0.62	91.30											0.92												100	61	
AX1B	1	11-6	4	Cal +	7.79					1.15	91.06				1.26																			100	57	
SK4a	2	1	2	Cal +	2.45					0.79	96.75																							100	57	
SK4a	2	1	3	Cal +	3.67						96.33																							100	58	
SK4a	2	1	4	Cal +	5.92					0.65	93.43																							100	59	
SK4a	2	1	6	Cal +	5.10					0.68	94.22																							100	60	
SK4a	2	1	10	Cal +	4.03					1.05	94.92																							100	60	
SK4a	2	2	2	Cal +	2.03					0.88	97.09																							100	57	
SK4a	2	2	8	Cal +	2.78						97.22																							100	59	
SK4a	2	3	3	Cal +	2.60						97.40																							100	57	
SK4a	2	3	18	Cal +	2.28						97.72																							100	57	
SK4a	2	5	26	Cal +	4.07					0.67	95.26																							100	57	
SK4a	2	7	2	Cal +	2.07						97.93																							100	55	
SK4a	2	7	3	Cal +	2.39						97.61																							100	56	
SK4a	2	7	7	Cal +	22.77		0.58	14.33		0.73	61.59																							100	69	
SK4a	2	7	8	Cal +	35.03	0.00	0.61	8.87	0.00	0.65	54.84	0.00	0.00	0.00	0.00	0.00	0.00		0.00			0.00			0.00			0.00					100	76		
SK4a	2	7	10	Cal +	2.21						97.79																							100	57	
SK4a	2	7	11	Cal +	33.84			17.00		0.85	48.31																							100	74	
SK4a	2	7	13	Cal +	6.91		0.93	27.64		0.95	63.58																							100	61	
SK4a	2	7	18	Cal +	5.82					1.02	93.16																							100	60	
SK4a	2	8	9	Cal +	2.44						97.56																							100	58	
SK4a	2	9	8	Cal +	3.05					1.17	95.70																							100	55	
SK4a	2	10	6	Cal +	6.05						93.95																							100	61	
SK5	2	16	9	Cal +	12.17					0.83	87.01																							100	58	
SK4a	2	5	31	Cal + Brl + Qz	11.40		0.88			0.63	59.86	0.58			9.86													16.79						100	65	
SK4a	2	11	8	Cal + Brl + Qz	3.41						75.82				6.70													14.07						100	65	
SK4a	2	11	9	Cal + Brl + Qz	2.52						84.83				3.83													8.82						100	63	
SK4a	2	12	2	Cal + Cal +	59.32	0.58	2.10	9.48		0.68	27.21		0.64																					100	86	
SK5	2	8	14	Cal + Feohy + Qz	4.85			43.42		1.27	50.46																							100	64	
SK5	2	12	9	Cal + Feohy + Qz	3.16			20.97		1.07	74.81																							100	56	
SK5	2	17	5	Cal + Feohy + Qz	9.41			39.45			51.13																							100	59	
SK5	2	8	2	Cal + Feohy + Qz +	4.75		1.28	43.88		1.39	48.89																							100	58	
SK5	2	2	5	Cal + Gth +	9.73		1.12	42.01		1.66	45.49																							100	68	
SK5	2	2	9	Cal + Gth +	19.17		1.32	47.57		1.48	30.46																							100	70	
SK5	2	17	13	Cal + Gth +	18.70		1.90	26.75			52.65																							100	67	
ARK2	1	1	10	Cal + Qz	12.96					1.91	85.13																							100	62	
ARK2	1	4	8	Cal + Qz	34.30			0.68		1.25	63.78																							100	71	
ARK2	1	7	2	Cal + QZ	37.91		0.55			1.05	60.49																							100	76	
ARK2	1	7	3	Cal + Qz	38.93					1.02	60.06																							100	75	
ARK2	1	7	9	Cal + Qz	45.11			3.70		0.54	50.25						0.40																	100	71	
ARK2	1	7	10	Cal + Qz	64.60					0.49	34.91																							100	84	
ARK2	1	7	12	Cal + Qz	40.19		0.83	1.25		0.82	56.77						0.33																	100	69	
ARK2	1	8	4	Cal + Qz	18.86		0.57			1.64	78.93																							100	63	
ARK2	1	8	7	Cal + Qz	19.29					1.59	79.13																							100	61	
ARK2	1	8	12	Cal + Qz	15.49		1.11	1.30		2.73	79.00		0.38																				100	58		
AX1A	1	1	5	Cal + Qz	5.40					1.46	93.15																							100	59	
AX1A	1	1	9	Cal + Qz	15.18		1.82				81.94		1.06																					100	65	
AX1A	1	2	4	Cal + Qz	38.55		0.72				60.73																							100	71	
AX1A	1	2	5	Cal + Qz	11.82					0.64	87.53																							100	62	
AX1A	1	3	8	Cal + Qz	13.05						86.95																							100	62	
AX1A	1	4	2	Cal + Qz	38.11						61.89																							100	73	
AX1A	1	4	11	Cal + Qz	55.13						44.87																							100	83	
AX1A	1	5	6	Cal + Qz	13.82						86.18																							100	61	
AX1A	1	6	2	Cal + Qz	2																															

Supplementary Table S10: All EDS analyses by mineral

Sample	Locality	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	C2O3	CoO	NiO	CrO	ZrO	As2O3	ZnO2	Ag2O	Ru2O	MnO3	BaO	PbO	LuxO3	Ca2O3	Nd2O3	VO3	PO2	Total	Actual Total		
AX2	1	3	4	Cal + Qz	24.37					0.62	75.01																									100	66	
AX2	1	3	5	Cal + Qz	38.48						61.52																										100	75
AX2	1	3	6	Cal + Qz	20.60			1.03		1.08	75.78					1.51																					100	70
AX2	1	4	4	Cal + Qz	48.48			0.78			50.75																										100	76
AX2	1	4	5	Cal + Qz	14.30						85.70																										100	58
AX2	1	4	7	Cal + Qz	16.94					1.02	82.04																										100	60
AX3	1	1	2	Cal + Qz	19.42	2.51	3.43	0.81		0.91	72.08		0.82																								100	66
AX3	1	1	7	Cal + Qz	3.90						96.10																										100	55
AX3	1	2	1	Cal + Qz	3.47					2.60	93.92																										100	56
AX3	1	2	3	Cal + Qz	2.63					1.39	95.98																										100	58
AX3	1	2	4	Cal + Qz	2.79					3.07	94.14																										100	61
AX3	1	4	6	Cal + Qz	3.22					0.76	96.02																										100	54
AX3	1	4	7	Cal + Qz	5.34					0.95	93.71																										100	56
AX3	1	11	4	Cal + Qz	40.36					1.18	58.46																										100	69
AX3	1	11	5	Cal + Qz	11.77						88.23																										100	57
AX3	1	11	6	Cal + Qz	39.83		0.66	0.49		0.67	58.34																										100	71
AX3	1	11	7	Cal + Qz	11.06						88.95																										100	58
AX3	1	11	9	Cal + Qz	2.63				0.76	0.63	95.30																										100	54
AX3	1	12	2	Cal + Qz	20.58		2.97	0.74		0.44	70.47		0.79																								100	61
AX3	1	12	3	Cal + Qz	29.29					1.27	69.43																										100	63
AX3	1	12	5	Cal + Qz	3.28					0.78	95.94																										100	51
AX3	1	12	6	Cal + Qz	34.50					0.78	64.72																										100	68
AX3	1	12	8	Cal + Qz	3.33					1.25	95.42																										100	55
AX3	1	13	3	Cal + Qz	6.08						93.92																										100	55
AX3	1	13	5	Cal + Qz	18.16					1.35	80.49																										100	61
AX3	1	13	6	Cal + Qz	28.05					0.97	70.99																										100	60
AX3	1	14	4	Cal + Qz	26.04		0.68	0.63		1.30	72.46																										100	59
AX3	1	14	5	Cal + Qz	12.33					0.92	82.16	1.59	1.08		1.06		0.86																				100	49
AX3	1	14	7	Cal + Qz	13.77					0.64	85.58																										100	55
AX3	1	15	4	Cal + Qz	49.58					0.51	49.91																										100	75
AX1B	1	11-6	3	Cal + Qz	34.85					0.68	64.47																										100	67
AX3	1	4 - 6	3	Cal + Qz	12.32						87.68																										100	61
AX3	1	4 - 6	4	Cal + Qz	2.87						97.13																										100	57
AX3	1	4 - 6	5	Cal + Qz	5.01				0.83		92.83				1.33																						100	58
AX3	1	4 - 6	6	Cal + Qz	36.11						63.89																										100	74
AX3	1	4 - 6	7	Cal + Qz	19.75					0.86	79.39																										100	65
AX3	1	4 - 6	12	Cal + Qz	70.03						29.97																										100	92
AX3	1	14 - 1	14	Cal + Qz	19.86					1.09	79.05																										100	67
SK4a	2	3	8	Cal + Qz	3.53						96.47																										100	58
SK4a	2	3	9	Cal + Qz	19.00				0.56		80.44																										100	64
SK4a	2	3	14	Cal + Qz	31.21						68.79																										100	69
SK4a	2	3	19	Cal + Qz	40.96					0.49	58.55																										100	74
SK4a	2	4	1	Cal + Qz	38.30					0.72	60.99																										100	67
SK4a	2	4	3	Cal + Qz	22.31					0.89	76.80																										100	62
SK4a	2	4	5	Cal + Qz	28.71						71.29																										100	66
SK4a	2	4	7	Cal + Qz	5.75					1.05	93.20																										100	57
SK4a	2	8	8	Cal + Qz	70.87						29.13																										100	90
SK4a	2	4	10	Cal + Qz	43.43						56.57																										100	73
SK4a	2	5	7	Cal + Qz	9.92		0.78	1.11		2.19	85.25	0.75																									100	58
SK4a	2	5	9	Cal + Qz	2.77						97.23																										100	56
SK4a	2	5	13	Cal + Qz	4.05						95.95																										100	58
SK4a	2	5	19	Cal + Qz	18.46						81.54																										100	63
SK4a	2	5	24	Cal + Qz	49.73						50.27																										100	79
SK4a	2	5	35	Cal + Qz	25.96				0.53		73.51																										100	67
SK4a	2	5	36	Cal + Qz	12.66				0.89		85.37																										100	61
SK4a	2	5	38	Cal + Qz	4.59						95.41																										100	56
SK4a	2	5	38	Cal + Qz	21.35					0.65	78.00																										100	67
SK4a	2	6	2	Cal + Qz	15.32					0.77	83.91																										100	59
SK4a	2	6	3	Cal + Qz	15.55						84.45																										100	61
SK4a	2	6	4	Cal + Qz	6.70						93.30																										100	58
SK4a	2	7	6	Cal + Qz	23.05						76.95																									</		

Supplementary Table S10: All EDS analyses by mineral

Sample	Locality	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	Cr2O3	CoO	NiO	CuO	ZnO	As2O3	ZrO2	Ag2O	Rb2O	MnO3	BaO	PbO	Li2O3	Cu2O3	Nd2O3	VO3	PtO2	Total	Actual Total
AX3	1	6	2	Oz	98.44			0.60							0.96																			100	115	
AX3	1	7	1	Oz	100.00																													100	113	
AX3	1	8	5	Oz	100.00																													100	112	
AX3	1	9	1	Oz	99.40			0.60																										100	111	
AX3	1	10	1	Oz	100.00																													100	111	
AX3	1	11	1	Oz	100.00																													100	106	
AX3	1	11	3	Oz	100.00																													100	110	
AX3	1	11	8	Oz	100.00																													100	113	
AX3	1	12	1	Oz	99.39		0.61																											100	109	
AX3	1	13	1	Oz	100.00																													100	107	
AX3	1	14	8	Oz	99.65						0.35																							100	103	
AX3	1	14	9	Oz	99.79						0.21																							100	101	
AX3	1	14	10	Oz	97.52						2.48																							100	106	
AX3	1	15	5	Oz	99.73						0.27																							100	104	
AX3	1	15	6	Oz	99.59						0.41																							100	102	
AX3	1	15	7	Oz	99.50						0.50																							100	106	
AX1B	1	5-4,10	6	Oz	100.00																													100	118	
AX1B	1	5-7	1	Oz	100.00																													100	117	
AX1B	1	5-7	12	Oz	100.00																													100	118	
AX1B	1	6-7	1	Oz	100.00																													100	120	
AX1B	1	6-8	1	Oz	100.00																													100	120	
AX1B	1	7-4,6	1	Oz	100.00																													100	120	
AX1B	1	7-4,6	19	Oz	100.00																													100	120	
AX1B	1	7-3,5	1	Oz	99.53		0.47																											100	112	
AX1B	1	7-3,5	2	Oz	100.00																													100	120	
AX1B	1	7-3,5	17	Oz	100.00																													100	116	
AX1B	1	7-3,5	25	Oz	99.46		0.54																											100	119	
AX1B	1	8-4,5	1	Oz	100.00																													100	120	
AX1B	1	9-3,4	1	Oz	100.00																													100	121	
AX1B	1	9-5	1	Oz	100.00																													100	119	
AX1B	1	11-6	2	Oz	100.00																													100	113	
AX1B	1	11-6	7	Oz	99.51						0.49																							100	111	
AX3	1	3-3	1	Oz	100.00																													100	118	
AX3	1	3-3	12	Oz	100.00																													100	116	
AX3	1	3-6	2	Oz	100.00																													100	116	
AX3	1	3-6	9	Oz	100.00																													100	118	
AX3	1	3-6	18	Oz	100.00																													100	117	
AX3	1	3-6	19	Oz	100.00																													100	111	
AX3	1	3-6	20	Oz	100.00																													100	109	
AX3	1	3-6	21	Oz	98.20																													100	96	
AX3	1	4-6	9	Oz	100.00								0.45		0.95		0.40																100	106		
AX3	1	4-8	10	Oz	100.00																												100	117		
AX3	1	4-6	11	Oz	100.00																													100	117	
SK4a	2	1	1	Oz	100.00																													100	116	
SK4a	2	1	12	Oz	99.49		0.51																											100	117	
SK4a	2	2	1	Oz	100.00																													100	116	
SK4a	2	2	4	Oz	99.51						0.49																							100	121	
SK4a	2	2	9	Oz	100.00																													100	123	
SK4a	2	3	21	Oz	100.00																													100	115	
SK4a	2	3	22	Oz	100.00																													100	120	
SK4a	2	4	15	Oz	100.00																													100	118	
SK4a	2	5	1	Oz	100.00																													100	100	
SK4a	2	5	2	Oz	100.00																													100	110	
SK4a	2	5	3	Oz	100.00																													100	94	
SK4a	2	5	33	Oz	100.00																													100	115	
SK4a	2	5	34	Oz	100.00																													100	117	
SK4a	2	6	6	Oz	100.00																													100	119	
SK4a	2	7	1	Oz	100.00																													100	116	
SK4a	2	7	19	Oz	100.00																													100	119	
SK4a	2	7	20	Oz	99.31						0.69																							100	117	
SK4a	2	8	5	Oz	98.61		0.96						0.23																				100	115		
SK4a	2	8	6	Oz	98.85		0.92						0.23																				100	109		
SK4a	2	8	7	Oz	98.55		0.66	0.79																									100	104		
SK4a	2	8	10	Oz	100.00																													100	117	
SK4a	2	9	7	Oz	99.38						0.62																							100	112	
SK4a	2	9	10	Oz	100.00																													100	110	
SK4a	2	10	1	Oz	100.00																													100	112	
SK4a	2	10	7	Oz	99.54						0.46																									

Supplementary Table S10: All EDS analyses by mineral

Sample Locality	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	Cr2O3	CuO	NiO	CuO	ZrO	As2O3	ZrO2	Ag2O	Ru2O	MnO3	BaO	PbO	LapO3	Ce2O3	Nd2O3	VO3	PhO2	Total	Actual Total
SK5	2	5	21 Oz	99.66						0.34																							100	107	
SK5	2	5	22 Oz	100.00																													100	110	
SK5	2	5	23 Oz	100.00																													100	111	
SK5	2	6	1 Oz	100.00																													100	115	
SK5	2	6	10 Oz	100.00																													100	114	
SK5	2	6	14 Oz	100.00																													100	108	
SK5	2	6	15 Oz	100.00																													100	112	
SK5	2	7	10 Oz	99.04						0.96																							100	106	
SK5	2	7	11 Oz	99.08						0.92																							100	106	
SK5	2	7	12 Oz	100.00																													100	107	
SK5	2	7	14 Oz	99.72						0.28																							100	110	
SK5	2	7	16 Oz	99.51						0.49																							100	112	
SK5	2	10	1 Oz	99.54						0.46																							100	109	
SK5	2	10	16 Oz	99.33						0.67																							100	111	
SK5	2	11	2 Oz	99.26						0.74																							100	108	
SK5	2	11	10 Oz	100.00																													100	113	
SK5	2	11	12 Oz	100.00																													100	113	
SK5	2	11	17 Oz	99.69						0.31																							100	111	
SK5	2	14	12 Oz	99.77						0.23																							100	109	
SK5	2	14	34 Oz	100.00																													100	111	
SK5	2	14	35 Oz	100.00																													100	110	
SK5	2	15	1 Oz	99.42		0.58																											100	103	
SK5	2	15	4 Oz	100																															

Supplementary Table S10: All EDS analyses by mineral

Sample	Locality	Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	Cr2O3	CoO	NiO	CuO	ZnO	As2O3	ZrO2	Ag2O	Rb2O	MnO3	BaO	PbO	Li2O3	Cu2O3	Nd2O3	VO3	PbO2	Total	Actual Total
AX1C	1	2	6	Oz + Cal	55.06						44.92																							100	86	
AX1C	1	3	6	Oz + Cal	66.25						33.75																							100	88	
AX1C	1	3	9	Oz + Cal	86.17						13.83																							100	101	
AX1C	1	3	10	Oz + Cal	81.02						18.98																							100	96	
AX1C	1	3	11	Oz + Cal	87.51						12.49																							100	108	
AX1C	1	6	10	Oz + Cal	55.04						44.96																							100	86	
AX1C	1	3a	8	Oz + Cal	95.16			1.01			3.83																							100	49	
AX1C	1	3a	9	Oz + Cal	88.40			1.83			9.77																							100	21	
AX1C	1	5a	5	Oz + Cal	68.93						31.07																							100	88	
AX2	1	1	4	Oz + Cal	86.50			0.36			13.14																							100	108	
AX3	1	13	4	Oz + Cal	56.36					0.47	43.17																							100	81	
AX1B	1	7-3.5	7	Oz + Cal	81.43						38.57																							100	89	
AX3	1	14-1	17	Oz + Cal	93.86						6.14																							100	118	
SK4a	2	3	1	Oz + Cal	69.50						30.50																							100	87	
SK4a	2	4	2	Oz + Cal	93.78						6.22																							100	104	
SK4a	2	4	6	Oz + Cal	85.66						14.34																							100	99	
SK4a	2	4	14	Oz + Cal	97.86						2.14																							100	113	
SK4a	2	8	3	Oz + Cal	78.82						21.18																							100	96	
SK4a	2	9	12	Oz + Cal	90.74						9.26																							100	96	
SK4a	2	11	11	Oz + Cal	51.93						48.07																							100	82	
SK4a	2	11	12	Oz + Cal	96.23		0.90				2.66		0.22																					100	107	
SK4a	2	11	13	Oz + Cal	92.78		0.60	0.44			6.18																							100	103	
SK4a	2	11	16	Oz + Cal	79.76						20.24																							100	101	
SK4a	2	11	17	Oz + Cal	93.95						6.05																							100	108	
SK5	2	5	7	Oz + Cal	55.23						44.77																							100	75	
SK5	2	5	15	Oz + Cal	52.78						47.22																							100	76	
SK5	2	7	22	Oz + Cal	97.97						2.03																							100	107	
SK5	2	7	24	Oz + Cal	65.50						34.50																							100	72	
SK5	2	8	6	Oz + Cal	55.96						44.04																							100	78	
SK5	2	9	7	Oz + Cal	96.16						3.84																							100	102	
SK5	2	9	11	Oz + Cal	68.37						31.63																							100	72	
SK5	2	10	15	Oz + Cal	95.92						4.08																							100	105	
SK5	2	12	12	Oz + Cal	89.72		0.82				9.24		0.22																					100	99	
SK5	2	12	13	Oz + Cal	91.42		0.91				7.67																							100	98	
SK5	2	13	34	Oz + Cal	97.62						2.38																							100	101	
SK5	2	14	5	Oz + Cal	80.31						19.69																							100	90	
SK5	2	14	6	Oz + Cal	98.37						1.63																							100	107	
SK5	2	14	20	Oz + Cal	56.81					0.53	42.66																							100	81	
SK5	2	14	33	Oz + Cal	95.27						4.73																							100	97	
SK5	2	15	3	Oz + Cal	97.87						2.13																							100	101	
SK5	2	16	5	Oz + Cal	92.52		0.60	1.71			4.69						0.49																	100	60	
SK5	2	16	6	Oz + Cal	95.73						4.27																							100	103	
SK5	2	16	7	Oz + Cal	16.54			0.56			82.90																							100	58	
SK5	2	16	8	Oz + Cal	51.09						48.91																							100	77	
SK5	2	20	2	Oz + Cal	97.91						2.09																							100	113	
SK5	2	22	9	Oz + Cal	66.89					0.52	32.59																							100	89	
SK5	2	22	15	Oz + Cal	69.81						29.94		0.25																					100	94	
SK5	2	22	16	Oz + Cal	90.89			0.77		1.48	3.87	0.45										0.73											100	77		
SK5	2	22	19	Oz + Cal	97.52						2.48																							100	118	
SK5	2	22	24	Oz + Cal	72.12						27.88												1.51											100	87	
AX1B	1	7-3.5	8	Oz + Cal +	71.21						25.52				1.76																			100	82	
SK5	2	22	8	Oz + Cal +	77.16		3.48	0.83		0.48	17.07		0.98																					100	97	
SK5	2	22	8	Oz + Cal +	74.81		2.80	0.57		0.52	20.60		0.70																					100	87	
SK5	2	22	20	Oz + Cal +	88.62		0.72	0.70		1.90	4.38	0.74			2.17							0.76												100	94	
AX2	1	5-2	3	Oz + FeOhy	64.39						35.16																							100	141	
AX2	1	5-2	9	Oz + FeOhy	82.29			17.17				0.54																						100	151	
AX3	1	3-3	6	Oz + FeOhy	71.74			27.40													0.63	0.23												100	118	
AX3	1	3-3	11	Oz + FeOhy	71.42			28.58																										100	108	
AX3	1	3-6	8	Oz + FeOhy	41.15			56.92	0.65		0.68							0.59																100	107	
SK5	2	1	7	Oz + FeOhy	77.87		1.10	20.16		0.63			0.24																					100	110	
SK5	2	19	12	Oz + FeOhy	75.08			1.16	23.26	0.50																								100	82	
SK5	2	2	29	Oz + FeOhy +	83.40		1.39	33.80		0.91	0.49																							100	107	
SK5	2	3	4	Oz + FeOhy +	83.44			16.21		0.35																								100	95	
SK5	2	3	5	Oz + FeOhy +	66.82		4.06	27.44		0.73			0.94																					100	100	
SK5	2	3	6	Oz + FeOhy +	79.1																															

