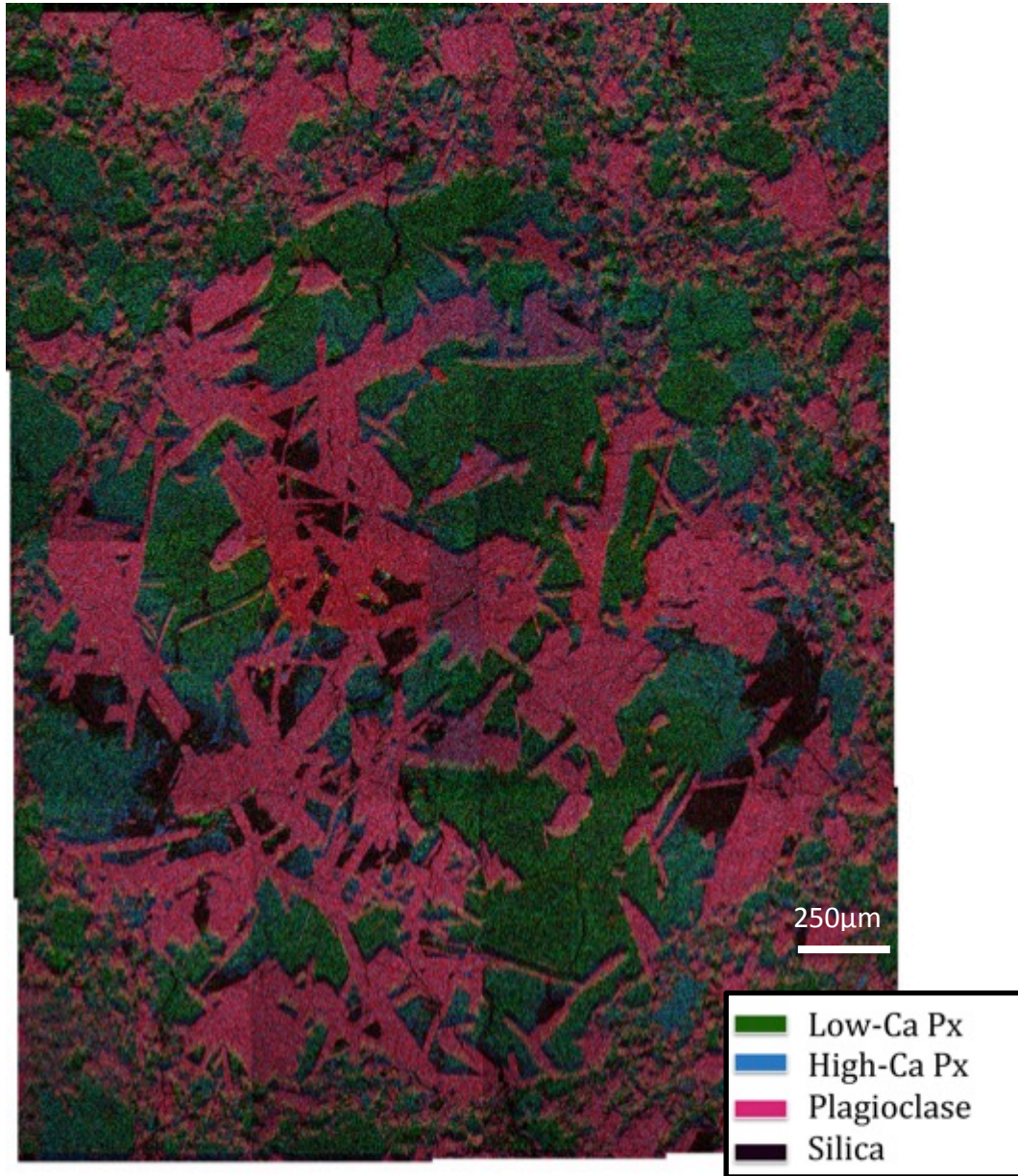


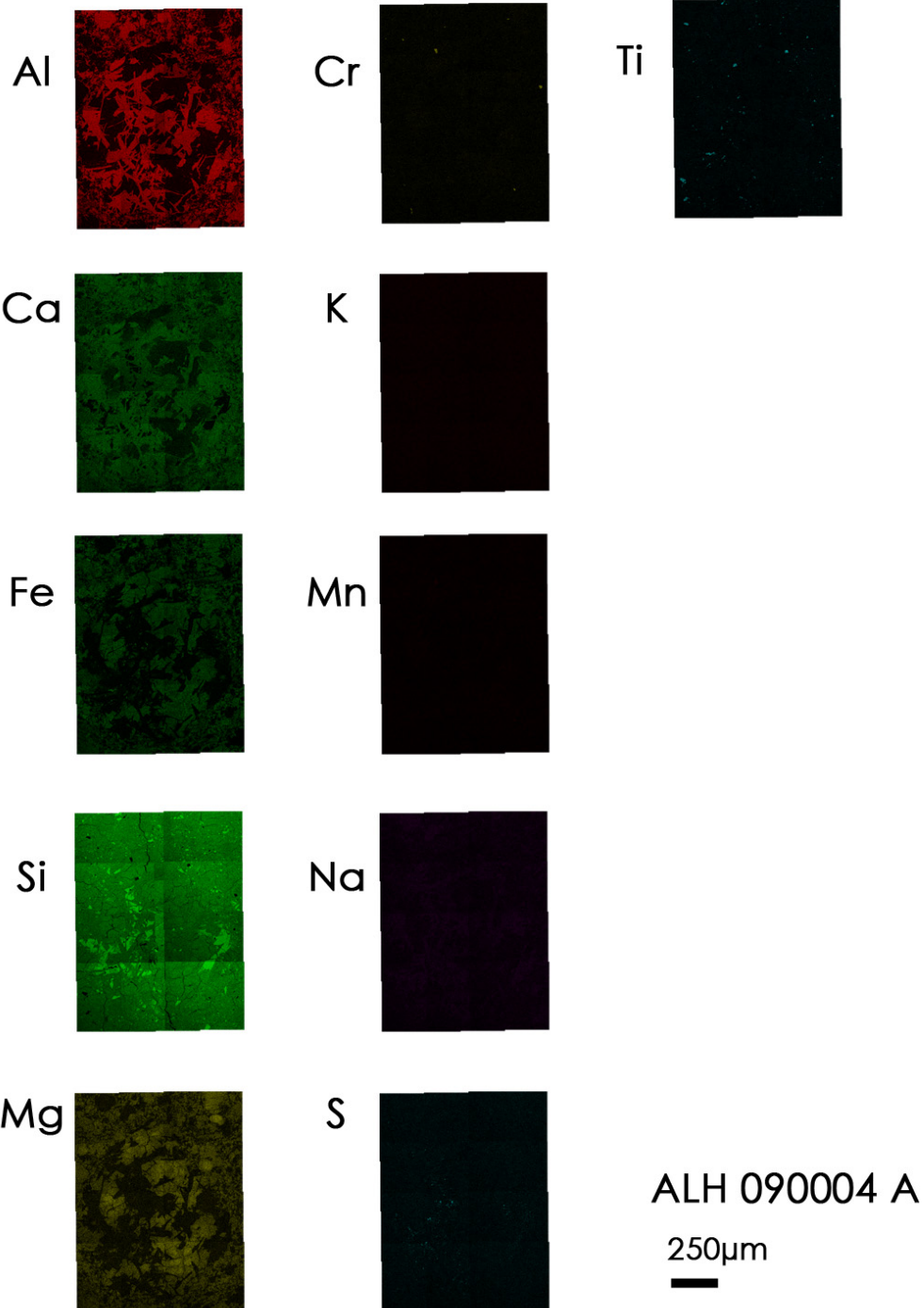