Sample Locality	Site	Position	Mineral	SO2	TO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	Cr2O3	CoO	NO	CoO	ZnO	As2O3	ZrO2	Ag2O	Rb2O	MnO3	BaO	PbO	Li2O3	Ca2O3	Ni2O3	WO3	PO2	Total	Actual Total
AX1B	15-4.10	5	Sp +	21.20		2.86	1.74		5.12	7.57				33.21	1.05							27.25											100	52	
AX1B	15-4.10	7	Sp +	20.93		2.46	1.87		5.10	7.03				32.03	1.46							29.14											100	44	
AX1B	15-4.10	8	Sp +	29.53					6.44	9.87				43.52								10.64											100	12	
AX1B	15-4.10	9	Sp +	18.02		1.63	1.17		4.85	9.04				34.83	0.78							29.83	0.03										100	87	
AX1B	15-7	2	Sp +	22.99	0.50	2.48	1.92		4.38	7.62				32.62	0.75							27.13											100	90	
AX1B	15-7	3	Sp +	24.92		3.06	1.92		3.90	7.72				35.25	0.99		1.92					22.23											100	35	
AX1B	15-7	4	Sp +	21.97	0.51	2.27	1.82		4.27	7.85				31.92	0.75		1.14					28.65											100	83	
AX1B	15-7	6	Sp +	30.47		2.08	1.46		4.78	8.11				28.23	0.83							24.15											100	77	
AX1B	15-7	7	Sp +	23.79	0.59	2.08	1.45		4.20	5.71				33.58	0.82							27.55	0.23										100	64	
AX1B	15-7	8	Sp +	22.60		2.61			6.74	21.51				32.62								13.91											100	16	
AX1B	16-7	2	Sp +	23.22		2.95	2.08		4.26	9.54		0.35		28.16	0.83							23.85					4.74						100	79	
AX1B	16-7	3	Sp +	32.22		3.83	2.18		5.51	7.82				29.51	0.91							18.02											100	24	
AX1B	16-7	4	Sp +	25.78			1.77		7.16	10.17				30.10								25.01											100	17	
AX1B	16-7	5	Sp +	27.30		3.55	2.91		5.31	9.19				27.04	0.81							23.56	0.31										100	58	
AX1B	16-7	6	Sp +	33.73	0.46	2.41	1.61		3.29	6.47		0.34		26.63	0.59							24.39	0.07										100	108	
AX1B	16-8	2	Sp +	18.15		2.02	1.36		4.46	6.97				34.43	0.71							31.71	0.19										100	79	
AX1B	16-8	3	Sp +	26.77		4.77	1.76		7.84	9.98				31.21								17.66											100	18	
AX1B	16-8	4	Sp +	23.22		4.19	2.33		6.34	9.30				31.13	1.24							22.24											100	27	
AX1B	16-8	5	Sp +	21.56		1.89	1.73		5.52	7.25				31.38	0.67							28.66	0.34										100	70	
AX1B	16-8	6	Sp +	26.20		2.80	1.88		4.61	7.40		0.45		29.82	0.56							26.20	0.09										100	43	
AX1B	16-8	7	Sp +	14.95		1.84	1.44		4.74	6.59				37.38	0.64							32.49											100	47	
AX1B	16-8	8	Sp +	14.74		1.53	1.33		8.99	13.41				35.75								24.25											100	31	
AX1B	17-4.6	2	Sp +	25.12		2.29	1.64		3.70	7.80		0.38		31.63								26.34	0.05				1.05						100	97	
AX1B	17-3.5	3	Sp +	24.29		3.53	1.98		4.97	7.68				31.17	0.94							25.57											100	64	
AX1B	17-3.5	4	Sp +	28.55		3.08	2.08		3.92	7.93		0.37		28.63	0.94							24.58											100	65	
AX1B	17-3.5	9	Sp +	24.49		2.21	1.75		7.14	9.90				29.15	0.71							24.66											100	48	
AX1B	17-3.5	10	Sp +	24.24		2.01	1.70		4.64	7.79				28.14	0.57							23.58					7.33						100	64	
AX1B	17-3.5	21	Sp +	25.86		3.04	2.24		4.26	9.34		0.38		29.53	0.51							24.91											100	76	
AX1B	17-3.5	22	Sp +	32.75		3.99	3.48		3.96	10.45		0.44		24.88	0.57							19.48											100	65	
AX1B	18-4.5	3	Sp +	20.30		2.49	1.86		5.56	8.06		0.34		31.43	0.57							21.55					7.86						100	74	
AX1B	18-4.5	4	Sp +	24.20		2.53	1.80		7.03	9.08				30.60	0.61							22.69					1.46						100	57	
AX1B	19-5	2	Sp +	27.55		3.55	2.88		4.60	9.49				28.22	0.62							23.21											100	63	
AX1B	19-5	3	Sp +	25.45	0.56	3.36	2.54		5.16	9.30		0.43		28.89	0.57							23.76											100	72	
AX1B	111-6	1	Sp +	21.43		2.60	1.71		3.77	6.65		0.44		31.44	0.52							26.12					0.80	4.52					100	96	
AX1B	19-3.4	5	Sp + Ap +	33.78		2.27	1.13		3.01	7.29			4.31	27.62	0.75							19.84											100	31	
AX1B	17-4.6	3	Sp + Cal +	16.97		2.02	1.48		3.20	33.43		0.33		22.09	0.35							20.14											100	80	
AX1B	17-4.6	4	Sp + Cal +	40.98		2.92	2.33		3.82	10.82		0.46		20.83	0.39							17.16	0.28										100	73	
AX1B	17-3.5	23	Sp + Cal +	46.42		1.47	4.48	0.63	28.46					7.26	0.34							6.83					2.18						100	74	
AX1B	15-7	5	Sp + Qz +	62.30	0.45	1.87	2.79		0.57	1.26		0.27		14.27	0.24							15.97											100	111	
AX1B	16-7	7	Sp + Qz +	63.69	0.41	1.58	1.69		1.26	1.93		0.23		14.33	0.27							14.61	0.00										100	110	
AX1B	17-4.6	7	Sp + Qz +	44.51		2.27	1.94		3.65	8.76				22.05								16.82											100	58	
AX1B	17-4.6	9	Sp + Qz +	40.67		1.26	1.17		4.25	8.25				24.72	0.32							19.60											100	78	
AX1B	17-4.6	12	Sp + Qz +	38.35		3.62	2.29	0.47	3.13	6.36		0.44		23.84	0.63							19.04					1.84						100	91	
AX1B	17-4.6	13	Sp + Qz +	72.83		0.69	0.56		1.01	2.41				11.47	0.26							10.76											100	108	
AX1B	17-4.6	14	Sp + Qz +	65.73		0.80	0.53		1.79	2.78				14.70	0.38							13.13	0.15										100	107	
AX1B	17-4.6	15	Sp + Qz +	43.32		1.63	0.86		3.36	6.97				22.85	0.42							20.58	0.00										100	64	
AX1B	17-4.6	17	Sp + Qz +	56.47		0.85	0.83		2.01	3.61				18.38	0.41							17.08	0.36										100	69	
AX1B	17-4.6	18	Sp + Qz +	63.42			1.54		1.60	2.31				16.02	0.43							14.68											100	88	
AX1B	17-3.5	14	Sp + Qz +	43.09		1.67	1.89		3.35	7.19				23.59	0.44							18.77											100	70	
AX1B	17-3.5	15	Sp + Qz +	95.41										2.01	0.66							1.92											100	85	
AX1B	17-3.5	16	Sp + Qz +	62.88		0.80	0.67		2.16	3.12				15.82	0.36							14.18											100	90	
AX1B	17-3.5	18	Sp + Qz +	59.27		1.02	0.86		1.85	3.18				17.77	0.28							15.87											100	104	
AX1B	17-3.5	24	Sp + Qz +	59.76		1.02	5.74	2.39	1.27	2.41				12.84	0.27							11.32					1.87						100	85	
AX1B	17-3.5	26	Sp + Qz +	72.36			0.96	0.82	0.56	1.40				11.21	0.36							4.72					7.61						100	72	
AX1B	19-5	4	Sp + Qz +	74.62		1.87	1.54		2.06	4.14				7.90	0.34							7.52											100	99	
AX3	13-3	10	TiO2 + Qz	47.27	52.73																												100	126	
SK5	2-1	6	TiO2 + Qz	24.67	73.76		1.57																												

Supplementary Material S11: SEM-BSE images and Electron Dispersive Spectroscopy (EDS) mineral analyses for sample ARK2.

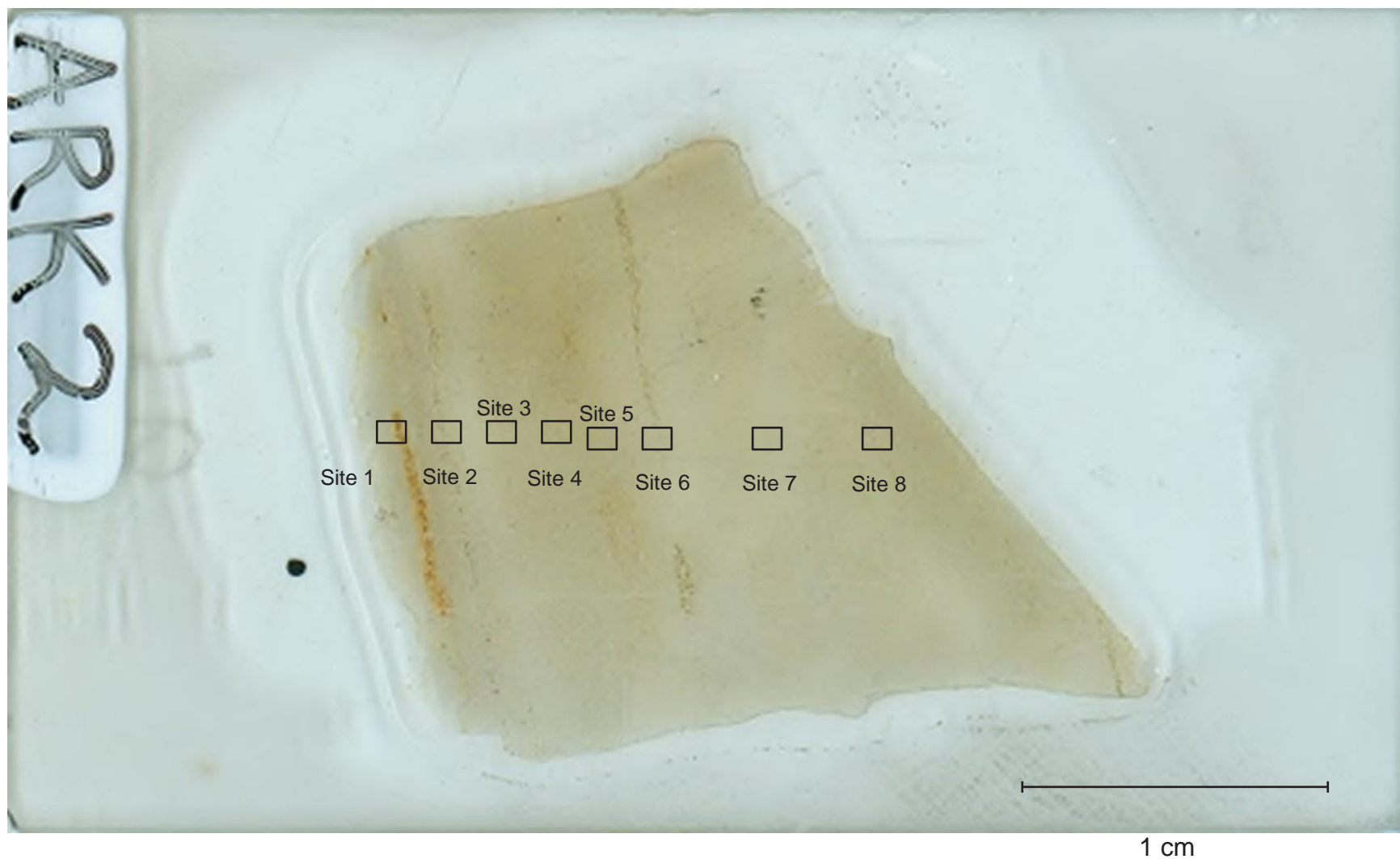


Figure S11.1: ARK2 thin section showing respective sites taken for mineral chemical analyses (EDS) via Scanning Electron Microscope (SEM).

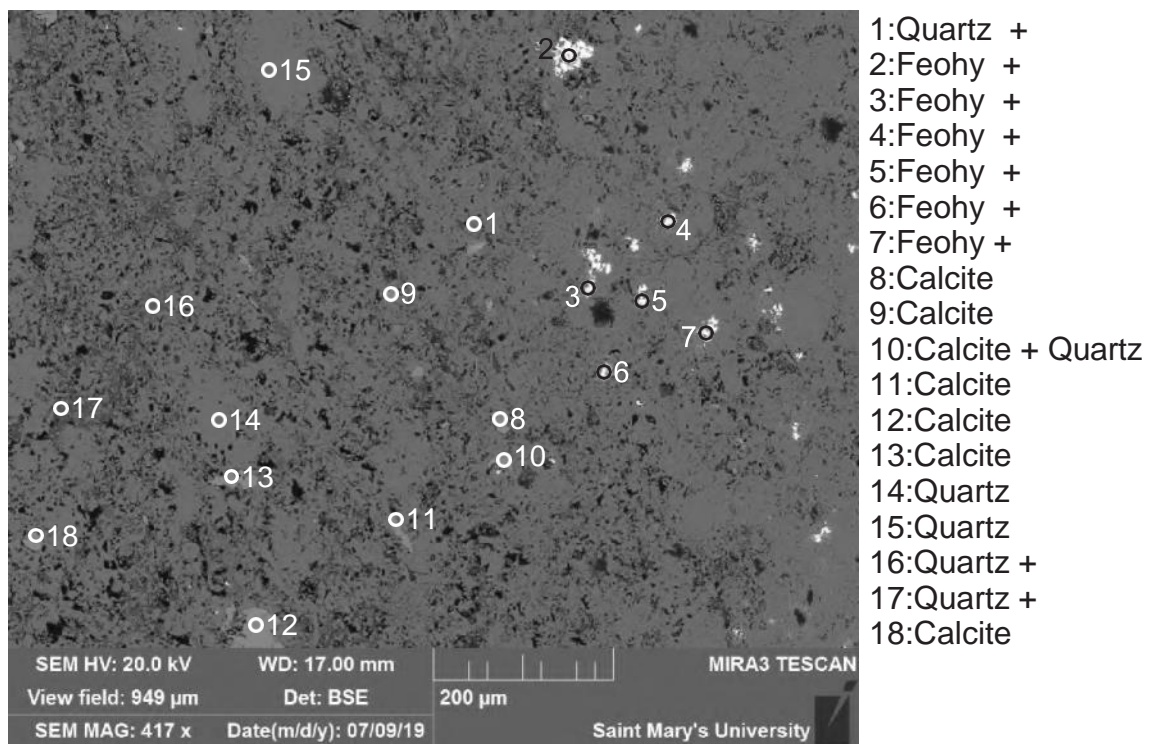


Figure S11.2: ARK2 (SEM) Site 1 (Table S11.1).

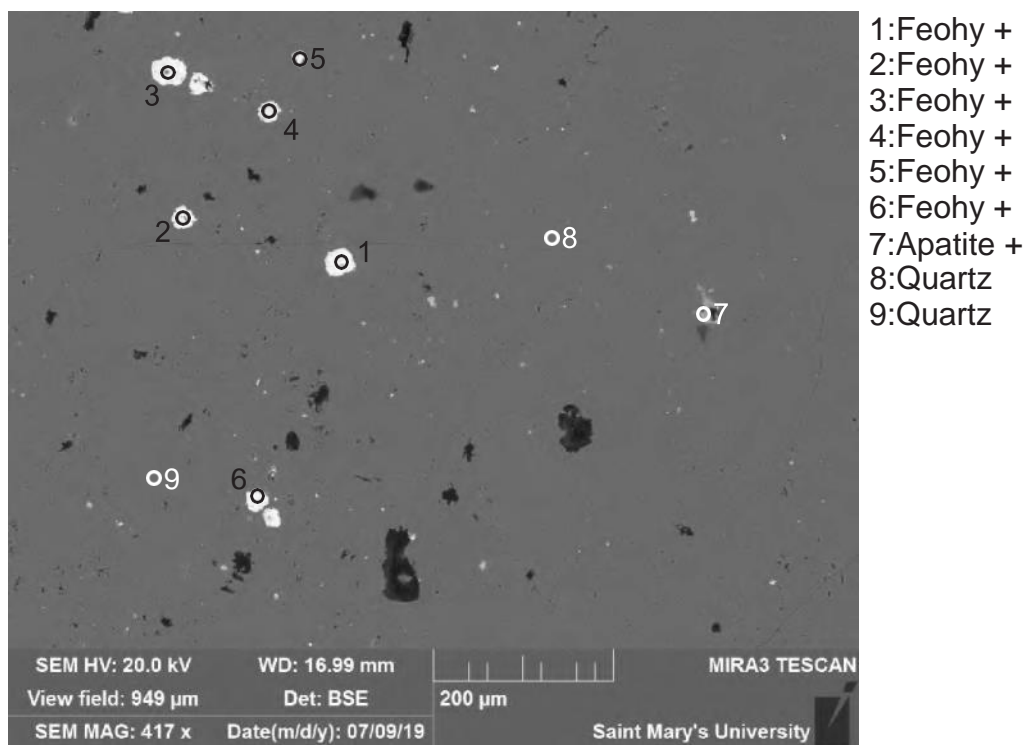


Figure S11.3: ARK2 (SEM) Site 2 (Table S11.1).

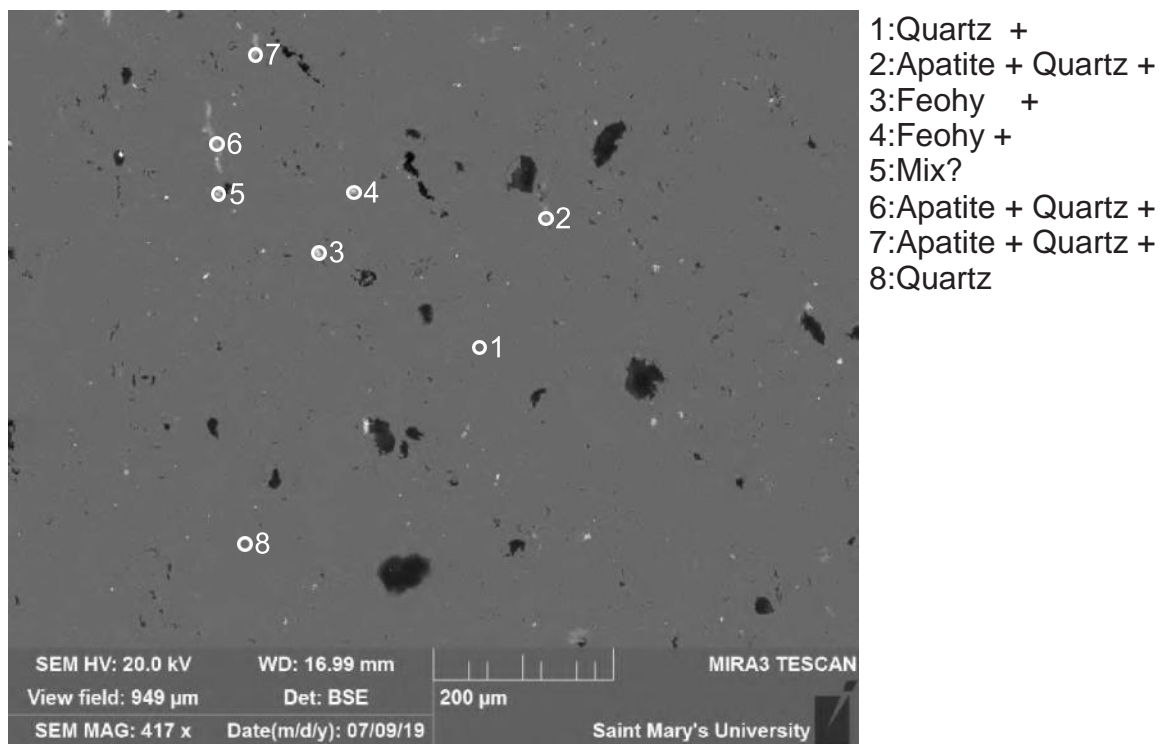


Figure S11.4: ARK2 (SEM) Site 3 (Table S11.1).

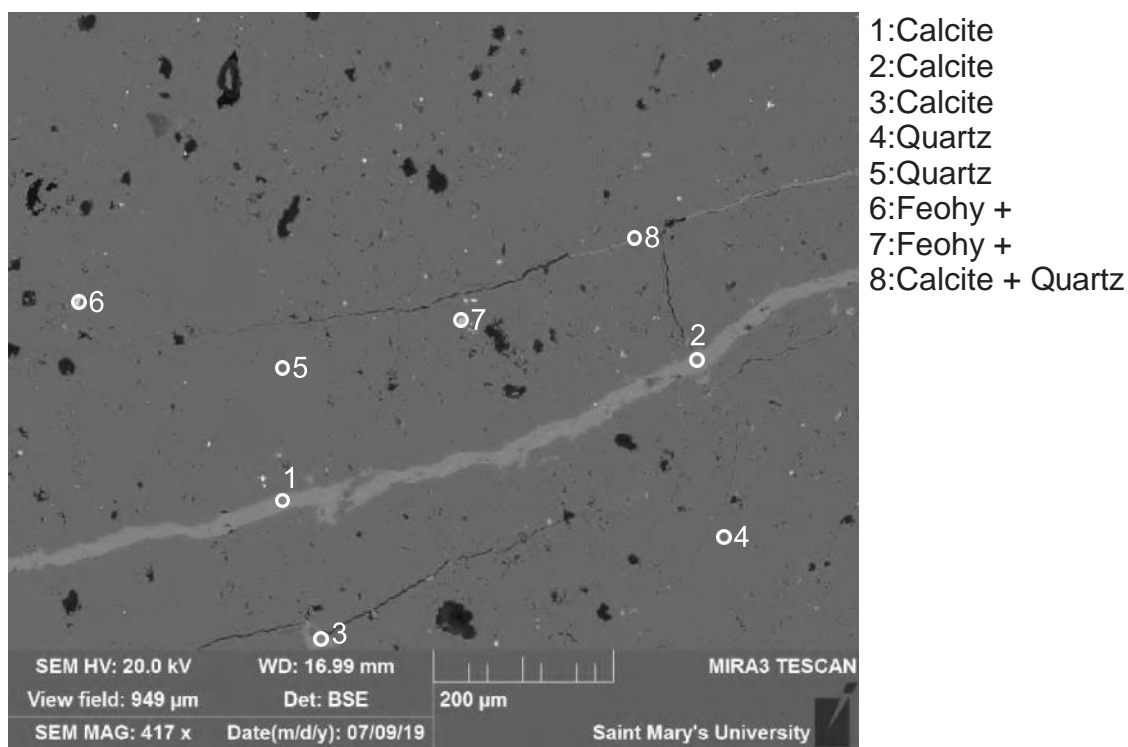
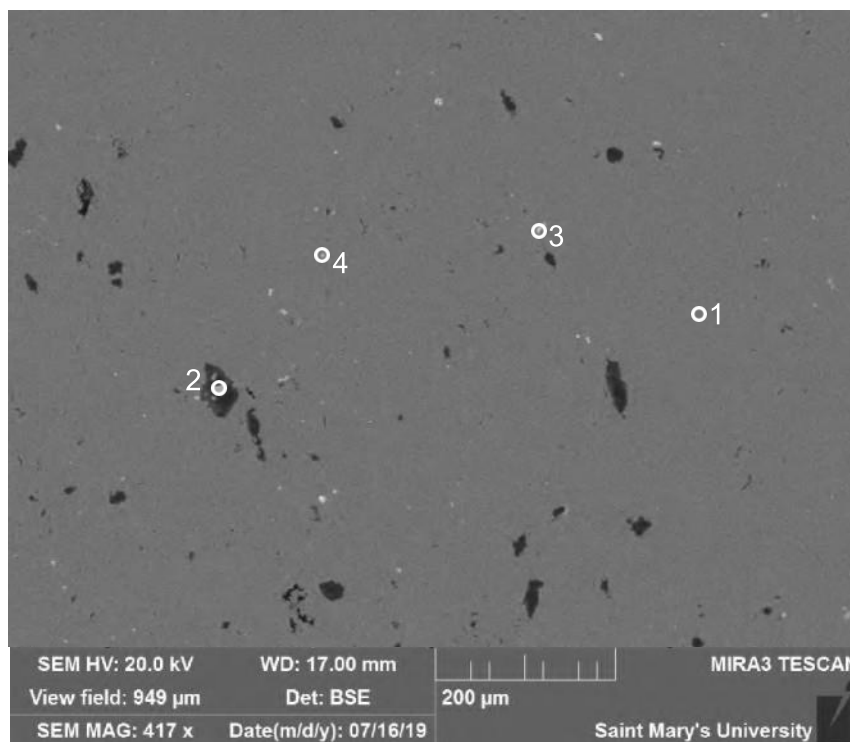
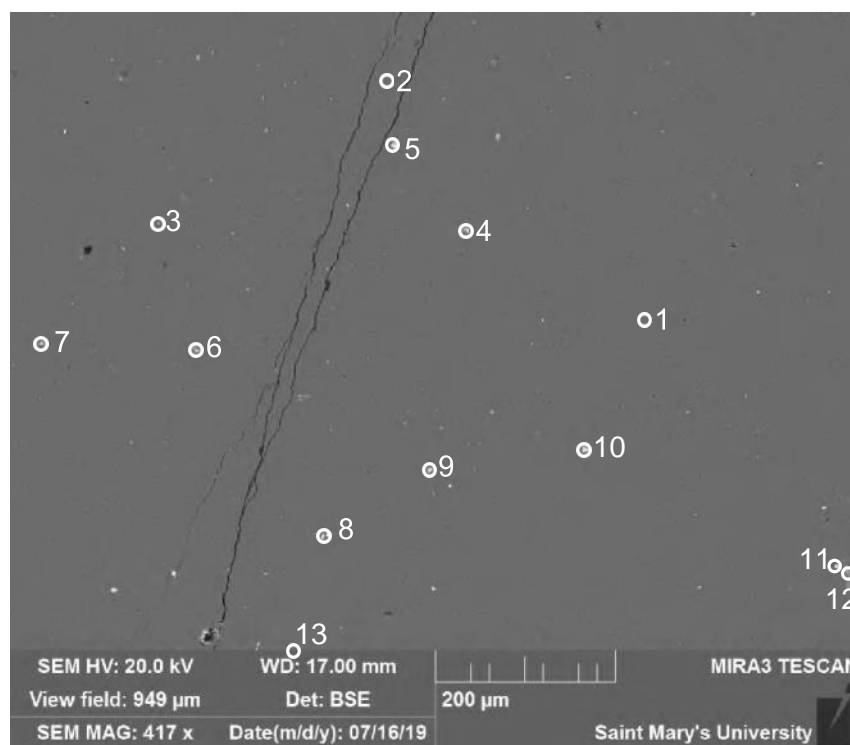


Figure S11.5: ARK2 (SEM) Site 4 (Table S11.1).



- 1:Quartz +
- 2:Apatite
- 3:Feohy +
- 4:Quartz +

Figure S11.6: ARK2 (SEM) Site 5 (Table S11.1).



- 1:Quartz
- 2:Quartz +
- 3:Quartz
- 4:Feohy +
- 5:Feohy +
- 6:Feohy +
- 7:Feohy +
- 8:Feohy +
- 9:Feohy +
- 10:Feohy +
- 11:Feohy +
- 12:Apatite + Quartz +
- 13:Feohy +

Figure S11.7: ARK2 (SEM) Site 6 (Table S11.1).

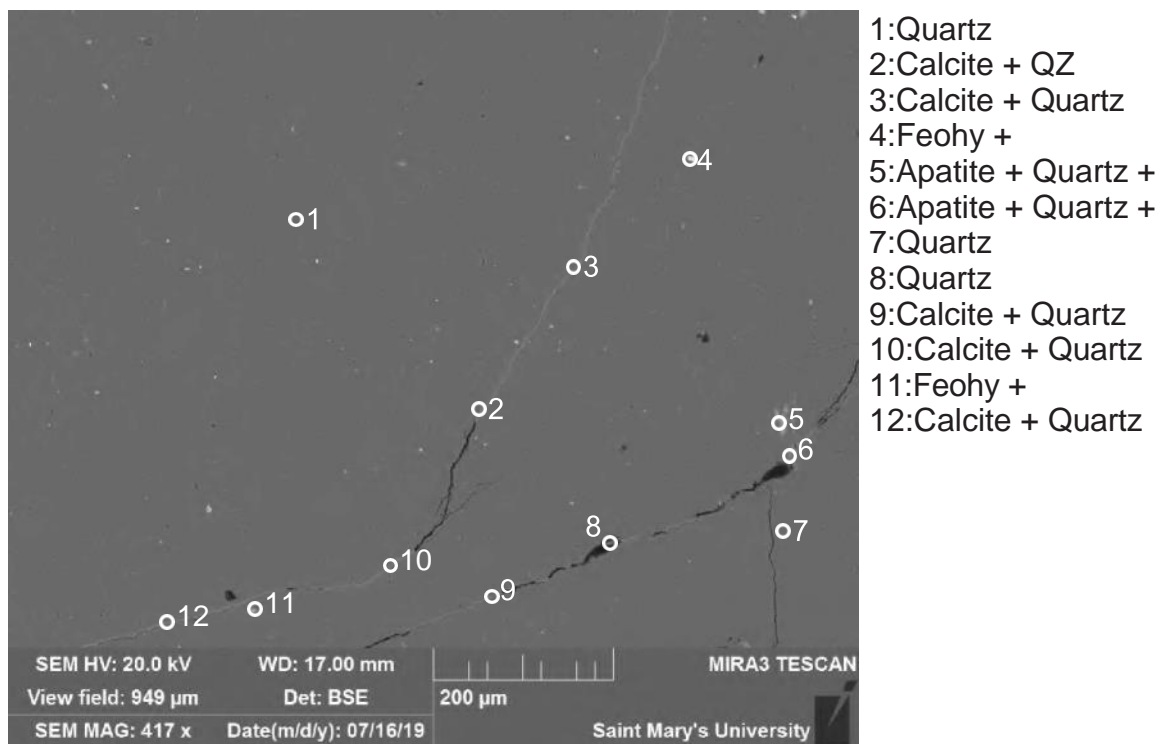


Figure S11.8: ARK2 (SEM) Site 7 (Table S11.1).

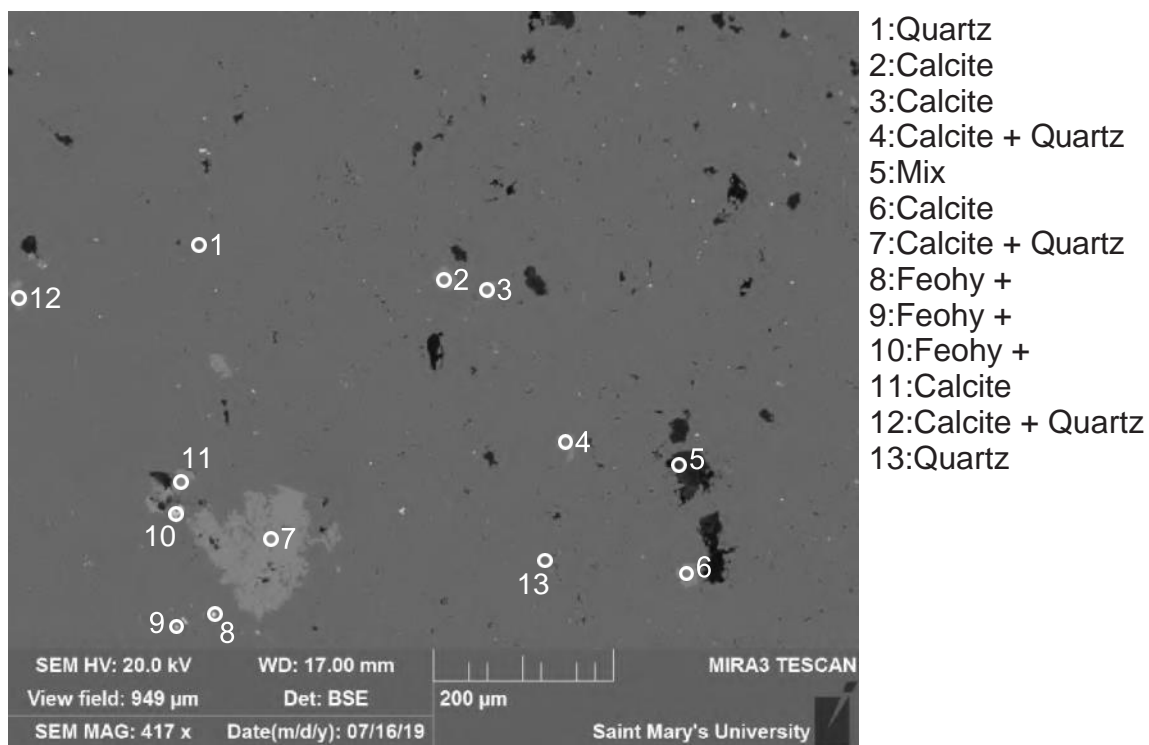


Figure S11.9: ARK2 (SEM) Site 8 (Table S11.1).

Table S11.1: Scanning Electron Microscope (SEM) mineral chemical analyses (EDS) of ARK2.

Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	NiO	CuO	ZnO	WO3	Total	Actual Total
1	1	Qz +	98.60		0.93					0.28	0.18									100	120
1	2	Feohy +	5.69		1.54	88.64	1.25	1.41	0.82						0.66					100	86
1	3	Feohy +	6.20		1.57	88.91	0.75	1.17	0.90						0.51					100	87
1	4	Feohy +	8.96		1.48	86.09	0.47	1.73	0.77						0.51					100	86
1	5	Feohy +	7.95		1.39	87.41		1.74	0.81						0.71					100	83
1	6	Feohy +	7.30		1.71	87.17	0.93	1.40	0.91						0.58					100	85
1	7	Feohy +	13.40		2.08	80.36		1.81	0.96						1.09			0.29		100	82
1	8	Cal	0.91					0.84	54.25											56	61
1	9	Cal	0.86					0.90	54.24											56	60
1	10	Cal + Qz	12.96					1.91	85.13											100	62
1	11	Cal	1.28					0.88	53.83											56	61
1	12	Cal	0.59					1.01	54.39											56	60
1	13	Cal	0.90					0.96	54.14											56	60
1	14	Qz	100.00																	100	120
1	15	Qz	100.00																	100	118
1	16	Qz +	92.65		3.63	0.94		1.00	0.36		1.15				0.27					100	101
1	17	Qz +	92.24		2.38	1.22		0.76	1.40		0.65	0.90			0.44					100	89
1	18	Cal	0.88					1.00	54.12											56	58
2	1	Feohy +	6.46		0.98	90.50		0.91	0.52						0.63					100	81
2	2	Feohy +	17.25			79.64	1.02	1.19	0.45						0.46					100	85
2	3	Feohy +	24.45		1.49	71.97		1.36							0.73					100	85
2	4	Feohy +	8.40		1.65	86.47	0.62	1.51	0.58						0.76					100	79
2	5	Feohy +	5.85			90.68	0.68	0.90	0.50						0.46		0.94			100	78
2	6	Feohy +	10.83			85.83	1.49	0.79	0.50						0.57					100	83
2	7	Ap +	1.17					0.82	47.55	1.29		38.42	2.44	5.64	1.28				1.39	100	114
2	8	Qz	99.22		0.78															100	119
2	9	Qz	99.47		0.53															100	117
3	1	Qz +	98.15		1.41						0.44									100	118
3	2	Ap + Qz +	25.55					0.57	37.40	0.81		28.51	1.99	4.52	0.67					100	107
3	3	Feohy +	27.93		3.57	65.33		1.60	0.66						0.91					100	86
3	4	Feohy +	24.60		4.09	67.35		1.91	0.82						1.23					100	81
3	5	Mix?	81.15		1.16	16.59		0.42	0.37						0.32					100	98
3	6	Ap + Qz +	21.53					0.51	36.80	0.76		32.53	1.33	5.50	1.06					100	111
3	7	Ap + Qz +	1.25					0.75	46.97	1.18		38.93	2.24	6.11	1.26				1.31	100	108
3	8	Qz	99.24		0.56						0.20									100	118
4	1	Cal	1.00					0.65	54.35											56	57
4	2	Cal	0.83					0.83	54.34											56	59
4	3	Cal	0.95					1.00	54.05											56	58
4	4	Qz	99.80												0.20					100	121

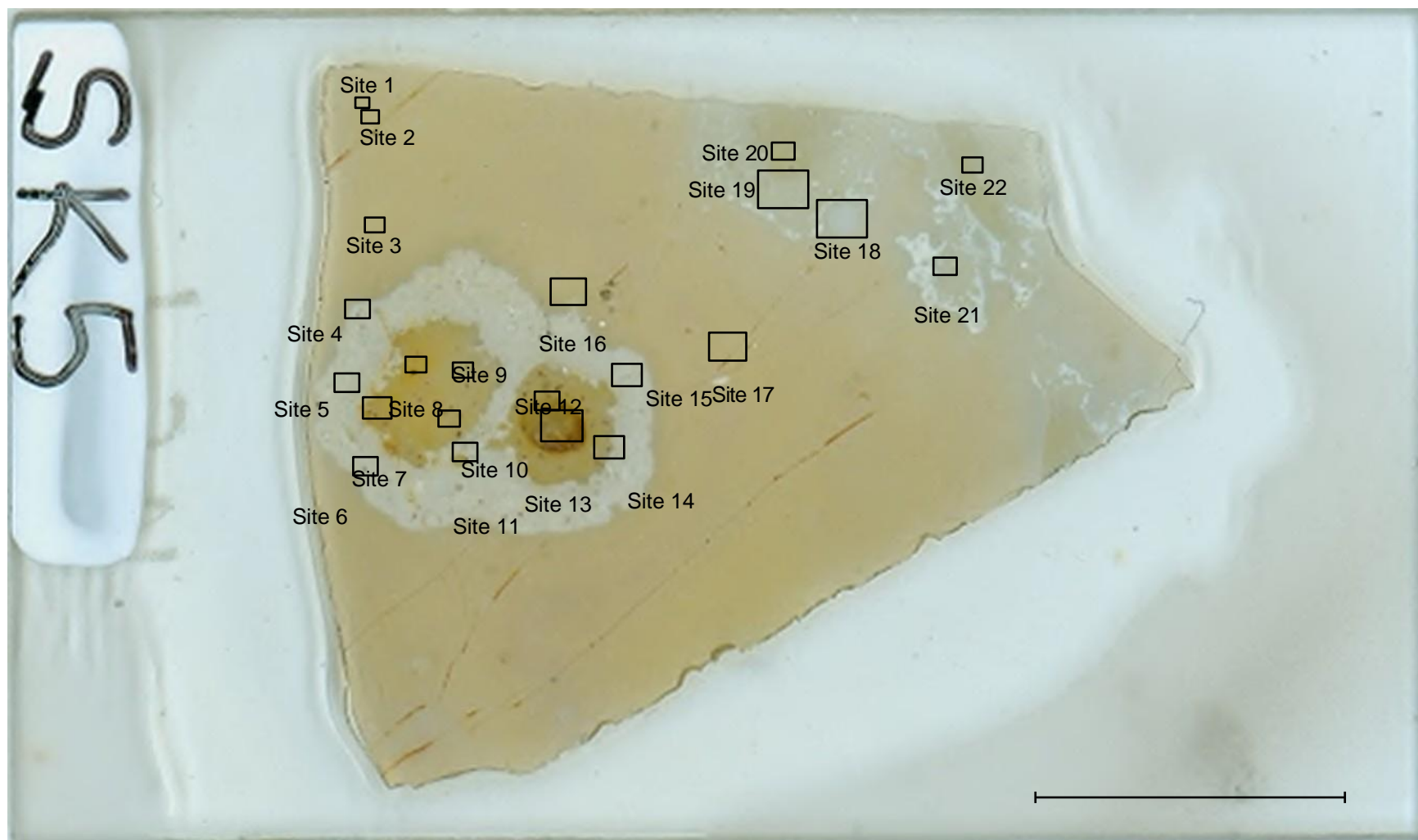
Table S11.1: Scanning Electron Microscope (SEM) mineral chemical analyses (EDS) of ARK2.

Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	NiO	CuO	ZnO	WO3	Total	Actual Total
4	5	Qz	100.00																	100	116
4	6	Feohy +	14.40		4.40	76.83		2.25	0.80						1.31					100	77
4	7	Feohy +	42.12		3.85	50.24		1.80	0.89						1.10					100	87
4	8	Cal + Qz	34.30			0.68		1.25	63.78											100	71
5	1	Qz +	97.87		1.42	0.27					0.45									100	116
5	2	Ap	0.95						46.28			43.76		7.61					1.41	100	121
5	3	Feohy +	16.00		1.25	78.94	0.76	1.42	0.73						0.89					100	85
5	4	Qz +	82.90		0.64	16.21									0.25					100	94
6	1	Qz	99.41		0.59															100	118
6	2	Qz +	97.99		1.62						0.39									100	111
6	3	Qz	99.41		0.59															100	112
6	4	Feohy +	29.42		0.95	67.71	0.43	1.02							0.48					100	94
6	5	Feohy +	17.69		1.12	79.51			0.50						0.50		0.68			100	86
6	6	Feohy +	62.17		1.96	34.38		0.70	0.33						0.47					100	95
6	7	Feohy +	46.29		2.59	47.76		1.34	0.42						1.05		0.55			100	90
6	8	Feohy +	11.96		2.03	82.80	0.98	1.17	0.46						0.61					100	82
6	9	Feohy +	22.46		1.14	73.05		0.75	0.56						0.74	0.55	0.74			100	88
6	10	Feohy +	14.46		1.46	81.06	0.73	1.20	0.49						0.61					100	86
6	11	Feohy +	18.48		1.44	76.70	0.52	1.37	0.70						0.79					100	92
6	12	Ap + Qz +	50.21					0.34	22.55	0.67		21.83	1.20	2.27	0.92					100	125
6	13	Feohy +	16.18			81.04		0.93	0.59						0.60	0.65				100	82
7	1	Qz	98.93		0.81						0.26									100	110
7	2	Cal + QZ	37.91		0.55			1.05	60.49											100	76
7	3	Cal + Qz	38.93					1.02	60.06											100	75
7	4	Feohy +	14.06		1.40	82.45		0.97	0.55						0.56					100	82
7	5	Ap + Qz +	29.92					0.48	32.03	0.97		28.65	1.70	4.85	1.40					100	115
7	6	Ap + Qz +	4.73					1.08	53.83	1.31		28.34	2.45	6.53	1.74					100	85
7	7	Qz	100.00																	100	119
7	8	Qz	100.00																	100	119
7	9	Cal + Qz	45.11			3.70		0.54	50.25						0.40					100	71
7	10	Cal + Qz	64.60					0.49	34.91											100	84
7	11	Feohy +	43.44		3.81	48.46		1.81	0.70	0.61	0.23				0.94					100	95
7	12	Cal + Qz	40.19		0.83	1.25		0.62	56.77						0.33					100	69
8	1	Qz	99.15		0.65						0.20									100	108
8	2	Cal	4.92					0.96	50.12											56	58
8	3	Cal	2.38			2.97		0.77	49.88											56	55
8	4	Cal + Qz	18.86		0.57			1.64	78.93											100	63
8	5	Mix	54.40	0.96	15.37	3.58		4.18	10.92	3.03	1.91		4.23		1.42					100	37
8	6	Cal	2.23			1.85		1.13	50.79											56	58

Table S11.1: Scanning Electron Microscope (SEM) mineral chemical analyses (EDS) of ARK2.

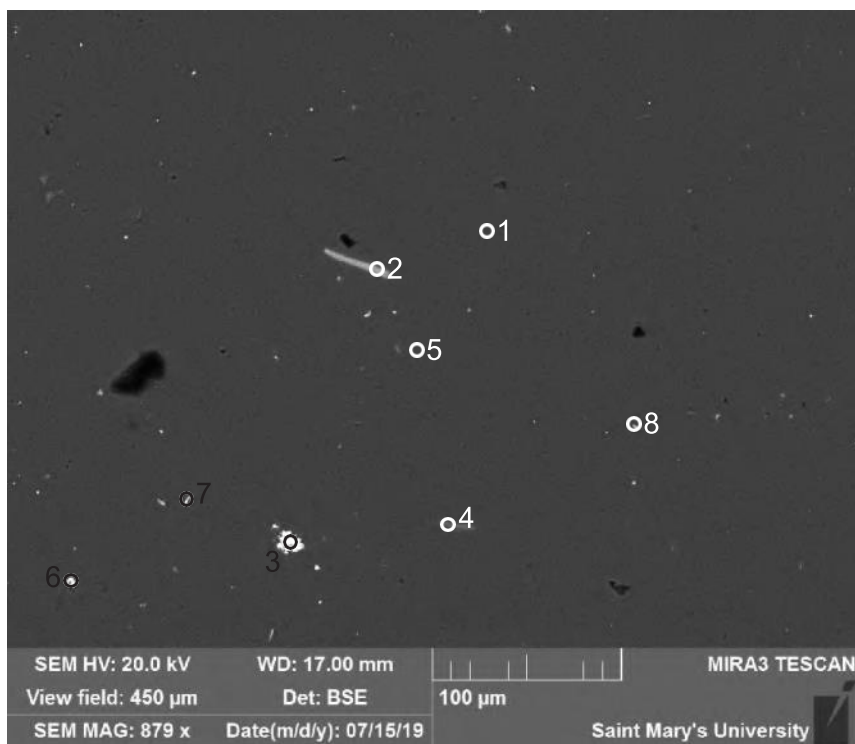
Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	NiO	CuO	ZnO	WO3	Total	Actual Total
8	7	Cal + Qz	19.29					1.59	79.13											100	61
8	8	Feohy +	28.17		1.00	68.14	0.54	1.03	0.67						0.46					100	85
8	9	Feohy +	57.84		2.38	35.77		1.04	0.93		0.41				1.62					100	99
8	10	Feohy +	25.43		3.57	65.82		2.05	1.00	0.66					1.46					100	80
8	11	Cal	1.96					0.78	53.26											56	54
8	12	Cal + Qz	15.49		1.11	1.30		2.73	79.00		0.38									100	58
8	13	Qz	100.00																	100	115

Supplementary Material S12: SEM-BSE images and Electron Dispersive Spectroscopy (EDS) mineral analyses for sample SK5.



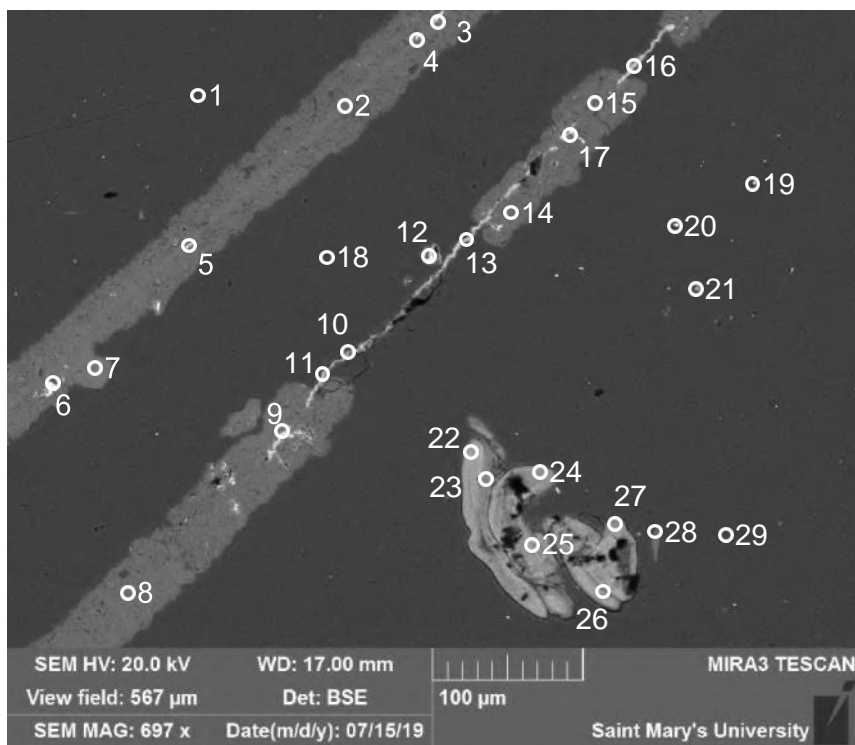
1 cm

Figure S12.1: SK5 thin section showing respective sites taken for mineral chemical analyses (EDS) via Scanning Electron Microscope (SEM).



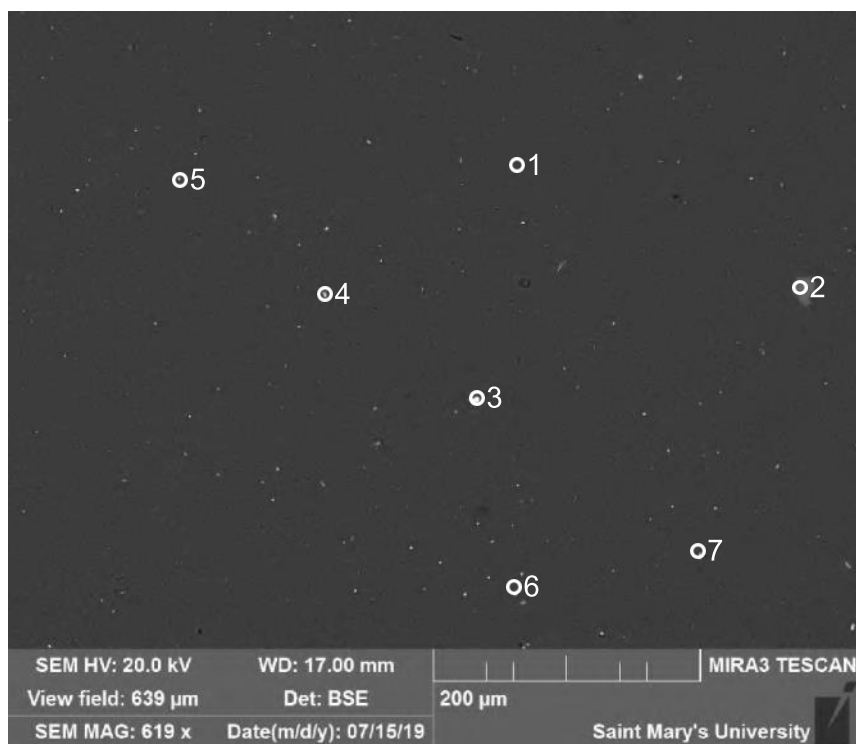
- 1:Quartz
- 2:Apatite + Quartz
- 3:Feohy +
- 4:Apatite + Quartz
- 5:Quartz
- 6:TiO₂ + Quartz
- 7:Quartz + Feohy
- 8:TiO₂ + Quartz

Figure S12.2: SK5 (SEM) Site 1 (Table S12.1).



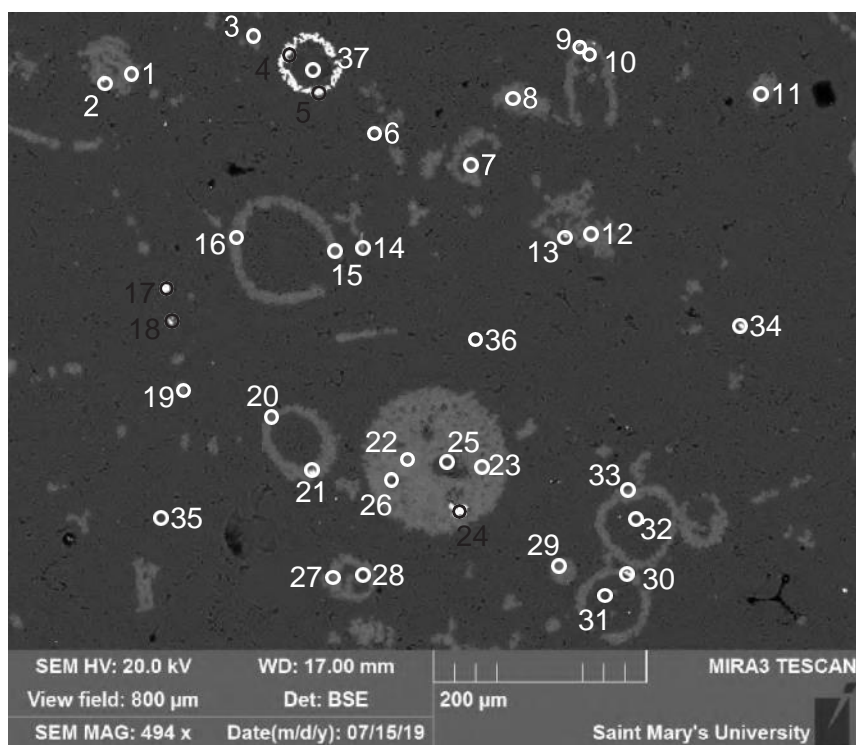
- 1:Quartz
- 2:Calcite + Quartz
- 3:Feohy + Calcite + Quartz +
- 4:Feohy + Calcite + Quartz +
- 5:Calcite + Goethite +
- 6:Goethite +
- 7:Calcite + Quartz
- 8:Calcite + Quartz
- 9:Calcite + Goethite +
- 10:Feohy + Quartz + Calcite
- 11:Feohy + Quartz + Calcite +
- 12:Feohy + Quartz + Calcite +
- 13:Feohy + Quartz +
- 14:Calcite + Quartz
- 15:Calcite + Quartz
- 16:Feohy + Quartz +
- 17:Feohy + Calcite +
- 18:Quartz
- 19:TiO₂ + Quartz
- 20:Feohy + Quartz
- 21:Feohy + Quartz
- 22:Apatite
- 23:Apatite + Quartz
- 24:Apatite +
- 25:Apatite +
- 26:Apatite
- 27:Apatite
- 28:Apatite + Quartz
- 29:Quartz + Feohy +

Figure S12.3: SK5 (SEM) Site 2 (Table S12.1).



- 1:Quartz
- 2:Calcite + Quartz
- 3:Feohy +
- 4:Quartz + Feohy +
- 5:Quartz + Feohy +
- 6:Quartz + Feohy +
- 7:Quartz + Feohy +

Figure S12.4: SK5 (SEM) Site 3 (Table S12.1).



- 1:Calcite + Quartz
- 2:Feohy + Quartz +
- 3:Calcite + Quartz
- 4:Feohy + Quartz
- 5:Feohy + Quartz
- 6:Calcite + Quartz
- 7:Calcite + Quartz
- 8:Calcite + Quartz
- 9:Feohy + Calcite + Quartz
- 10:Calcite + Quartz
- 11:Calcite + Quartz
- 12:Calcite + Quartz
- 13:Feohy + Quartz +
- 14:Apatite + Quartz
- 15:Calcite + Quartz
- 16:Calcite + Quartz
- 17:Feohy + Quartz
- 18:Feohy + Quartz + Calcite +
- 19:Calcite + Quartz
- 20:Calcite + Quartz
- 21:Feohy + Quartz +
- 22:Calcite
- 23:Calcite
- 24:Feohy + Quartz +
- 25:Quartz
- 26:Quartz
- 27:Calcite + Quartz
- 28:Quartz
- 29:Calcite
- 30:Feohy + Quartz +
- 31:Quartz
- 32:Quartz
- 33:Calcite + Quartz
- 34:Feohy + Quartz +
- 35:Quartz
- 36:Quartz
- 37:Quartz

Figure S12.5: SK5 (SEM) Site 4 (Table S12.1).

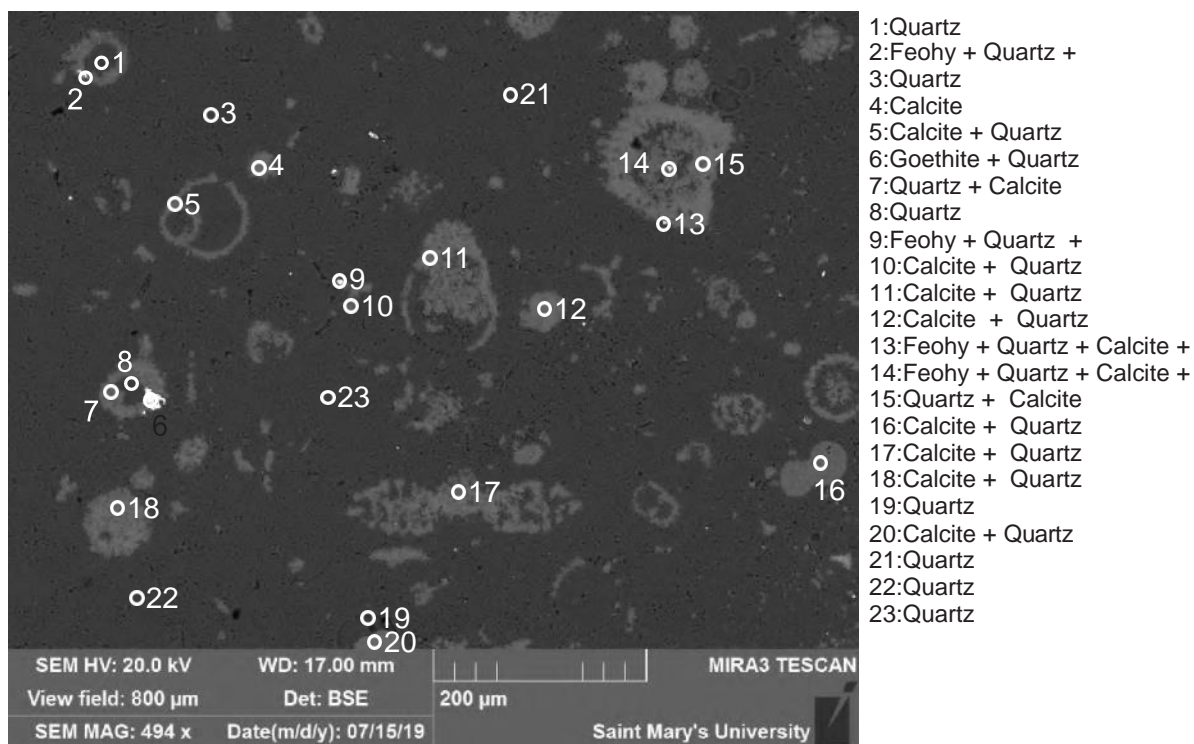


Figure S12.6: SK5 (SEM) Site 5 (Table S12.1).

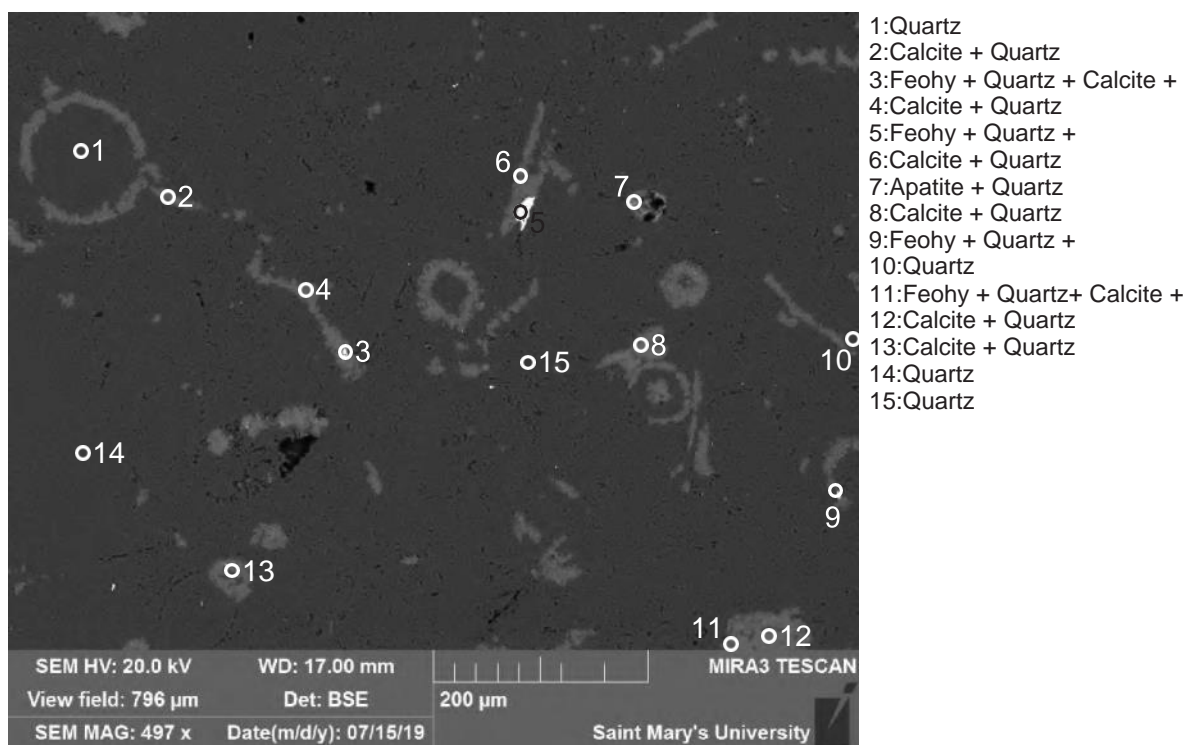


Figure S12.7: SK5 (SEM) Site 6 (Table S12.1).

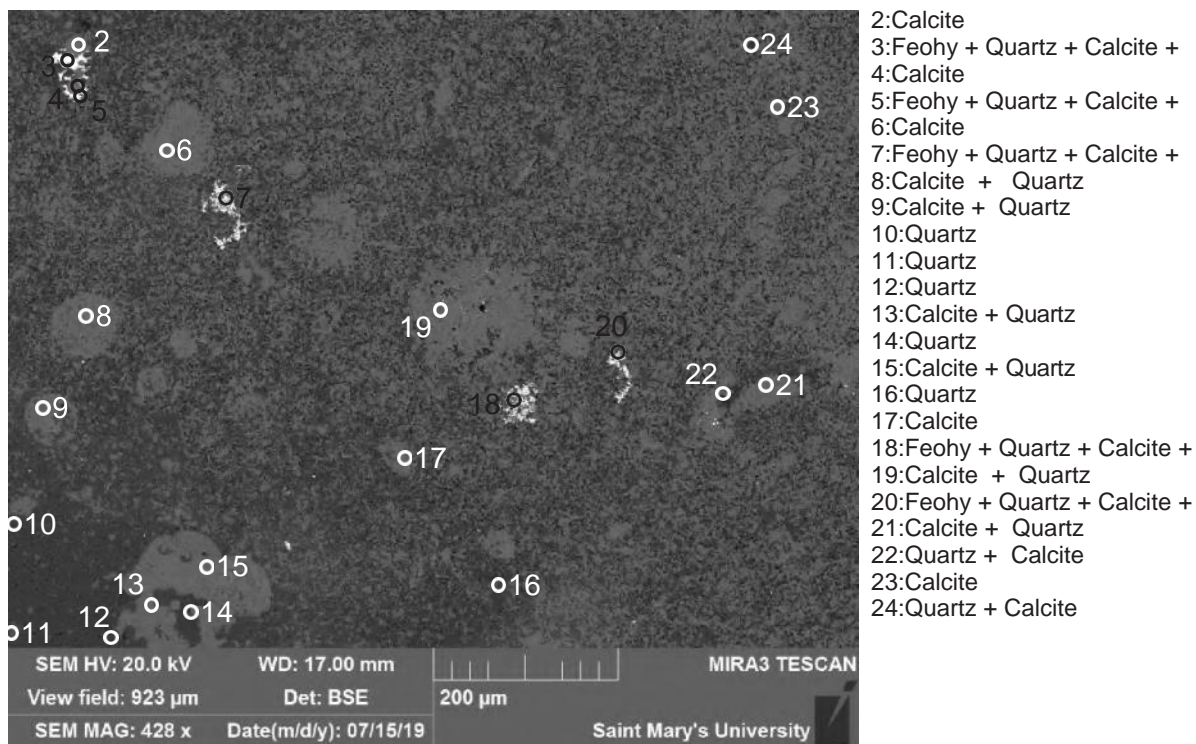


Figure S12.8: SK5 (SEM) Site 7 (Table S12.1).

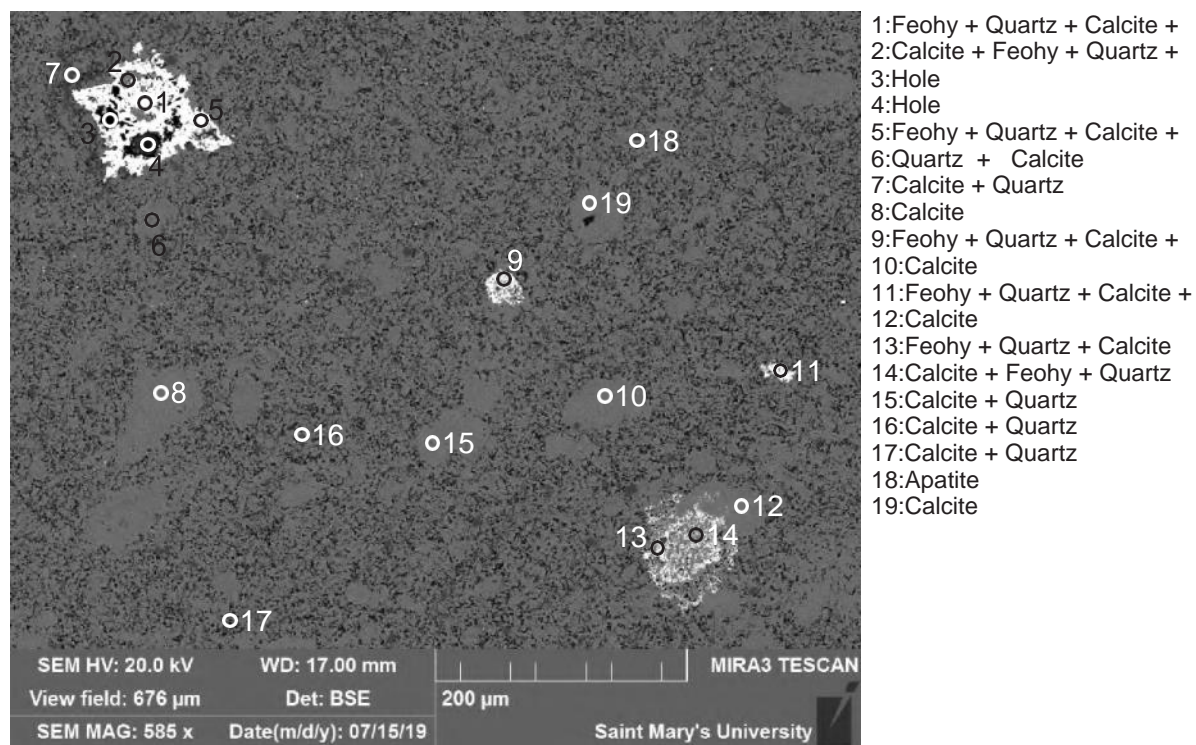


Figure S12.9: SK5 (SEM) Site 8 (Table S12.1).

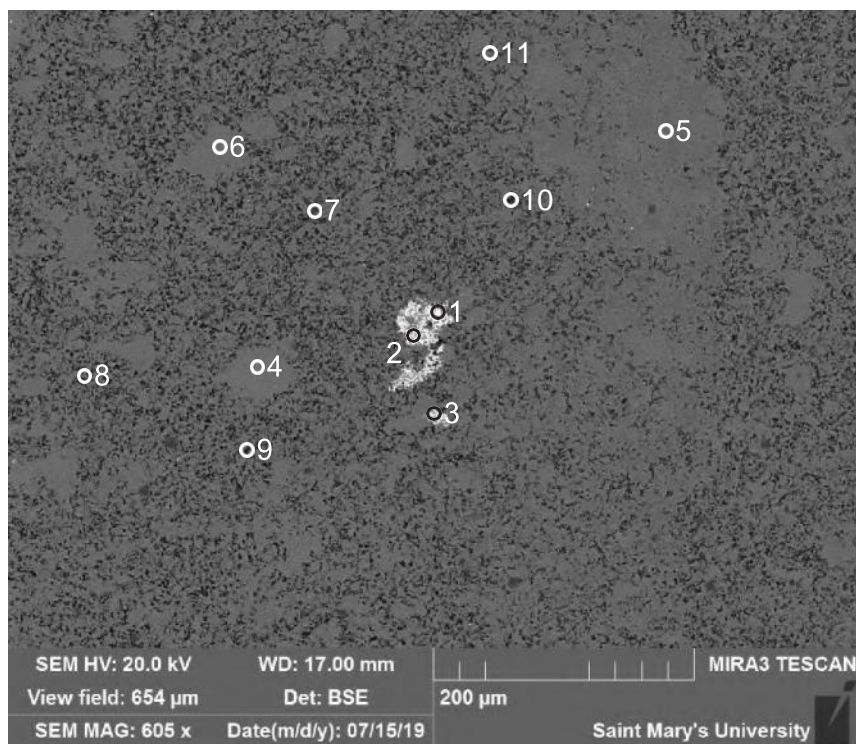


Figure S12.10: SK5 (SEM) Site 9 (Table S12.1).

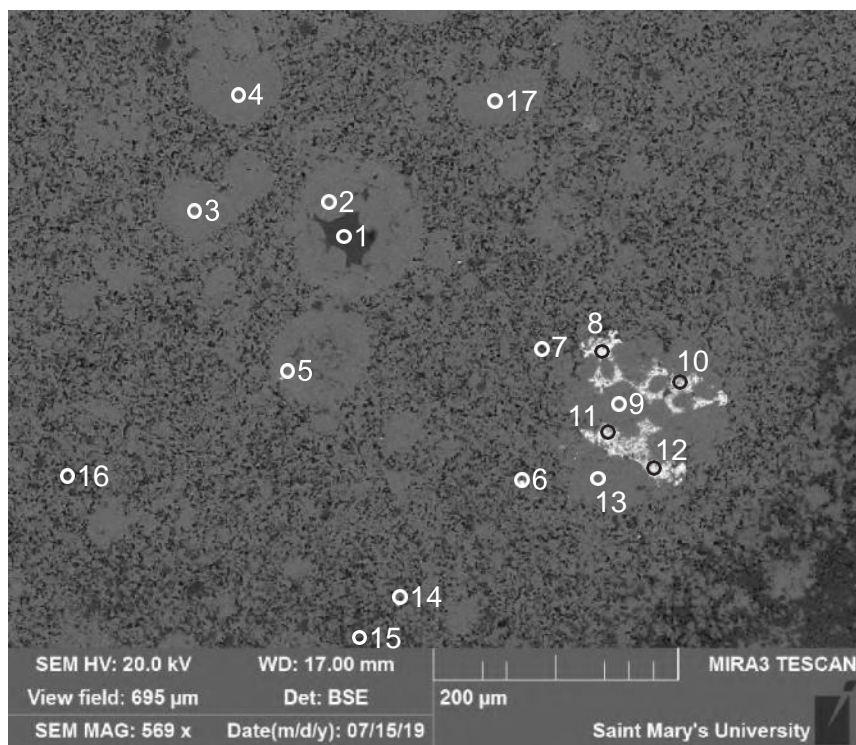


Figure S12.11: SK5 (SEM) Site 10 (Table S12.1).

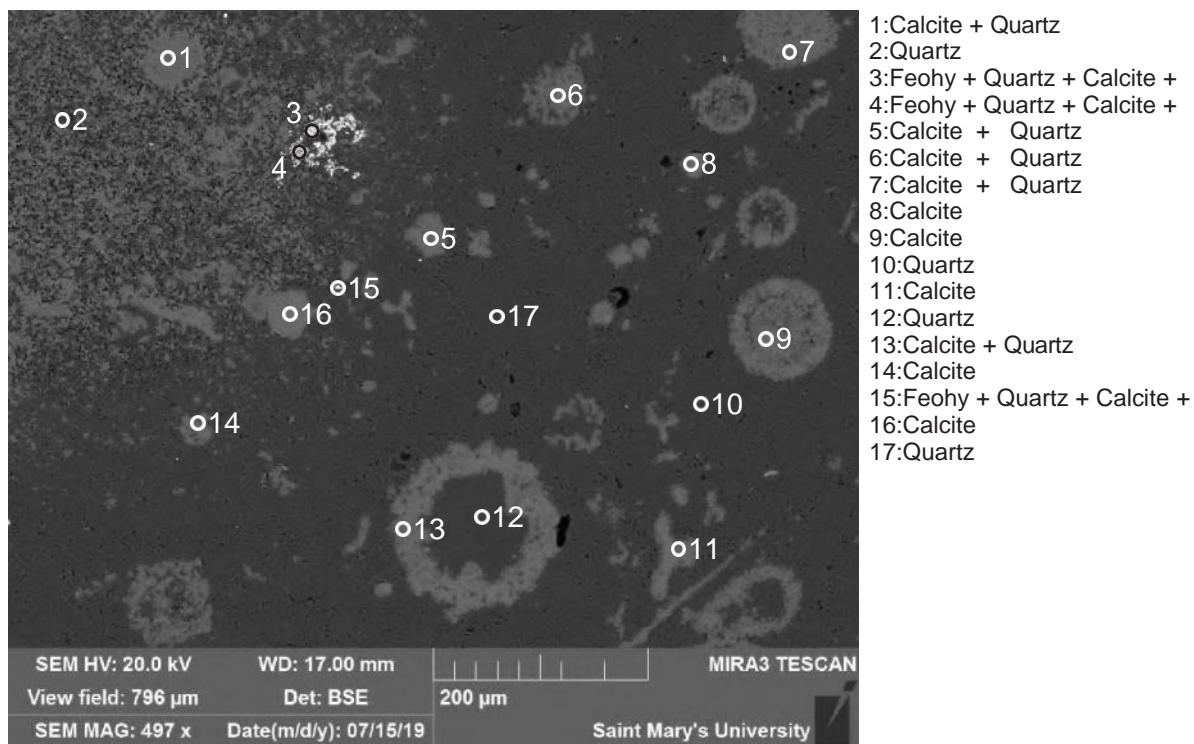


Figure S12.12: SK5 (SEM) Site 11 (Table S12.1).

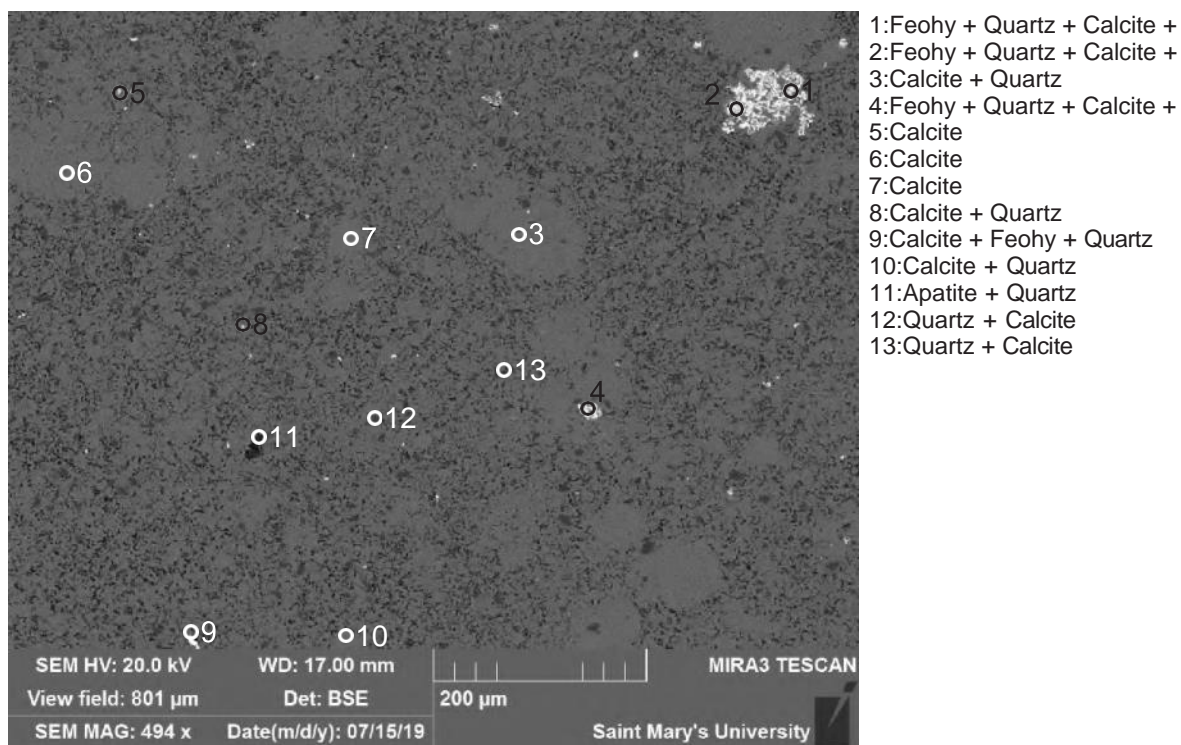


Figure S12.13: SK5 (SEM) Site 12 (Table S12.1).

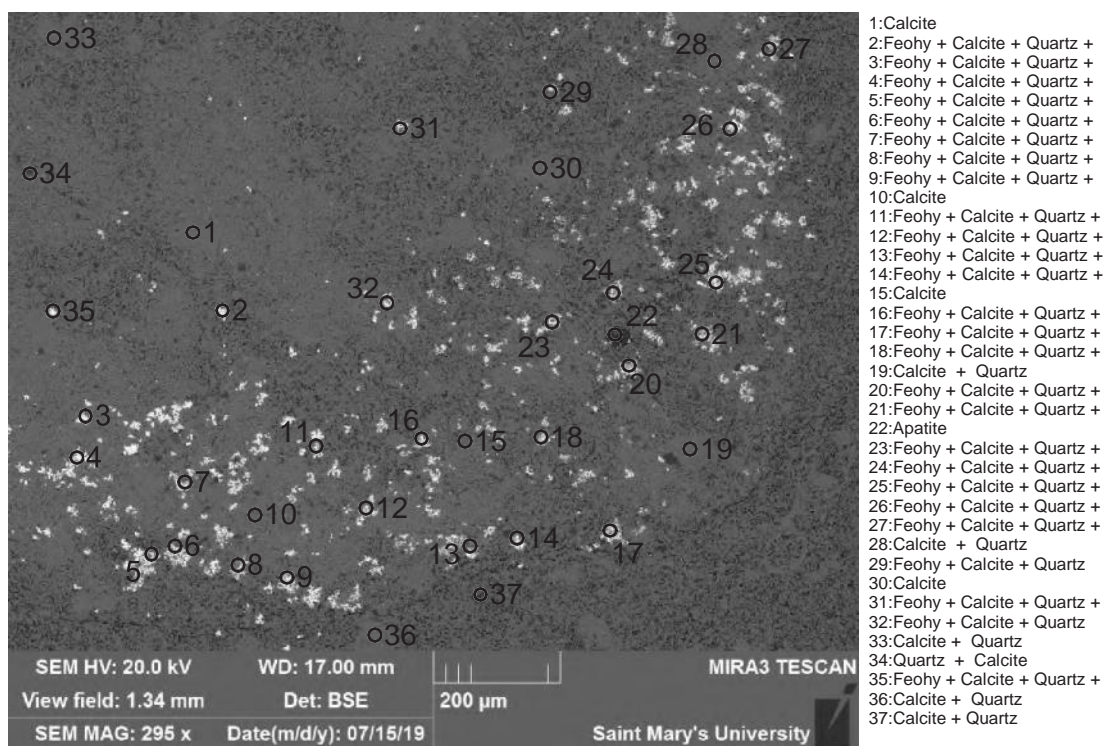


Figure S12.14: SK5 (SEM) Site 13 (Table S12.1).

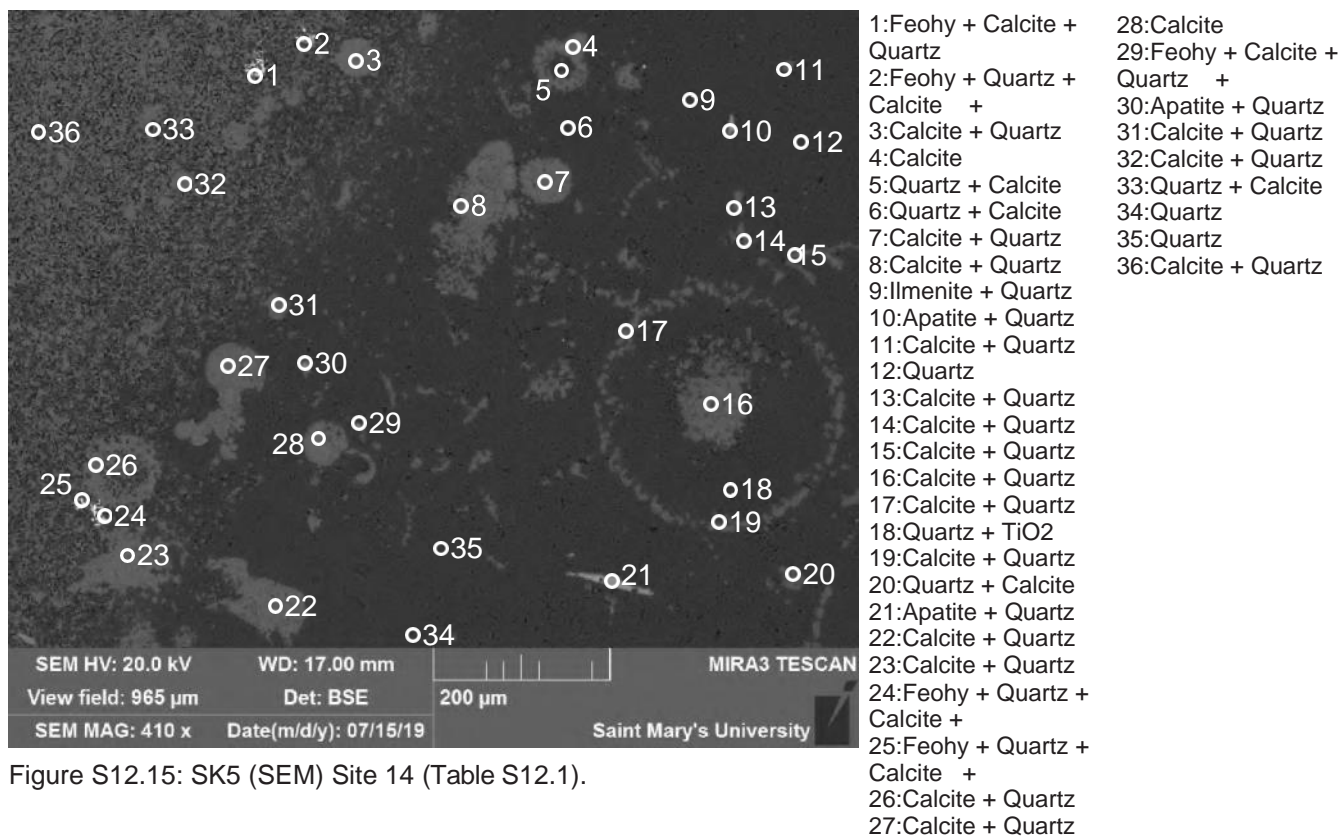
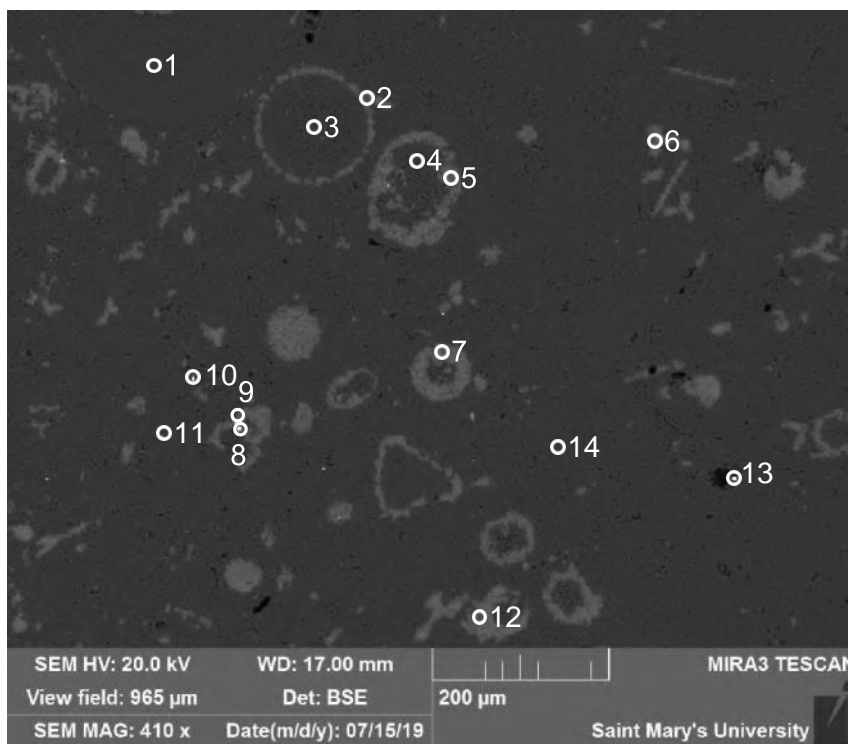
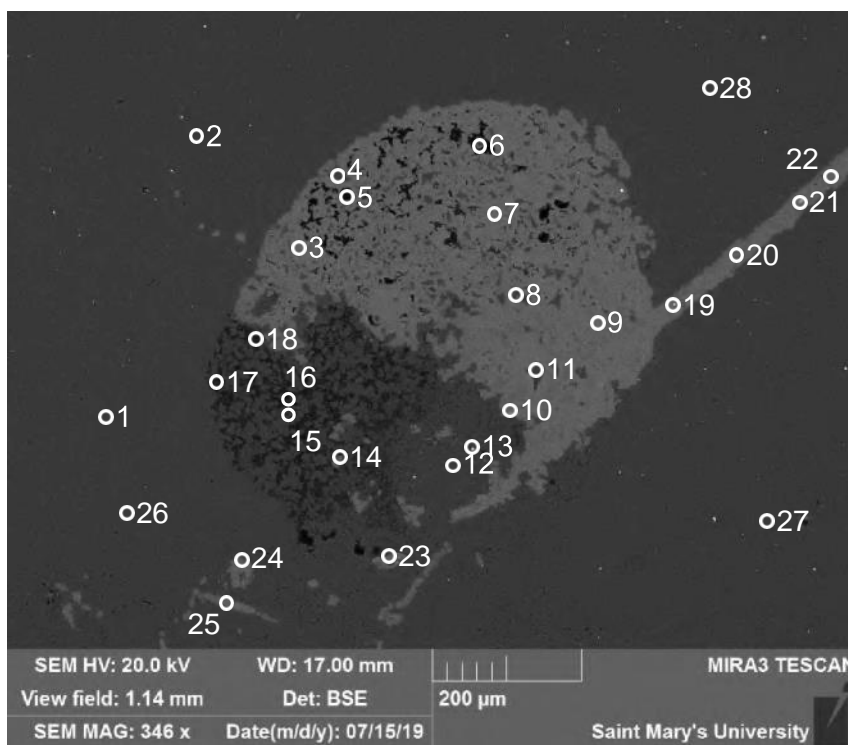


Figure S12.15: SK5 (SEM) Site 14 (Table S12.1).



- 1:Quartz
- 2:Calcite + Quartz
- 3:Quartz + Calcite
- 4:Quartz
- 5:Calcite + Quartz
- 6:Calcite + Quartz
- 7:Calcite + Quartz
- 8:Feohy + Quartz + Calcite +
- 9:Feohy + Quartz + Calcite +
- 10:Zircon + Quartz
- 11:Feohy + Quartz +
- 12:Calcite + Quartz
- 13:Pyrite + Quartz
- 14:Quartz +

Figure S12.16: SK5 (SEM) Site 15 (Table S12.1).



- 1:Quartz
- 2:Quartz
- 3:Calcite + Quartz
- 4:Quartz
- 5:Quartz + Calcite
- 6:Quartz + Calcite
- 7:Quartz + Calcite
- 8:Quartz + Calcite
- 9:Calcite +
- 10:Apatite + Quartz
- 11:Quartz
- 12:Quartz +
- 13:TiO₂ + Quartz
- 14:Calcite + Quartz
- 15:Quartz
- 16:Quartz
- 17:Quartz
- 18:Quartz
- 19:Pyrite + Calcite + Quartz
- 20:Calcite + Quartz
- 21:Feohy + Calcite + Quartz +
- 22:Calcite + Quartz
- 23:Calcite + Quartz
- 24:Calcite + Quartz
- 25:Calcite + Quartz
- 26:Quartz
- 27:Quartz
- 28:Quartz

Figure S12.17: SK5 (SEM) Site 16 (Table S12.1).

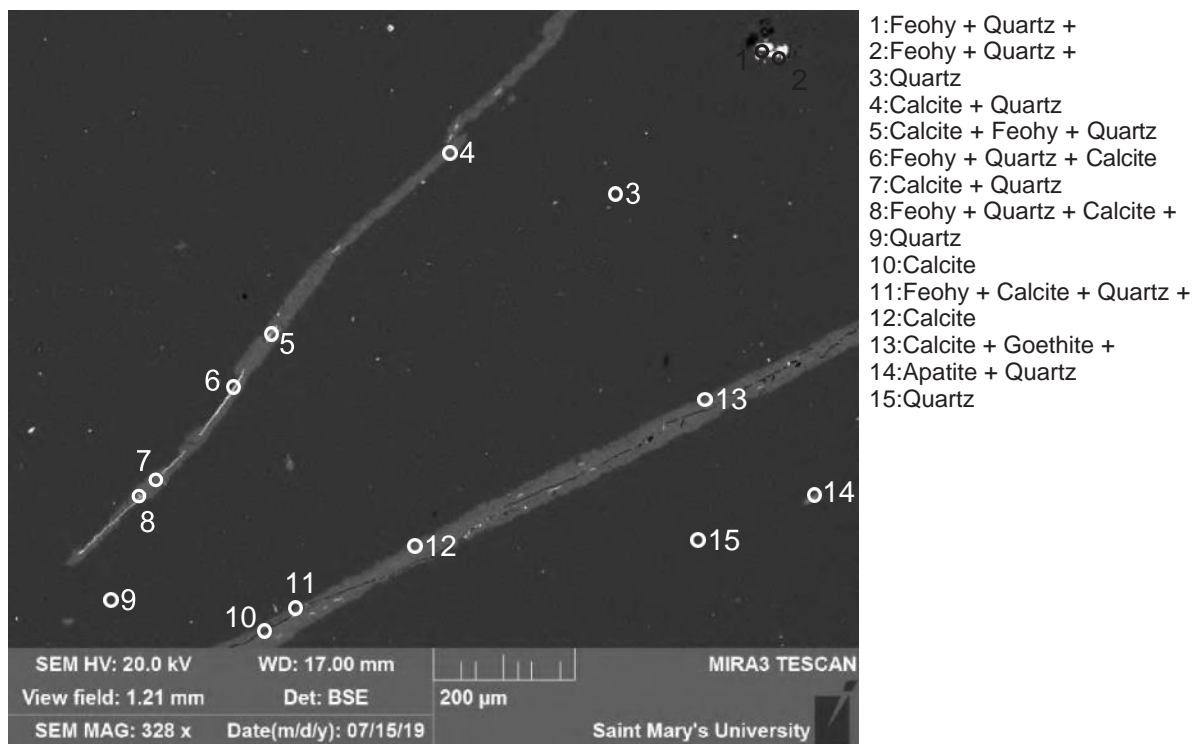


Figure S12.18: SK5 (SEM) Site 17 (Table S12.1).

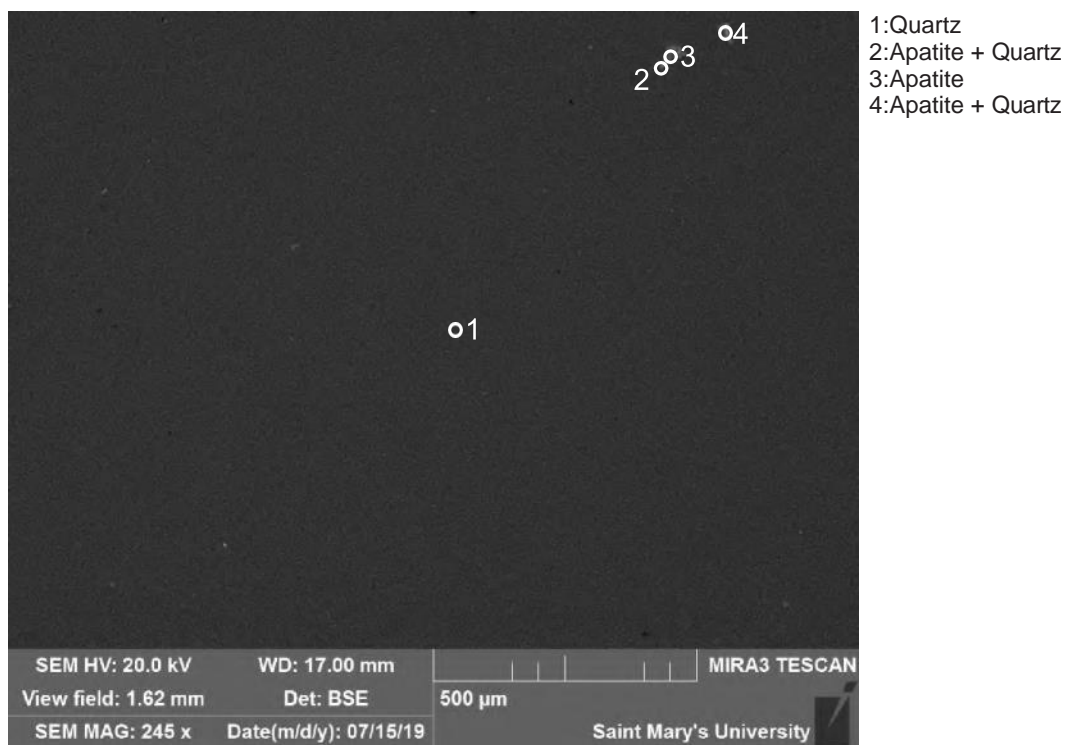


Figure S12.19: SK5 (SEM) Site 18 (Table S12.1).

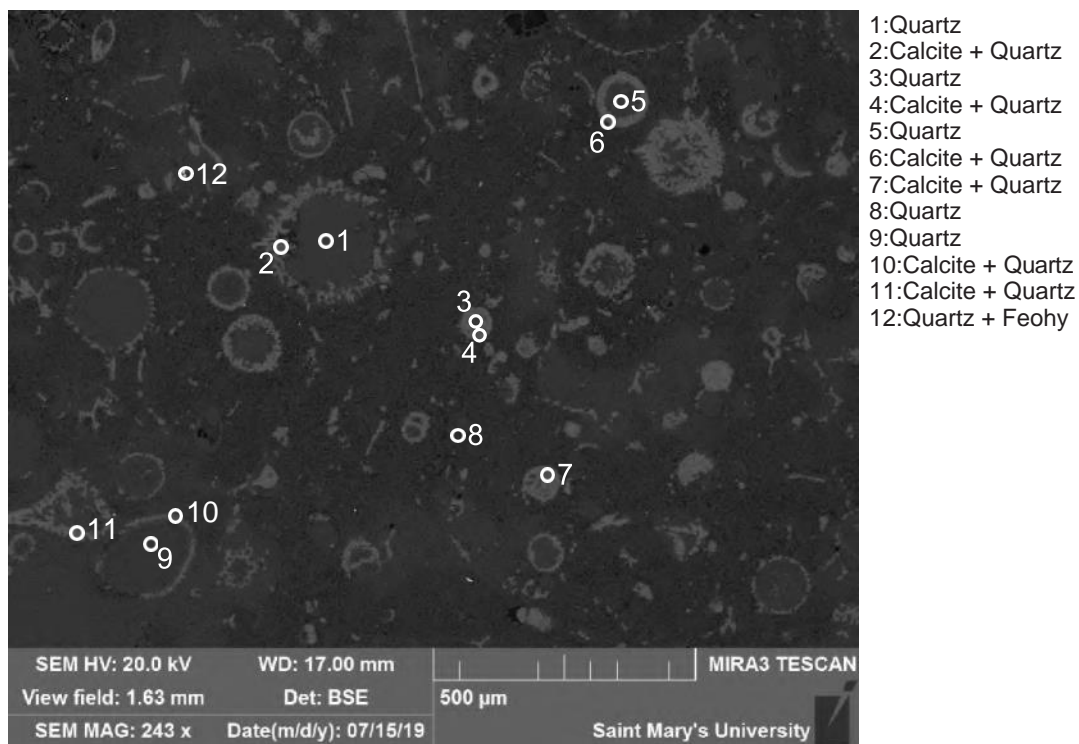


Figure S12.20: SK5 (SEM) Site 19 (Table S12.1).

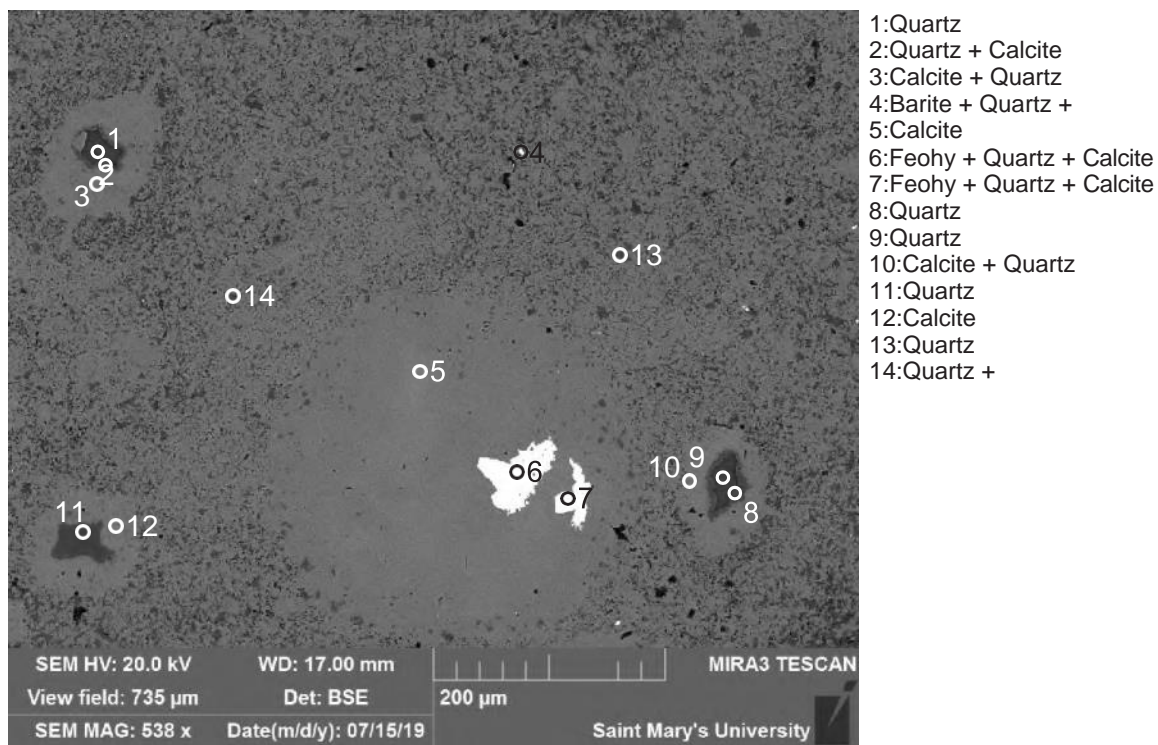


Figure S12.21: SK5 (SEM) Site 20 (Table S12.1).

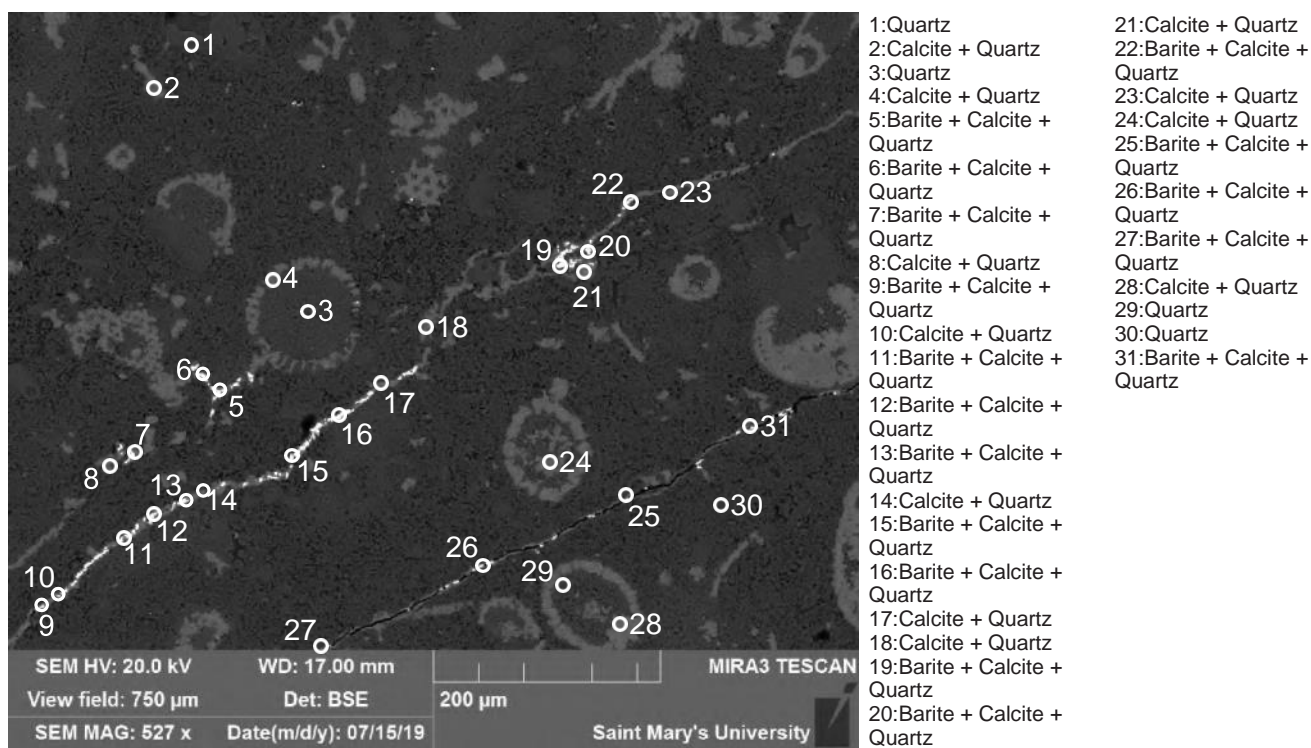


Figure S12.22: SK5 (SEM) Site 21 (Table S12.1).

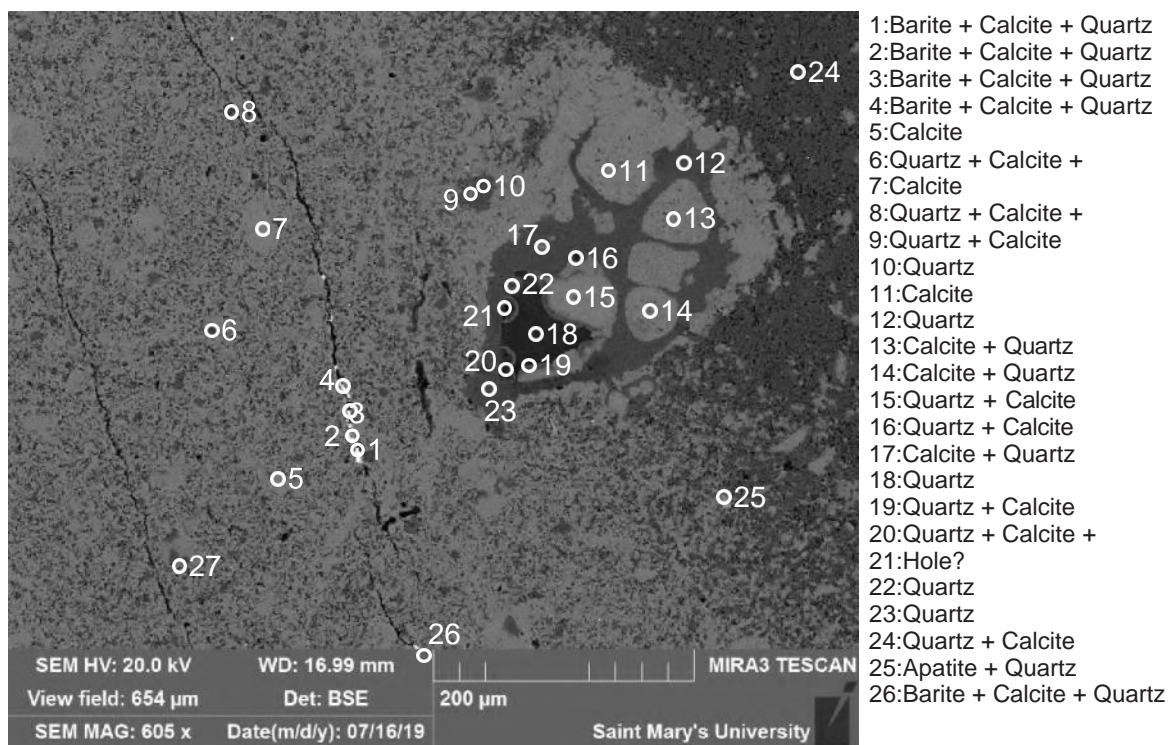


Figure S12.23: SK5 (SEM) Site 22 (Table S12.1).

27: Calcite + Quartz +

Figure S12.23: SK5 (SEM) Site 22 (Table S12.1).

Table S12.1: Scanning Electron Microscope (SEM) mineral chemical analyses (EDS) of SK5.

Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	Cr2O3	CoO	CuO	ZnO	ZrO2	Ag2O	BaO	La2O3	Ce2O3	Nd2O3	WO3	Total	Actual Total
1	1	Qz	100																								100	114
1	2	Ap + Qz	4.84						48.6			38.12	1.6	6.84													100	103
1	3	Feohy +	11.26		1.79	83.86		2.46	0.63																		100	76
1	4	Ap + Qz	47.65			1.15			28.81			19.43	1	1.96													100	102
1	5	Qz	100																								100	115
1	6	TiO2 + Qz	24.67	73.76		1.57																					100	109
1	7	Qz + Feohy	77.87		1.1	20.16		0.63			0.24																100	110
1	8	TiO2 + Qz	56.05	42.71		1			0.24																		100	118
2	1	Qz	100																								100	112
2	2	Cal + Qz	18.46						81.54																		100	62
2	3	Feohy + Cal + Qz +	7.68		1.18	59.13		1.35	30.66																		100	69
2	4	Feohy + Cal + Qz +	11.88		0.74	49.28		1.19	36.9																		100	71
2	5	Cal + Gth +	9.73		1.12	42.01		1.66	45.49																		100	68
2	6	Gth +	18.54		2.79	73.33		2.08	3.26																		100	76
2	7	Cal + Qz	2.69					0.89	96.42																		100	54
2	8	Cal + Qz	7.81					0.7	91.49																		100	57
2	9	Cal + Gth +	19.17		1.32	47.57		1.48	30.46																		100	70
2	10	Feohy + Qz + Cal	67.38		1.07	29.6		0.85	1.1																		100	101
2	11	Feohy + Qz + Cal +	67.64		1.14	29.05		1.02	1.15																		100	97
2	12	Feohy + Qz + Cal +	29.16		1.75	65.46		2.23	1.38																		100	81
2	13	Feohy + Qz +	61.22		1.62	34.97		0.76	1.19		0.24																100	99
2	14	Cal + Qz	27.52			1.23			71.24																		100	66
2	15	Cal + Qz	33.39					0.54	66.07																		100	70
2	16	Feohy + Qz +	65.41		1.15	31.52		0.8	1.12																		100	100
2	17	Feohy + Cal +	19.44		3.2	55.72		1.55	18.63		0.41	1.05															100	76
2	18	Qz	100																								100	110
2	19	TiO2 + Qz	48.04	51.67		0.29																					100	115
2	20	Feohy + Qz	64.48			34.32		0.91	0.29																		100	102
2	21	Feohy + Qz	71.12		0.82	26.92		0.79	0.34																		100	99
2	22	Ap	0.5						49.71	0.84		39.52	1.63	6.36												1.44	100	103
2	23	Ap + Qz	5.07						49.91	0.72		38.24	1.53	4.52													100	92
2	24	Ap +	0.64						50.05	1.12		39.67	1.57	5.61												1.34	100	100
2	25	Ap +	1.28						50.35	1.02		39.39	1.62	6.33													100	100
2	26	Ap	0.83						49.65	1.01		39.68	1.52	5.85												1.46	100	103
2	27	Ap	0.75						50.27	1.04		39.52	1.64	5.4												1.38	100	101
2	28	Ap + Qz	41.28			2.01			31.63	0.42		23.65	1.01														100	99
2	29	Qz + Feohy +	63.4		1.39	33.8		0.91	0.49																		100	107
3	1	Qz	100																								100	111
3	2	Cal + Qz	2.28					0.68	97.04																		100	56
3	3	Feohy +	27.5		0.77	69.82		1.46	0.45																		100	86
3	4	Qz + Feohy +	83.44			16.21		0.35																			100	95
3	5	Qz + Feohy +	66.82		4.06	27.44		0.73			0.94																100	100
3	6	Qz + Feohy +	79.15		1.17	18.87		0.81																			100	109
3	7	Qz + Feohy +	65.63		2.26	30.27		1.12	0.33		0.4																100	106
4	1	Cal + Qz	33.99						66.01																		100	65
4	2	Feohy + Qz +	11.55	0.49	2.87	79.39		2.4	2.97						0.32												100	72
4	3	Cal + Qz	28.84						71.16																		100	63
4	4	Feohy + Qz	6.26			92.04		1.7																			100	74
4	5	Feohy + Qz	9.91		1.85	85.19		2.32	0.73																		100	71
4	6	Cal + Qz	27.28					0.96	71.76																		100	62
4	7	Cal + Qz	32.23					0.72	67.04																		100	66
4	8	Cal + Qz	3.86					0.96	95.18																		100	55
4	9	Feohy + Cal + Qz	9.57		1.09	39.26		1.29	48.79																		100	63
4	10	Cal + Qz	35.81						64.19																		100	67
4	11	Cal + Qz	9.17						90.83																		100	57

Table S12.1: Scanning Electron Microscope (SEM) mineral chemical analyses (EDS) of SK5.

[illegible]

Table S12.1: Scanning Electron Microscope (SEM) mineral chemical analyses (EDS) of SK5.

Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	Cr2O3	CoO	CuO	ZnO	ZrO2	Ag2O	BaO	La2O3	Ce2O3	Nd2O3	WO3	Total	Actual Total
6	7	Ap + Qz	59.04						21.21	0.48		15.97	0.92	2.37													100	103
6	8	Cal + Qz	4.23					0.71	95.06																		100	56
6	9	Feohy + Qz +	40.72		1.43	55.06		1.59	1.21																		100	88
6	10	Qz	100																								100	114
6	11	Feohy + Qz+ Cal +	13.86		1.54	54.63		1.86	28.13																		100	75
6	12	Cal + Qz	19.91						80.09																		100	62
6	13	Cal + Qz	48.83		0.51			0.62	50.04																		100	74
6	14	Qz	100																								100	108
6	15	Qz	100																								100	112
7	2	Cal	1.25						98.75																		100	50
7	3	Feohy + Qz + Cal +	11.92		1.87	81.17		2.73	2.31																		100	68
7	4	Cal	1.81					0.71	97.48																		100	51
7	5	Feohy + Qz + Cal +	9.84		2.47	81.55		2.7	2.34			1.1															100	69
7	6	Cal						56																			56	51
7	7	Feohy + Qz + Cal +	26.74		1.56	67.45		2.4	1.86																		100	74
7	8	Cal + Qz	18.93						81.07																		100	58
7	9	Cal + Qz	25.71						74.29																		100	60
7	10	Qz	99.04						0.96																		100	106
7	11	Qz	99.08						0.92																		100	106
7	12	Qz	100																								100	107
7	13	Cal + Qz	21.17					0.59	78.25																		100	60
7	14	Qz	99.72						0.28																		100	110
7	15	Cal + Qz	14.88						85.12																		100	57
7	16	Qz	99.51						0.49																		100	112
7	17	Cal	1.61						98.39																		100	55
7	18	Feohy + Qz + Cal +	25.37		1.76	68.38		2.76	1.73																		100	73
7	19	Cal + Qz	25.36		0.83				73.81																		100	64
7	20	Feohy + Qz + Cal +	8.97	0.49	1.98	76.24		2.32	9			0.99															100	72
7	21	Cal + Qz	14.27					0.69	85.04																		100	60
7	22	Qz + Cal	97.97						2.03																		100	107
7	23	Cal						0.381	55.62																		56	53
7	24	Qz + Cal	65.5						34.5																		100	72
8	1	Feohy + Qz + Cal +	8.96		1.89	83.33		2.83	1.96			1.04															100	73
8	2	Cal + Feohy + Qz +	4.75		1.28	43.68		1.39	48.89																		100	58
8	3	Hole	16.14			49.21			13.78						20.87												100	3
8	4	Hole	41.41		4.19	5.36		10.22	18.89	3.65	0.77		11.89						3.62								100	30
8	5	Feohy + Qz + Cal +	8.37		1.43	85.62		2.96	1.62																		100	73
8	6	Qz + Cal	55.96						44.04																		100	78
8	7	Cal + Qz	39.71			0.68			59.61																		100	62
8	8	Cal							56																		56	54
8	9	Feohy + Qz + Cal +	16.83			65.16		2.18	15.83																		100	77
8	10	Cal						0.353	55.65																		56	56
8	11	Feohy + Qz + Cal +	8.6		1.67	82.61			3.06	4.06																	100	76
8	12	Cal						0.431	55.57																		56	56
8	13	Feohy + Qz + Cal	6.59		1.91	63.21		2.2	26.09																		100	71
8	14	Cal + Feohy + Qz	4.85			43.42		1.27	50.46																		100	64
8	15	Cal + Qz	4.07						95.93																		100	56
8	16	Cal + Qz	25.06						74.94																		100	59
8	17	Cal + Qz	17.85	1.25		6.47			74.44																		100	54
8	18	Ap							53.45	1.32		35.41	1.72	7.64	0.46												100	68
8	19	Cal							56																		56	55
9	1	Feohy + Cal + Qz +	7.22		1.5	73.62		2.57	15.09																		100	71
9	2	Feohy + Qz + Cal +	15.84		1.14	59.03		1.87	22.12																		100	73
9	3	Feohy + Qz + Cal +	10.17		1.97	68.69		2.55	16.61																		100	71
9	4	Cal							56																		56	53

Table S12.1: Scanning Electron Microscope (SEM) mineral chemical analyses (EDS) of SK5.

Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	Cr2O3	CoO	CuO	ZnO	ZrO2	Ag2O	BaO	La2O3	Ce2O3	Nd2O3	WO3	Total	Actual Total
9	5	Cal + Qz	6.26						93.74																		100	56
9	6	Cal						0.65	55.35																		56	53
9	7	Qz + Cal	96.16						3.84																		100	102
9	8	Cal + Qz	4.76						94.82						0.42												100	41
9	9	Cal	1.62						98.38																		100	44
9	10	Cal + Qz	4.75						95.25																		100	42
9	11	Qz + Cal	68.37						31.63																		100	72
10	1	Qz	99.54						0.46																		100	109
10	2	Cal + Qz	12						88																		100	56
10	3	Cal							56																		56	52
10	4	Cal							56																		56	52
10	5	Cal	0.94					0.7	98.36																		100	54
10	6	Mnz (Ce) +	1.55						5.83			33.69		-0.52							1.49		16.33	31.47	10.16		100	98
10	7	Cal + Qz	9.38						90.62																		100	49
10	8	Gth + Qz	19.8	0.63	3.36	70.81		2.31	2.57		0.52																100	79
10	9	Cal	2.08			1.92			95.99																		100	56
10	10	Gth + Qz	35.62	0.61	7.17	50.7		2	1.93		1.97																100	87
10	11	Gth + Qz	24.38		3.8	57.19		1.91	11.93		0.78																100	80
10	12	Feohy + Qz + Cal +	26.46		2.73	65.09		2.3	2.15	0.73	0.53																100	81
10	13	Cal	2.05						97.95																		100	55
10	14	Feohy + Qz + Cal	27.36		0.72	26.93		0.97	44.03																		100	68
10	15	Qz + Cal	95.92						4.08																		100	105
10	16	Qz	99.33						0.67																		100	111
10	17	Cal	1.72						98.28																		100	53
11	1	Cal + Qz	13.39		0.76				85.85																		100	56
11	2	Qz	99.26						0.74																		100	108
11	3	Feohy + Qz + Cal +	9.06	0.51	1.77	81.21		2.27	5.18																		100	65
11	4	Feohy + Qz + Cal +	34.18		1.29	49.47		1.65	13.4																		100	72
11	5	Cal + Qz	21.46					0.87	77.66																		100	61
11	6	Cal + Qz	1.27					1.23	97.5																		100	54
11	7	Cal + Qz	22.45						77.55																		100	62
11	8	Cal	1.65					1.29	97.06																		100	54
11	9	Cal	1.09					1.02	97.89																		100	55
11	10	Qz	100																								100	113
11	11	Cal	1.55					1.08	97.37																		100	56
11	12	Qz	100																								100	113
11	13	Cal + Qz	41.68						58.32																		100	71
11	14	Cal	2.1					0.65	97.24																		100	54
11	15	Feohy + Qz + Cal +	22.36		1.94	70.62		2.49	2.31						0.28												100	81
11	16	Cal	1.09					1.24	97.66																		100	53
11	17	Qz	99.69						0.31																		100	111
12	1	Feohy + Qz + Cal +	12.05		1.71	68.53		2.42	15.29																		100	69
12	2	Feohy + Qz + Cal +	7.12		1.4	53.11		1.68	36.68																		100	65
12	3	Cal + Qz	12.47						87.53																		100	56
12	4	Feohy + Qz + Cal +	16.47		1.46	54.82		1.56	25.7																		100	71
12	5	Cal	1.8			1.71			96.49																		100	51
12	6	Cal							56																		56	50
12	7	Cal							56																		56	52
12	8	Cal + Qz	4.65			4.4		0.88	90.06																		100	52
12	9	Cal + Feohy + Qz	3.16			20.97		1.07	74.81																		100	56
12	10	Cal + Qz	3.82		1			0.78	94.4																		100	55
12	11	Ap + Qz	1.8						50.92	1.12		38.17	1.57	5.62	0.8												100	49
12	12	Qz + Cal	89.72		0.82				9.24		0.22																100	99
12	13	Qz + Cal	91.42		0.91				7.67																		100	98
13	1	Cal							56																		56	50

Table S12.1: Scanning Electron Microscope (SEM) mineral chemical analyses (EDS) of SK5.

Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	Cr2O3	CoO	CuO	ZnO	ZrO2	Ag2O	BaO	La2O3	Ce2O3	Nd2O3	WO3	Total	Actual Total
13	2	Feohy + Cal + Qz +	15.84		3.24	64.02		2.14	14.44		0.33																100	71
13	3	Feohy + Cal + Qz +	10.25		2.44	66.31		2.32	18.68																		100	67
13	4	Feohy + Cal + Qz +	8.31		1.86	67.66		2.09	20.08																		100	66
13	5	Feohy + Cal + Qz +	7.79		2.1	58.33		2.1	29.69																		100	64
13	6	Feohy + Cal + Qz +	7.13		1.46	64.48		2.37	24.56																		100	65
13	7	Feohy + Cal + Qz +	8.4		1.62	54.28		1.88	33.82																		100	64
13	8	Feohy + Cal + Qz +	7.5		1.69	70.64		2.27	17.9																		100	68
13	9	Feohy + Cal + Qz +	5.54		1.58	43.66		2.04	47.19																		100	63
13	10	Cal	1.7			2.77			95.54																		100	53
13	11	Feohy + Cal + Qz +	8.57		3.89	67.56		2.93	17.05																		100	69
13	12	Feohy + Cal + Qz +	8.83		2.36	73.87		2.4	12.54																		100	70
13	13	Feohy + Cal + Qz +	8.04		1.99	72.83		2.55	13.87	0.72																	100	71
13	14	Feohy + Cal + Qz +	4.94		1.16	43.06		1.63	49.21																		100	62
13	15	Cal	1.78			0.96			96.49				0.76														100	55
13	16	Feohy + Cal + Qz +	6.04		1.43	59.15		1.9	31.48																		100	64
13	17	Feohy + Cal + Qz +	6.46		1.79	55.46		2.3	34																		100	71
13	18	Feohy + Cal + Qz +	7.92	0.65	2.6	73.82		2.49	12.52																		100	69
13	19	Cal + Qz	2.76						97.24																		100	55
13	20	Feohy + Cal + Qz +	6.73		1.99	65.97		2.16	23.15																		100	64
13	21	Feohy + Cal + Qz +	30.17		1.71	58.03		2.69	7.39																		100	80
13	22	Ap	1.02					0.57	48.36	1.15		39.67	1.95	6.74	0.54												100	67
13	23	Feohy + Cal + Qz +	7.91	0.58	2.85	72.2		2.94	13.52																		100	68
13	24	Feohy + Cal + Qz +	7.23		2.09	66.68		2.59	21.41																		100	66
13	25	Feohy + Cal + Qz +	7.1		1.92	58.74		2.27	29.97																		100	70
13	26	Feohy + Cal + Qz +	13.36	0.56	2.43	67.46		2.41	13.77																		100	71
13	27	Feohy + Cal + Qz +	36.21		1.9	54.87		1.65	5.37																		100	78
13	28	Cal + Qz	2.3					0.9	96.8																		100	53
13	29	Feohy + Cal + Qz	8.85	0.65		68.54		2.33	19.63																		100	67
13	30	Cal							56																		56	52
13	31	Feohy + Cal + Qz +	7.59		1.27	84.24		2.38	3.82					0.69													100	40
13	32	Feohy + Cal + Qz	6.76			57.16		1.96	34.11																		100	64
13	33	Cal + Qz	2.48						97.52																		100	48
13	34	Qz + Cal	97.62						2.38																		100	101
13	35	Feohy + Cal + Qz +	7.84	0.66	2.03	72.14		2.51	14.81																		100	65
13	36	Cal + Qz	2.9						97.1																		100	54
13	37	Cal + Qz	3.48			0.65			95.87																		100	49
14	1	Feohy + Cal + Qz	11.58			72.8		3.29	12.34																		100	52
14	2	Feohy + Qz + Cal +	34.6	0.52	1.52	55.91		1.64	5.81																		100	63
14	3	Cal + Qz	26.13						73.87																		100	60
14	4	Cal	1.71						98.29																		100	51
14	5	Qz + Cal	80.31						19.69																		100	90
14	6	Qz + Cal	98.37						1.63																		100	107
14	7	Cal + Qz	16.9						83.1																		100	57
14	8	Cal + Qz	2.75						97.25																		100	53
14	9	Ilm + Qz	41.95	33.64		22.86	0.58	0.43	0.54																		100	96
14	10	Ap + Qz	16.59					0.36	40.61	0.85		34.43	1.65	5.24	0.28												100	100
14	11	Cal + Qz	2.55					1.05	96.07						0.33												100	52
14	12	Qz	99.77						0.23																		100	109
14	13	Cal + Qz	23.15						76.85																		100	63
14	14	Cal + Qz	25.47						74.53																		100	62
14	15	Cal + Qz	10.08					0.62	89.3																		100	57
14	16	Cal + Qz	48.32					0.47	51.22																		100	75
14	17	Cal + Qz	14.41						85.59																		100	58
14	18	Qz + TiO2	74.35	14.7		10.7			0.25																		100	106
14	19	Cal + Qz	14.58			0.65		0.94	83.82																		100	60

Table S12.1: Scanning Electron Microscope (SEM) mineral chemical analyses (EDS) of SK5.

Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	Cr2O3	CoO	CuO	ZnO	ZrO2	Ag2O	BaO	La2O3	Ce2O3	Nd2O3	WO3	Total	Actual Total
14	20	Qz + Cal	56.81					0.53	42.66																		100	81
14	21	Ap + Qz	2.43					0.48	48.7	0.93		40.07	2.01	5.1	0.3												100	100
14	22	Cal + Qz	41.75						58.25																		100	69
14	23	Cal + Qz	8.85					0.64	90.51																		100	55
14	24	Feohy + Qz + Cal +	27.29		1.58	57.04		2.06	12.03																		100	74
14	25	Feohy + Qz + Cal +	39.19			41.85		1.46	17.5																		100	79
14	26	Cal + Qz	14.71						85.29																		100	55
14	27	Cal + Qz	14.98					0.68	84.34																		100	56
14	28	Cal	0.622						55.38																		56	52
14	29	Feohy + Cal + Qz +	24.89	1.66	1.83	31.69		1.84	37.78		0.32																100	72
14	30	Ap + Qz	3.89					0.78	49.54	0.9		36.4	1.97	6.26	0.27												100	90
14	31	Cal + Qz	27.92						72.08																		100	61
14	32	Cal + Qz	6.29						93.71																		100	53
14	33	Qz + Cal	95.27						4.73																		100	97
14	34	Qz	100																								100	111
14	35	Qz	100																								100	110
14	36	Cal + Qz	14.53						85.47																		100	51
15	1	Qz	99.42		0.58																						100	103
15	2	Cal + Qz	12.59					0.84	86.57																		100	55
15	3	Qz + Cal	97.87						2.13																		100	101
15	4	Qz	100																								100	105
15	5	Cal + Qz	15.29						84.71																		100	58
15	6	Cal + Qz	7.25						92.75																		100	55
15	7	Cal + Qz	43.13					0.51	56.35																		100	68
15	8	Feohy + Qz + Cal +	14.58		1.89	67.79		2.18	13.27						0.28												100	74
15	9	Feohy + Qz + Cal +	25.74		0.96	35.88		1.42	36.01																		100	71
15	10	Zrn + Qz	81.76						0.28											17.96							100	99
15	11	Feohy + Qz +	79.35		1.54	18.45		0.66																			100	101
15	12	Cal + Qz	5.35				0.8	1	92.85																		100	55
15	13	Py + Qz	1.36			27.62		0.25	0.21				70.57														100	215
15	14	Qz +	98.75		1.02						0.23																100	108
16	1	Qz	100																								100	106
16	2	Qz	100																								100	101
16	3	Cal + Qz	23.1						76.9																		100	59
16	4	Qz	99.64						0.36																		100	109
16	5	Qz + Cal	92.52		0.6	1.71			4.69						0.49												100	60
16	6	Qz + Cal	95.73						4.27																		100	103
16	7	Qz + Cal	16.54			0.56			82.9																		100	58
16	8	Qz + Cal	51.09						48.91																		100	77
16	9	Cal +	12.17					0.83	87.01																		100	58
16	10	Ap + Qz	5.13						52.94	0.84		34.3	1.56	5	0.22												100	90
16	11	Qz	99.23						0.47	0.3																	100	113
16	12	Qz +	98.66		1.05						0.3																100	112
16	13	TiO2 + Qz	45.31	52.71	0.52	0.76			0.7																		100	105
16	14	Cal + Qz	42.65						57.35																		100	71
16	15	Qz	100																								100	107
16	16	Qz	99.59						0.41																		100	94
16	17	Qz	99.74						0.26																		100	86
16	18	Qz	98.45		0.91				0.42		0.23																100	84
16	19	Py + Cal + Qz	4.58			15.47			44.9				35.06														100	88
16	20	Cal + Qz	31.21					0.55	68.24																		100	66
16	21	Feohy + Cal + Qz +	11.39		1.26	50.73		1.6	35.02																		100	67
16	22	Cal + Qz	19.22						80.78																		100	60
16	23	Cal + Qz	41.9						58.1																		100	71
16	24	Cal + Qz	36.59						63.42																		100	67

Table S12.1: Scanning Electron Microscope (SEM) mineral chemical analyses (EDS) of SK5.

Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	Cr2O3	CoO	CuO	ZnO	ZrO2	Ag2O	BaO	La2O3	Ce2O3	Nd2O3	WO3	Total	Actual Total
16	25	Cal + Qz	35.57					0.62	63.81																		100	67
16	26	Qz	100																								100	107
16	27	Qz	100																								100	114
16	28	Qz	100																								100	109
17	1	Feohy + Qz +	7.13			90.96			0.72				1.18														100	72
17	2	Feohy + Qz +	12.95		1	64.08	3.66	2.44	13.02				1.44		0.37			1.03									100	59
17	3	Qz	100																								100	105
17	4	Cal + Qz	17.05						82.95																		100	56
17	5	Cal + Feohy + Qz	9.41			39.45			51.13																		100	59
17	6	Feohy + Qz + Cal	32.16			58.6		0.5	8.01									0.73									100	80
17	7	Cal + Qz	7.2						92.8																		100	51
17	8	Feohy + Qz + Cal +	36.99		1.22	47.91	0.62		12.42									0.83									100	78
17	9	Qz	100																								100	101
17	10	Cal	1.66					1.31	97.03																		100	52
17	11	Feohy + Cal + Qz +	8.41	22.3	1.22	40.96		0.68	21.34				4.29					0.8									100	66
17	12	Cal	1.92					1.16	96.92																		100	53
17	13	Cal + Gth +	18.7		1.9	26.75			52.65																		100	67
17	14	Ap + Qz	4.97						49.52	0.84		37.14	1.34	6.19													100	95
17	15	Qz	100																								100	111
18	1	Qz	98.24		0.96	0.3		0.27			0.22																100	104
18	2	Ap + Qz	1.1						50.23	0.78		40.25	1.52	5.77	0.34												100	86
18	3	Ap	0.96						50.06	0.88		40.9	1.32	5.87													100	76
18	4	Ap + Qz	20.98						39.55	0.74		32.63	1.17	4.94													100	90
19	1	Qz	100																								100	103
19	2	Cal + Qz	31.75						68.25																		100	60
19	3	Qz	99.71						0.29																		100	108
19	4	Cal + Qz	16.08					1.23	82.69																		100	57
19	5	Qz	100																								100	105
19	6	Cal + Qz	29.29						70.71																		100	60
19	7	Cal + Qz	36.72					0.94	62.34																		100	67
19	8	Qz	100																								100	101
19	9	Qz	100																								100	101
19	10	Cal + Qz	46.28						53.72																		100	67
19	11	Cal + Qz	5.61						94.39																		100	49
19	12	Qz + Feohy	75.08		1.16	23.26		0.5																			100	82
20	1	Qz	99.44						0.56																		100	110
20	2	Qz + Cal	97.91						2.09																		100	113
20	3	Cal + Qz	7.57					0.71	91.72																		100	57
20	4	Brt + Qz +	18.03		0.91				5.72		0.29		27.52									47.52					100	102
20	5	Cal						0.61	55.39																		56	55
20	6	Feohy + Qz + Cal	6.93			88.09			1.83									3.16									100	78
20	7	Feohy + Qz + Cal	6.81		1.12	85.63			2.61									3.83									100	79
20	8	Qz	99.5						0.5																		100	119
20	9	Qz	99.51						0.49																		100	115
20	10	Cal + Qz	2.52					0.66	96.82																		100	58
20	11	Qz	99.64						0.36																		100	113
20	12	Cal	1.75						98.25																		100	55
20	13	Qz	99.27						0.73																		100	116
20	14	Qz +	98.12		0.52				1.17		0.19																100	114
21	1	Qz	100																								100	106
21	2	Cal + Qz	19.65					2.1	78.25																		100	59
21	3	Qz	99.67						0.33																		100	103
21	4	Cal + Qz	25.88						74.12																		100	62
21	5	Brt + Cal + Qz	1.8						21.52				29.3				-0.03					47.42					100	93
21	6	Brt + Cal + Qz	3.87						3.66				34.19				0.01					58.27					100	104

Table S12.1: Scanning Electron Microscope (SEM) mineral chemical analyses (EDS) of SK5.

Site	Position	Mineral	SiO ₂	TiO ₂	Al ₂ O ₃	FeO	MnO	MgO	CaO	Na ₂ O	K ₂ O	P ₂ O ₅	SO ₃	F	Cl	Cr ₂ O ₃	CoO	CuO	ZnO	ZrO ₂	Ag ₂ O	BaO	La ₂ O ₃	Ce ₂ O ₃	Nd ₂ O ₃	WO ₃	Total	Actual Total
21	7	Brt + Cal + Qz	11.11					16.8					26.62				-0.09					45.57					100	89
21	8	Cal + Qz	12.13					2.11	85.77																		100	57
21	9	Brt + Cal + Qz	7.93					21.79	0.56				26.01				-0.25					43.97					100	91
21	10	Cal + Qz	9.71					90.29																			100	56
21	11	Brt + Cal + Qz	5.96					13.42					29.83				-0.05					50.84					100	96
21	12	Brt + Cal + Qz	7.87					23.63					23.65				-0.04					44.89					100	85
21	13	Brt + Cal + Qz	8.49					6.32					31.06				0.21					53.92					100	105
21	14	Cal + Qz	8.55					91.45																			100	55
21	15	Brt + Cal + Qz	3.22					9.45					32.33				-0.1					55.09					100	101
21	16	Brt + Cal + Qz	2.67					4.33					33.87				0.01					59.13					100	104
21	17	Cal + Qz	8.87					91.13																			100	57
21	18	Cal + Qz	23.78					76.22																			100	62
21	19	Brt + Cal + Qz	6.51					26.92					23.25				-0.06					43.38					100	81
21	20	Brt + Cal + Qz	7.46					16.57					27.53									48.45					100	94
21	21	Cal + Qz	13.36					86.64																			100	57
21	22	Brt + Cal + Qz	23.74					42.65					11.44									22.17					100	76
21	23	Cal + Qz	4.65					95.35																			100	55
21	24	Cal + Qz	44.71				0.96	54.33																			100	74
21	25	Brt + Cal + Qz	20.66				0.66	26.74					19.55				0.01					32.37					100	81
21	26	Brt + Cal + Qz	13.53					25.03					22.86				-0.05					38.63					100	86
21	27	Brt + Cal + Qz	22.43				0.7	49.31					9.16									18.4					100	72
21	28	Cal + Qz	24.97					75.03																			100	64
21	29	Qz	99.03		0.56			0.24		0.17																	100	111
21	30	Qz	100																								100	112
21	31	Brt + Cal + Qz	20.91					40.12					13.52				0.04					25.4					100	76
22	1	Brt + Cal + Qz	11.22					10.31					29.63				-0.01					48.85					100	91
22	2	Brt + Cal + Qz	1.48					19.85	0.52				29.21				0.09					48.85					100	85
22	3	Brt + Cal + Qz	4.33					17.57					28.14				0.19					49.78					100	79
22	4	Brt + Cal + Qz	3.08					24.55					26.74				-0.07					45.7					100	76
22	5	Cal						56																			56	56
22	6	Qz + Cal +	77.16		3.48	0.83		0.48	17.07		0.98																100	97
22	7	Cal						0.538	55.46																		56	55
22	8	Qz + Cal +	74.81		2.8	0.57		0.52	20.6		0.7																100	87
22	9	Qz + Cal	66.89					0.52	32.59																		100	89
22	10	Qz	99.64					0.36																			100	117
22	11	Cal	1.12					0.7	98.18																		100	57
22	12	Qz	99.72					0.28																			100	116
22	13	Cal + Qz	40.82					0.73	58.45																		100	73
22	14	Cal + Qz	40.85					0.62	58.54																		100	73
22	15	Qz + Cal	69.81					29.94		0.25																	100	94
22	16	Qz + Cal	90.89			0.77	1.48	3.87	0.45				1.82						0.73								100	77
22	17	Cal + Qz	45.6					0.47	53.92																		100	76
22	18	Qz	99.38						0.41						0.21												100	96
22	19	Qz + Cal	97.52					2.48																			100	118
22	20	Qz + Cal +	88.62		0.72	0.7	1.9	4.38	0.74				2.17						0.76								100	94
22	21	Hole?	68.34		1.67	2.69	4.28	9.95				2.28	7.87		0.5				2.41								100	46
22	22	Qz	99.73					0.27																			100	117
22	23	Qz	99.65					0.35																			100	117
22	24	Qz + Cal	72.12					27.88																			100	87
22	25	Ap + Qz	1.52					49.32	1.26			38.16	1.94	7.28	0.52												100	95
22	26	Brt + Cal + Qz	1.64					32.21					23.63		0.32		0.2					42.01					100	76
22	27	Cal + Qz +	24.03	9.66	1.04	4.27		60.65		0.34																	100	67

Supplementary Material S13: SEM-BSE images and Electron Dispersive Spectroscopy (EDS) mineral analyses for sample SK4a.

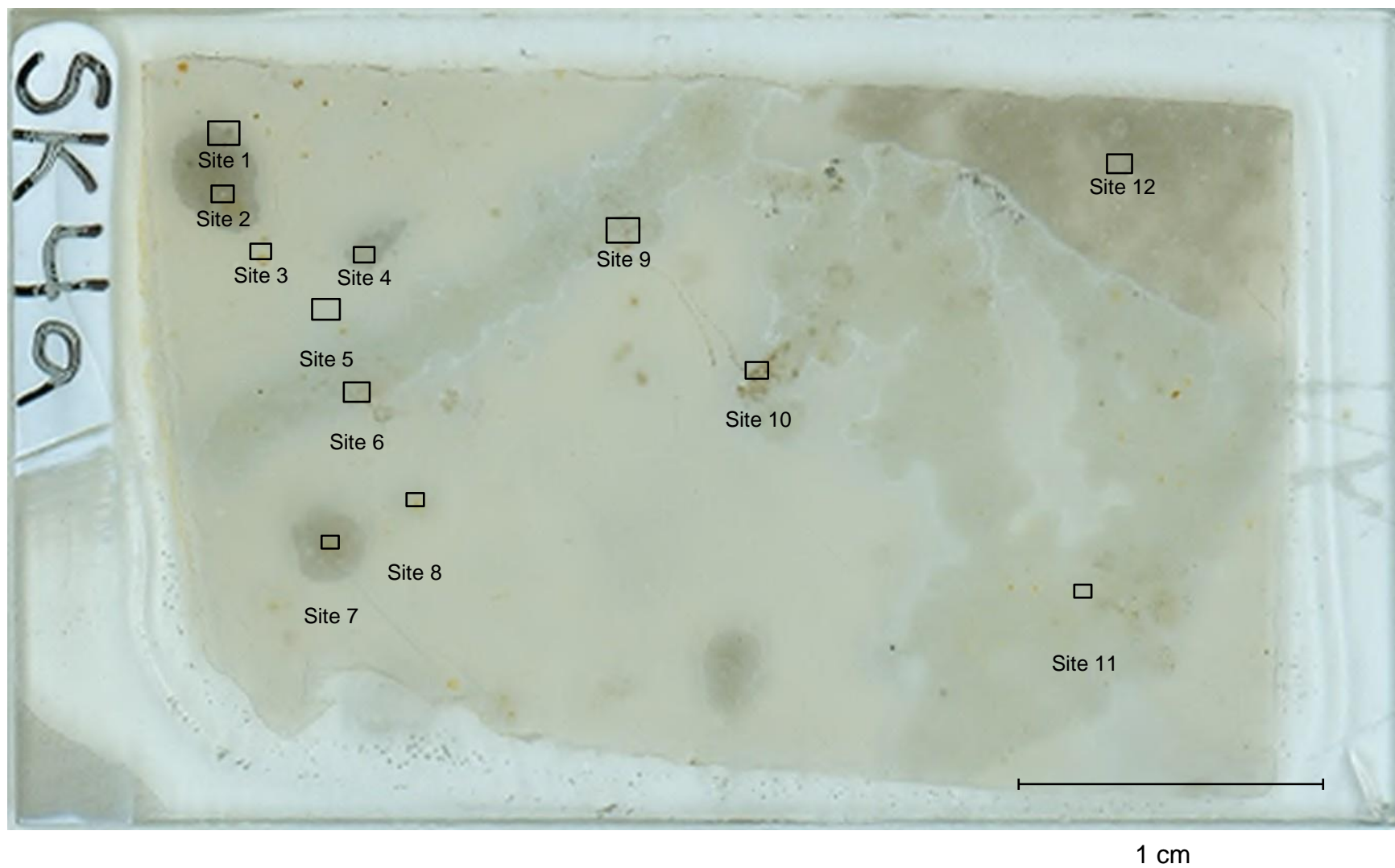


Figure S13.1: SK4a thin section showing respective sites taken for mineral chemical analyses (EDS) via Scanning Electron Microscope (SEM).

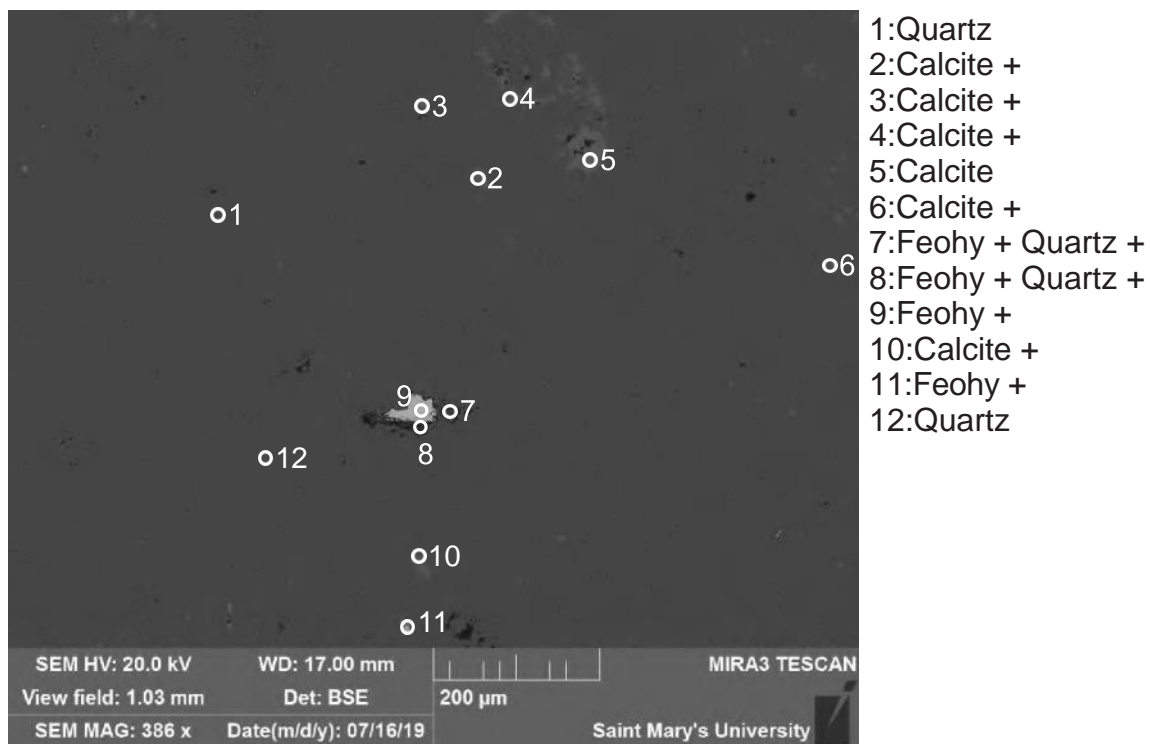


Figure S13.2: SK4a (SEM) Site 1 (Table S13.1).

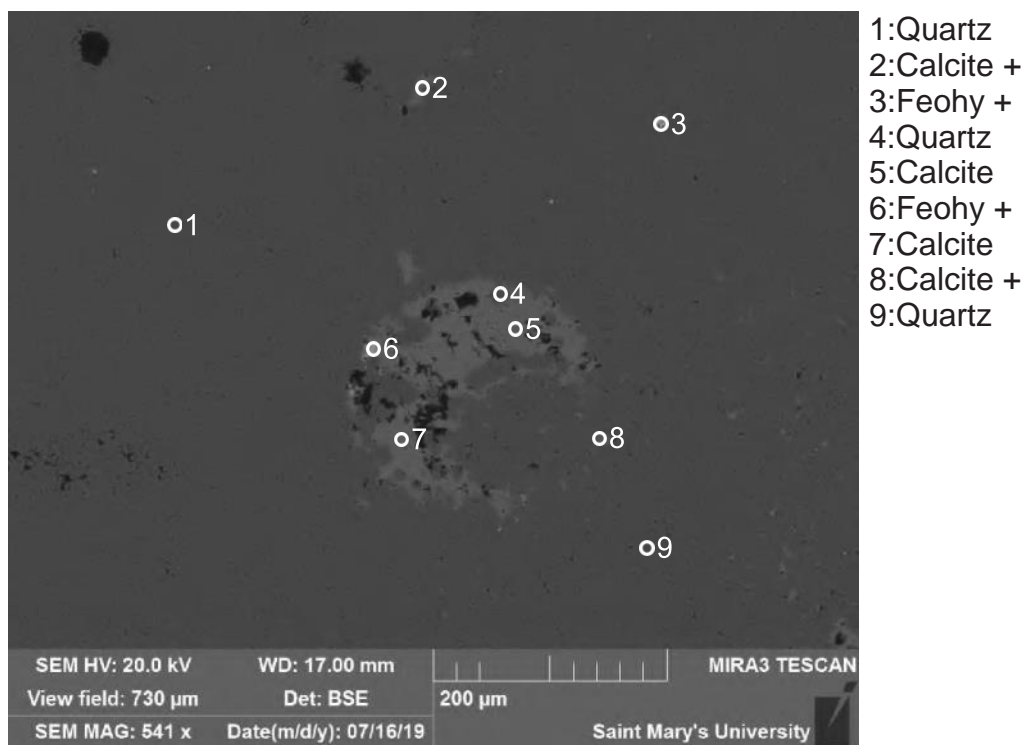


Figure S13.3: SK4a (SEM) Site 2 (Table S13.1).

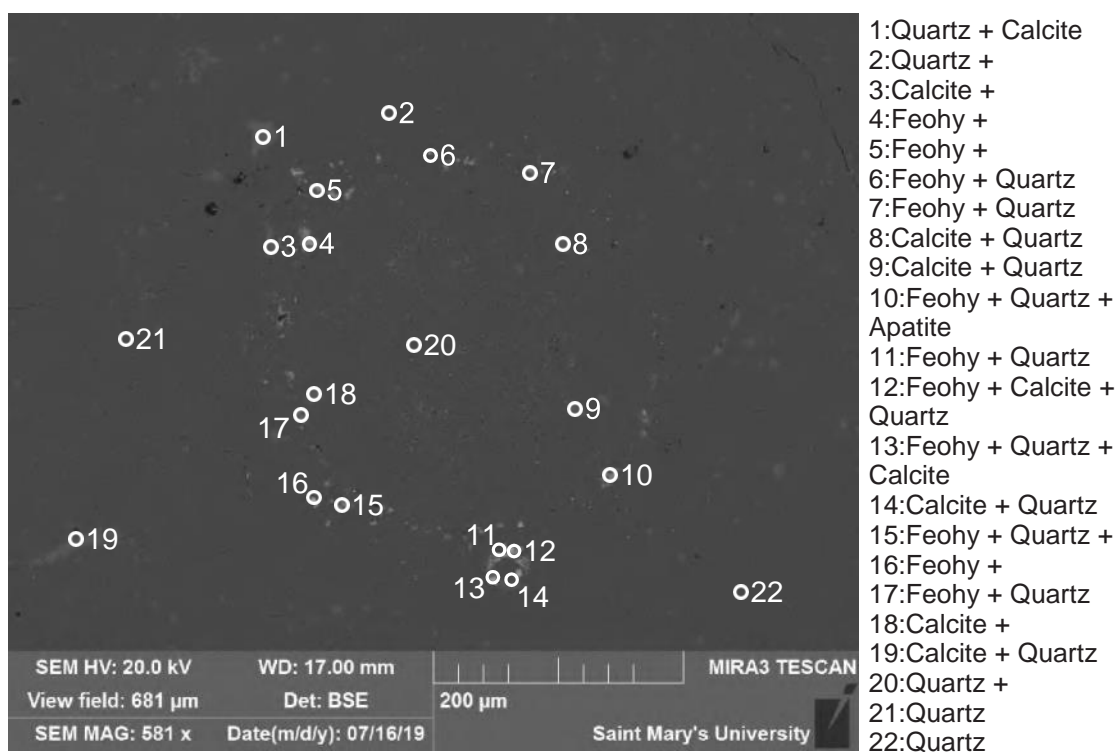


Figure S13.4: SK4a (SEM) Site 3 (Table S13.1).

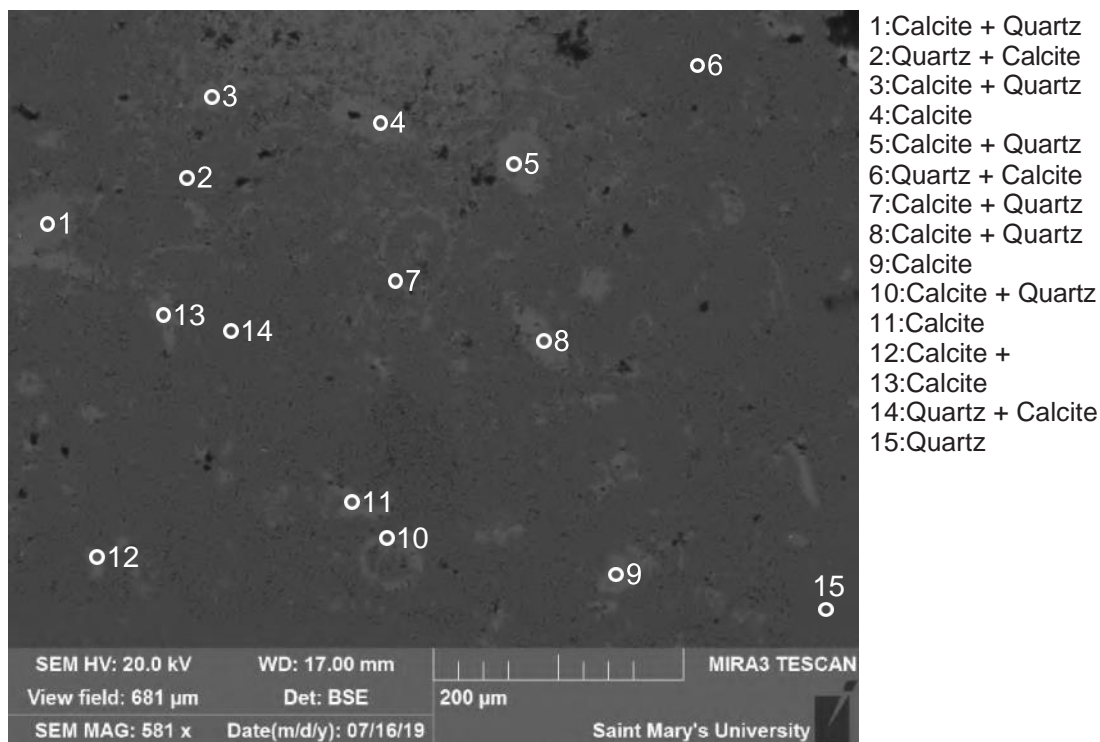


Figure S13.5: SK4a (SEM) Site 4 (Table S13.1).

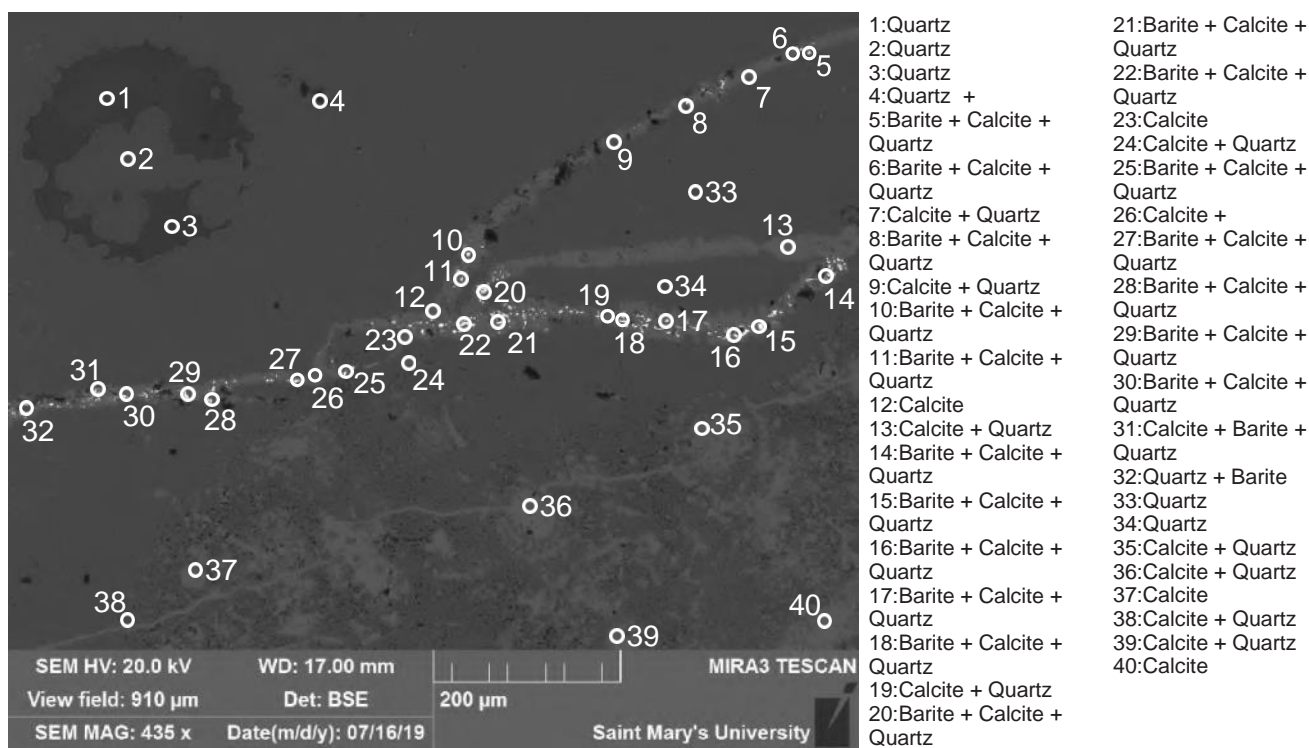


Figure S13.6: SK4a (SEM) Site 5 (Table S13.1).

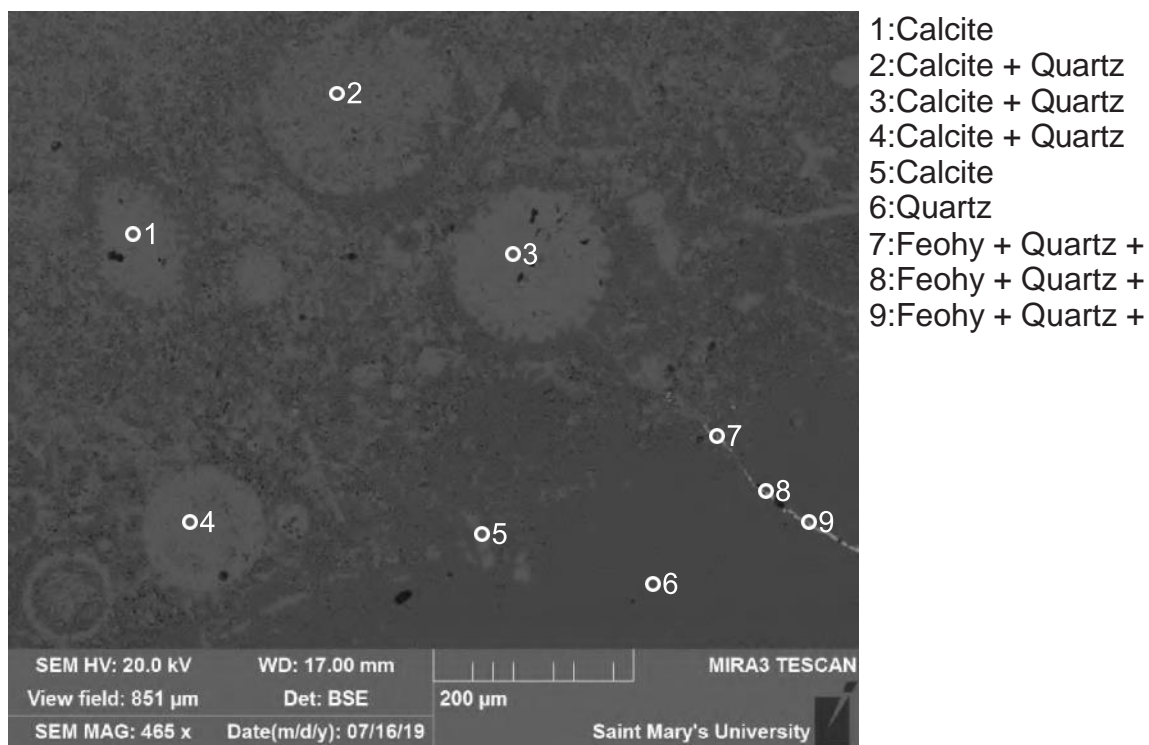


Figure S13.7: SK4a (SEM) Site 6 (Table S13.1).

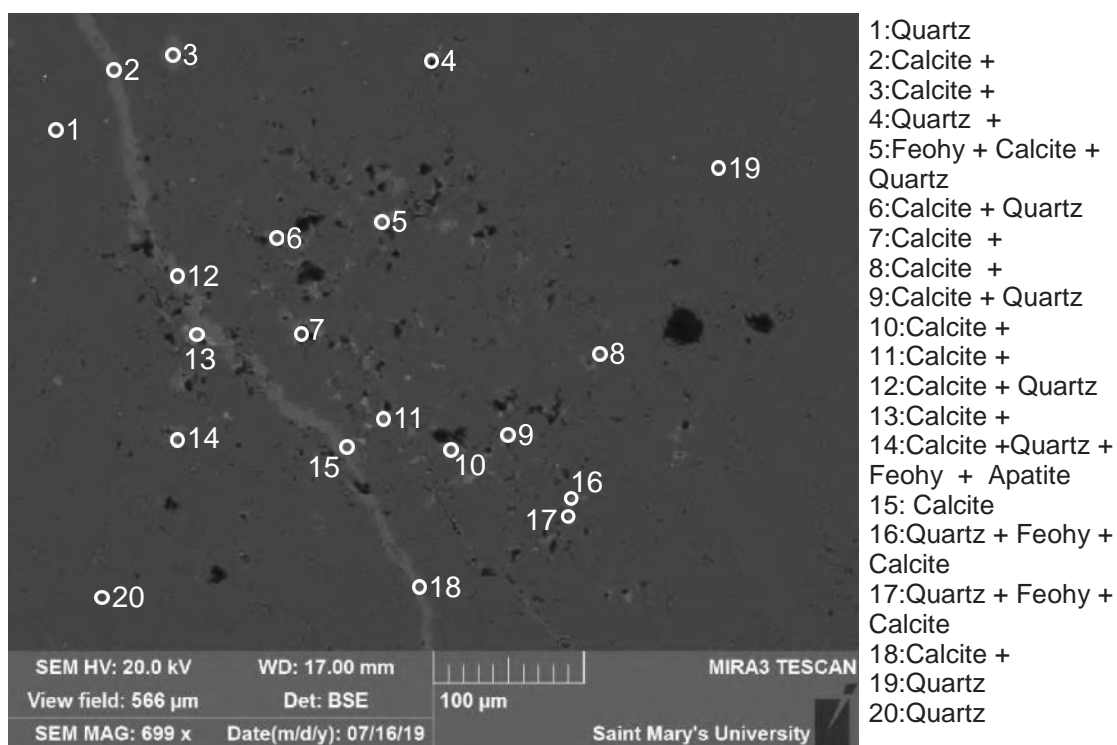


Figure S13.8: SK4a (SEM) Site 7 (Table S13.1).

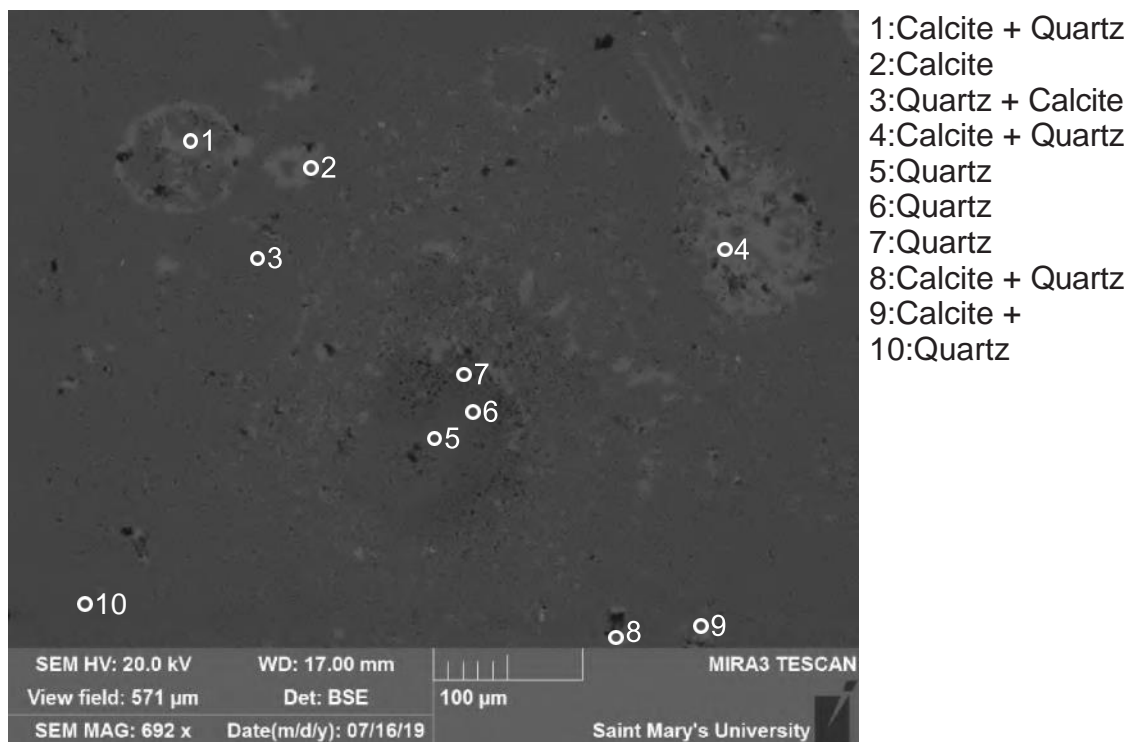


Figure S13.9: SK4a (SEM) Site 8 (Table S13.1).

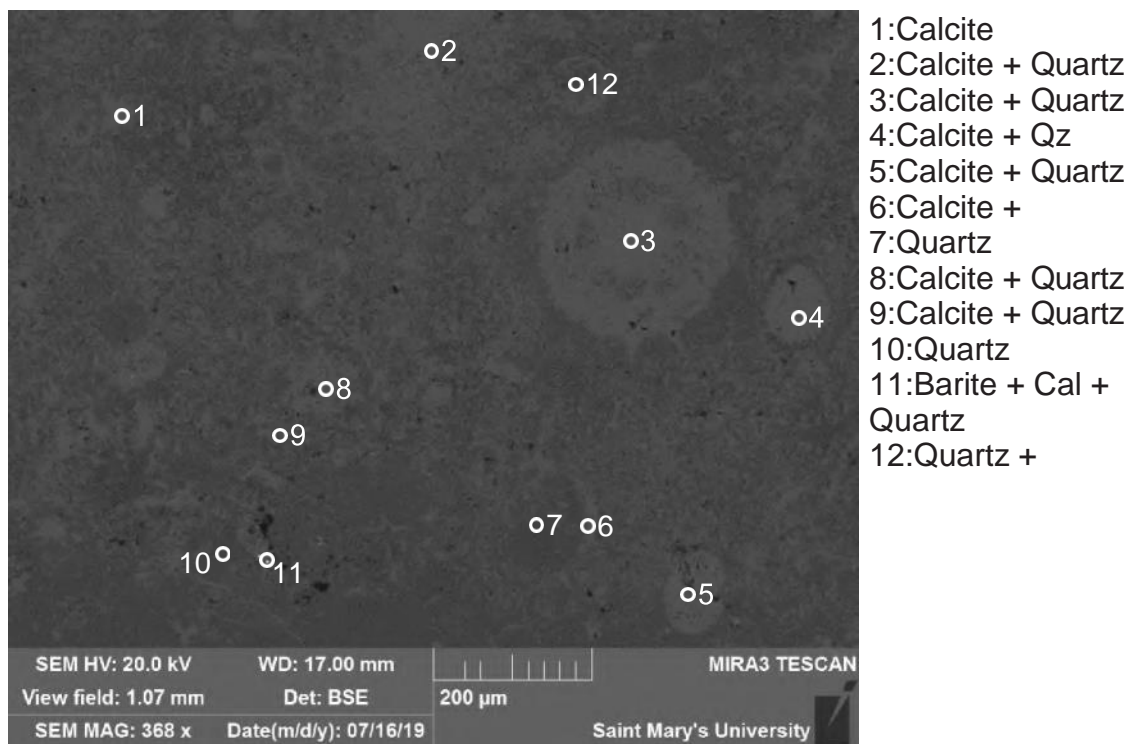


Figure S13.10: SK4a (SEM) Site 9 (Table S13.1).

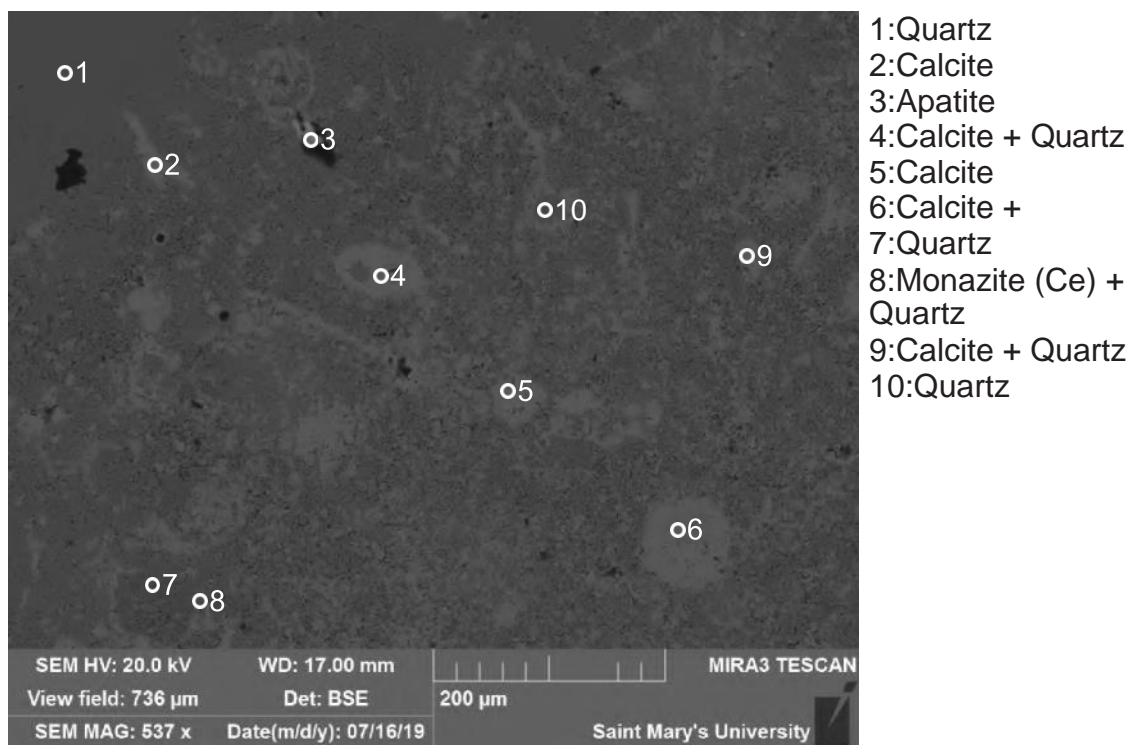


Figure S13.11: SK4a (SEM) Site 10 (Table S13.1).

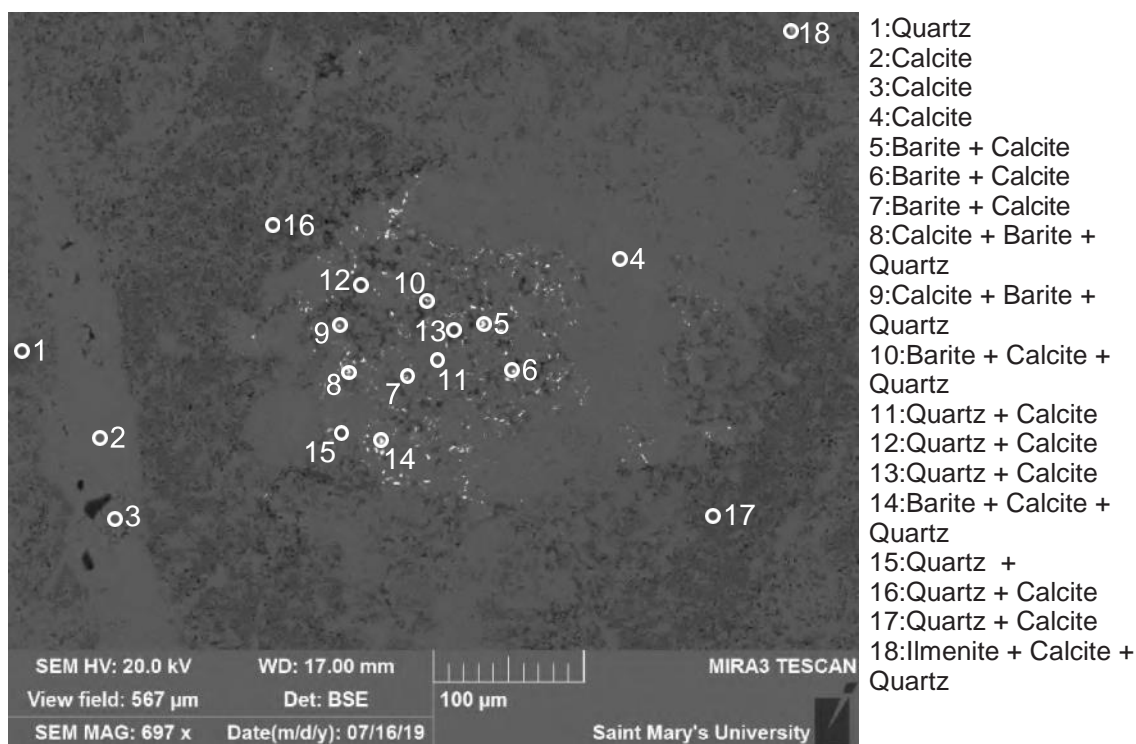


Figure S13.12: SK4a (SEM) Site 11 (Table S13.1).

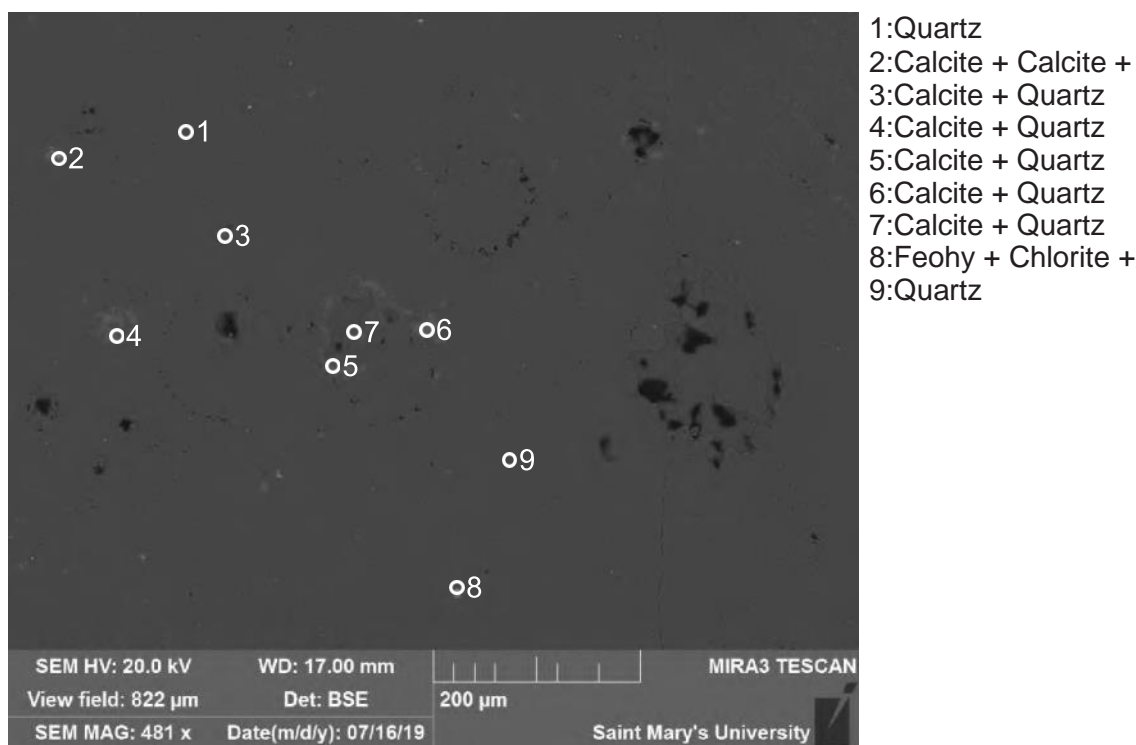


Figure S13.13: SK4a (SEM) Site 12 (Table S13.1).

Table S13.1: Scanning Electron Microscope (SEM) mineral chemical analyses (EDS) of SK4a.

Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	CoO	ZnO	Ag2O	BaO	La2O3	Ce2O3	Nd2O3	Total	Actual Total
1	1	Qz	100.00																				100	116
1	2	Cal +	2.45					0.79	96.75														100	57
1	3	Cal +	3.67						96.33														100	58
1	4	Cal +	5.92					0.65	93.43														100	59
1	5	Cal	0.90						55.10														56	57
1	6	Cal +	5.10					0.68	94.22														100	60
1	7	Feohy + Qz +	53.35		2.96	39.27		0.74	3.14						0.55								100	49
1	8	Feohy + Qz +	61.15		3.29	29.29		1.28	2.57	1.21	0.42				0.79								100	71
1	9	Feohy +	6.25			91.32		2.43															100	84
1	10	Cal +	4.03					1.05	94.92														100	60
1	11	Feohy +	12.05		1.37	84.73		1.85															100	88
1	12	Qz	99.49		0.51																		100	117
2	1	Qz	100.00																				100	116
2	2	Cal +	2.03					0.88	97.09														100	57
2	3	Feohy +	14.38		0.62	82.58		1.91	0.51														100	82
2	4	Qz	99.51						0.49														100	121
2	5	Cal						0.66	55.34														56	57
2	6	Feohy +	7.32		1.88	82.79		1.77	4.44			1.39			0.42								100	76
2	7	Cal	0.90						55.10														56	58
2	8	Cal +	2.78						97.22														100	59
2	9	Qz	100.00																				100	123
3	1	Qz + Cal	69.50						30.50														100	87
3	2	Qz +	96.85						3.15														100	113
3	3	Cal +	2.60						97.40														100	57
3	4	Feohy +	21.73		2.15	73.36		1.78	0.98														100	79
3	5	Feohy +	35.38		1.92	59.57		1.57	0.72			0.83											100	88
3	6	Feohy + Qz	77.49		0.74	20.41		0.41	0.95														100	92
3	7	Feohy + Qz	42.87		1.55	52.48		1.47	1.64														100	84
3	8	Cal + Qz	3.53						96.47														100	58
3	9	Cal + Qz	19.00				0.56		80.44														100	64
3	10	Feohy + Qz +	26.11		2.23	67.79		1.72	1.26			0.88											100	89
3	11	Feohy + Qz	53.87			44.81		0.89	0.43														100	111
3	12	Feohy + Cal + Qz	10.45		1.15	57.80		1.91	28.70														100	74
3	13	Feohy + Qz + Cal	8.56			86.90		1.70	2.84														100	83
3	14	Cal + Qz	31.21						68.79														100	69
3	15	Feohy + Qz +	60.73		1.04	34.94		1.00	1.58			0.70											100	98
3	16	Feohy +	9.80			88.22		1.48	0.51														100	83
3	17	Feohy + Qz	34.82		0.82	22.84		0.81	40.72														100	78
3	18	Cal +	2.28						97.72														100	57
3	19	Cal + Qz	40.96					0.49	58.55														100	74
3	20	Qz +	96.84		0.50				2.66														100	114
3	21	Qz	100.00																				100	115
3	22	Qz	100.00																				100	120
4	1	Cal + Qz	38.30					0.72	60.99														100	67
4	2	Qz + Cal	93.78						6.22														100	104
4	3	Cal + Qz	22.31					0.89	76.80														100	62
4	4	Cal	0.96					0.57	54.47														56	55
4	5	Cal + Qz	28.71						71.29														100	66
4	6	Qz + Cal	85.66						14.34														100	99

Table S13.1: Scanning Electron Microscope (SEM) mineral chemical analyses (EDS) of SK4a.

Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	CoO	ZnO	Ag2O	BaO	La2O3	Ce2O3	Nd2O3	Total	Actual Total
4	7	Cal + Qz	5.75					1.05	93.20														100	57
4	8	Cal + Qz	70.87						29.13														100	90
4	9	Cal	0.86					0.45	54.69														56	57
4	10	Cal + Qz	43.43						56.57														100	73
4	11	Cal	1.01						54.99														56	56
4	12	Cal	1.04					0.44	54.52														56	55
4	13	Cal	0.85						55.15														56	55
4	14	Qz + Cal	97.86						2.14														100	113
4	15	Qz	100.00																				100	118
5	1	Qz	100.00																				100	100
5	2	Qz	100.00																				100	110
5	3	Qz	100.00																				100	94
5	4	Qz +	93.72		1.46	1.22		0.78	1.35	0.34			1.13										100	93
5	5	Brt + Cal + Qz	2.66						18.45				28.79			-0.11			50.20				100	95
5	6	Brt + Cal + Qz	6.65						22.17				25.48			0.10			45.60				100	92
5	7	Cal + Qz	9.92		0.78	1.11		2.19	85.25	0.75													100	58
5	8	Brt + Cal + Qz	3.08						8.97				32.36			-0.04			55.63				100	106
5	9	Cal + Qz	2.77						97.23														100	56
5	10	Brt + Cal + Qz	5.06						5.12				32.64			0.13			57.04				100	112
5	11	Brt + Cal + Qz	6.70						18.53				27.35			0.09			47.34				100	98
5	12	Cal	0.88						55.12														56	57
5	13	Cal + Qz	4.05						95.95														100	58
5	14	Brt + Cal + Qz	8.87						12.24				28.06			0.05			50.78				100	106
5	15	Brt + Cal + Qz	2.51						10.35				30.52			-0.04			56.65				100	102
5	16	Brt + Cal + Qz	4.07						7.98				32.51			-0.06			55.49				100	106
5	17	Brt + Cal + Qz	10.16						50.94				12.12						26.78				100	75
5	18	Brt + Cal + Qz	2.50						24.16				26.97			-0.18			46.56				100	94
5	19	Cal + Qz	18.46						81.54														100	63
5	20	Brt + Cal + Qz	6.38						42.35				17.29			0.11			33.88				100	76
5	21	Brt + Cal + Qz	2.18						2.21				36.58			-0.08			59.11				100	116
5	22	Brt + Cal + Qz	4.82		0.89			0.47	5.19				31.04			-0.10	0.06		57.63				100	106
5	23	Cal	0.93						55.07														56	57
5	24	Cal + Qz	49.73						50.27														100	79
5	25	Brt + Cal + Qz	6.55						11.06				29.49						52.90				100	106
5	26	Cal +	4.07					0.67	95.26														100	57
5	27	Brt + Cal + Qz	3.89						13.40				30.16			-0.03			52.58				100	98
5	28	Brt + Cal + Qz	1.98						26.51				25.49			-0.01			46.04				100	85
5	29	Brt + Cal + Qz	2.60					0.57	15.66				28.49			-0.08			52.77				100	99
5	30	Brt + Cal + Qz	1.91						5.95				34.14			-0.01			58.01				100	106
5	31	Cal + Brt + Qz	11.40		0.88			0.63	59.86	0.58			9.86						16.79				100	65
5	32	Qz + Brt	78.22						15.23				2.75						3.81				100	99
5	33	Qz	100.00																				100	115
5	34	Qz	100.00																				100	117
5	35	Cal + Qz	25.96			0.53			73.51														100	67
5	36	Cal + Qz	12.66			0.89		1.08	85.37														100	61
5	37	Cal	0.91					0.41	54.67														56	55
5	38	Cal + Qz	4.59						95.41														100	56
5	39	Cal + Qz	21.35					0.65	78.00														100	67
5	40	Cal						0.39	55.61														56	58

Table S13.1: Scanning Electron Microscope (SEM) mineral chemical analyses (EDS) of SK4a.

Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	CoO	ZnO	Ag2O	BaO	La2O3	Ce2O3	Nd2O3	Total	Actual Total
6	1	Cal						0.53	55.47														56	52
6	2	Cal + Qz	15.32					0.77	83.91														100	59
6	3	Cal + Qz	15.55						84.45														100	61
6	4	Cal + Qz	6.70						93.30														100	58
6	5	Cal	1.09						54.91														56	57
6	6	Qz	100.00																				100	119
6	7	Feohy + Qz +	51.00		1.55	43.79			2.49			1.17											100	106
6	8	Feohy + Qz +	23.72		2.88	69.61		1.02	0.81			1.95											100	81
6	9	Feohy + Qz +	20.24		2.43	75.05			0.57			1.71											100	87
7	1	Qz	100.00																				100	116
7	2	Cal +	2.07						97.93														100	55
7	3	Cal +	2.39						97.61														100	56
7	4	Qz +	85.10		0.69	13.64		0.31	0.25														100	107
7	5	Feohy + Cal + Qz	22.02			19.25			58.73														100	68
7	6	Cal + Qz	23.05						76.95														100	64
7	7	Cal +	22.77		0.58	14.33		0.73	61.59														100	69
7	8	Cal +	35.03		0.61	8.87		0.65	54.84														100	76
7	9	Cal + Qz	22.70			0.56		0.53	76.21														100	66
7	10	Cal +	2.21						97.79														100	57
7	11	Cal +	33.84			17.00		0.85	48.31														100	74
7	12	Cal + Qz	2.42			0.71		1.15	95.73														100	57
7	13	Cal +	6.91		0.93	27.64		0.95	63.58														100	61
7	14	Cal + Qz + Feohy + Ap	8.67			18.58		0.98	70.85			0.91											100	62
7	15	Cal	0.94					0.39	54.67														56	57
7	16	Qz + Feohy + Cal	57.71		0.87	27.07		0.68	13.67														100	100
7	17	Qz + Feohy + Cal	50.81		1.30	36.77		1.15	9.97														100	94
7	18	Cal +	5.82					1.02	93.16														100	60
7	19	Qz	100.00																				100	119
7	20	Qz	99.31						0.69														100	117
8	1	Cal + Qz	18.17						81.83														100	59
8	2	Cal	0.98						55.02														56	55
8	3	Qz + Cal	78.82						21.18														100	96
8	4	Cal + Qz	5.90					0.74	93.36														100	58
8	5	Qz	98.81		0.96						0.23												100	115
8	6	Qz	98.85		0.92						0.23												100	109
8	7	Qz	98.55		0.66	0.79																	100	104
8	8	Cal + Qz	30.59					0.92	68.49														100	69
8	9	Cal +	2.44						97.56														100	58
8	10	Qz	100.00																				100	117
9	1	Cal	0.98					0.48	54.54														56	50
9	2	Cal + Qz	23.08						76.92														100	59
9	3	Cal + Qz	17.49						82.51														100	59
9	4	Cal + Qz	2.97						97.03														100	55
9	5	Cal + Qz	23.33						76.67														100	64
9	6	Cal +	3.05					1.17	95.78														100	55
9	7	Qz	99.38						0.62														100	112
9	8	Cal + Qz	57.40						42.60														100	78
9	9	Cal + Qz	32.42						67.58														100	64
9	10	Qz	100.00																				100	110

Table S13.1: Scanning Electron Microscope (SEM) mineral chemical analyses (EDS) of SK4a.

Site	Position	Mineral	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	SO3	F	Cl	CoO	ZnO	Ag2O	BaO	La2O3	Ce2O3	Nd2O3	Total	Actual Total
9	11	Br + Cal + Qz	3.17						31.71				22.11			-0.17			43.19				100	82
9	12	Qz + Cal	90.74						9.26														100	96
10	1	Qz	100.00																				100	112
10	2	Cal	0.90						55.10														56	55
10	3	Ap	1.09						51.14	1.13		39.28	1.59	5.78									100	102
10	4	Cal + Qz	19.45					0.59	79.96														100	64
10	5	Cal	0.92					0.57	54.50														56	57
10	6	Cal +	6.05						93.95														100	61
10	7	Qz	99.54						0.46														100	113
10	8	Mnz (Ce) + Qz	40.03						2.33			20.29		-0.20			1.51		9.86	19.34	6.84		100	118
10	9	Cal + Qz	9.60					0.66	89.74														100	61
10	10	Qz	99.07						0.93														100	112
11	1	Qz	98.96		0.57				0.47														100	116
11	2	Cal						0.85	55.15														56	57
11	3	Cal	1.16					0.77	54.04								0.02						56	57
11	4	Cal							56.00														56	59
11	5	Br + Cal	1.30					0.64	19.79				27.64			0.01			50.62				100	98
11	6	Br + Cal	1.15						10.17				33.36			0.05			55.26				100	113
11	7	Br + Cal	14.43						31.02				18.90			-0.04			35.69				100	94
11	8	Cal + Br + Qz	3.41						75.82				6.70						14.07				100	65
11	9	Cal + Br + Qz	2.52						84.83				3.83						8.82				100	63
11	10	Br + Cal + Qz	6.06						36.45				20.46			-0.12			37.14				100	84
11	11	Qz + Cal	51.93						48.07														100	82
11	12	Qz + Cal	96.23		0.90				2.66		0.22												100	107
11	13	Qz + Cal	92.78		0.60	0.44			6.18														100	103
11	14	Br + Cal + Qz	1.44						6.78				33.99			-0.04			57.84				100	116
11	15	Qz +	88.09		0.88	0.36			10.07	0.31	0.29												100	109
11	16	Qz + Cal	79.76						20.24														100	101
11	17	Qz + Cal	93.95						6.05														100	108
11	18	Ilm + Cal + Qz	3.37	57.65		35.09	0.58	0.82	2.49														100	101
12	1	Qz	99.81								0.19												100	116
12	2	Cal + Cal +	59.32	0.58	2.10	9.48		0.68	27.21		0.64												100	86
12	3	Cal + Qz	14.29						85.71														100	63
12	4	Cal + Qz	7.51					0.79	91.71														100	58
12	5	Cal + Qz	10.00					0.97	87.74				1.30										100	63
12	6	Cal + Qz	1.64					1.39	96.97														100	60
12	7	Cal + Qz	40.16					0.85	58.99														100	78
12	8	Feohy + Chl +	17.45		5.14	73.41		2.07	0.82		0.74				0.37								100	82
12	9	Qz	99.66						0.34														100	122