*Appendix G - ALH 090004A*

*G1. SEM Mineral Map*

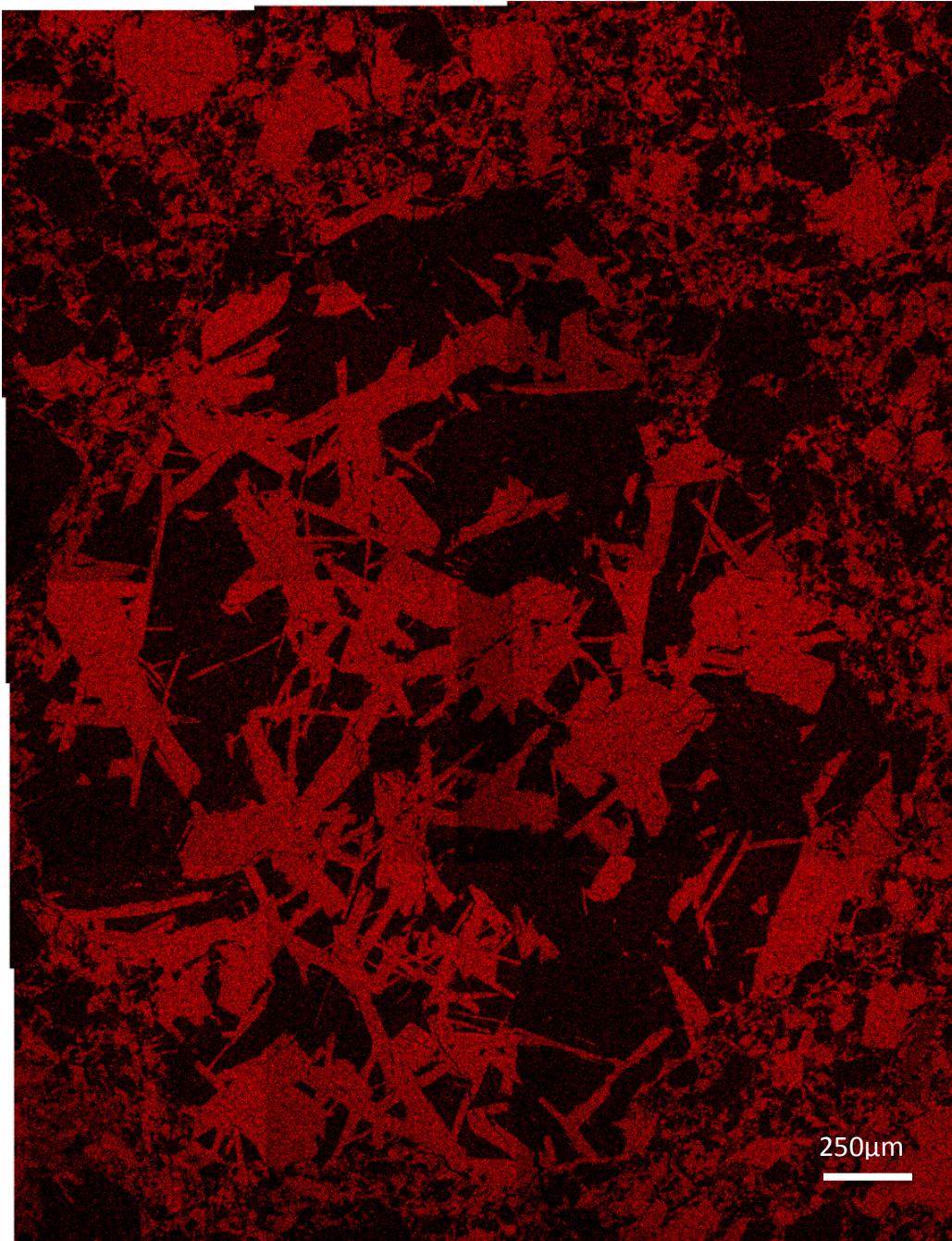


*ALH 090004A has large plagioclase laths and pyroxene grains that are slightly zoned.*

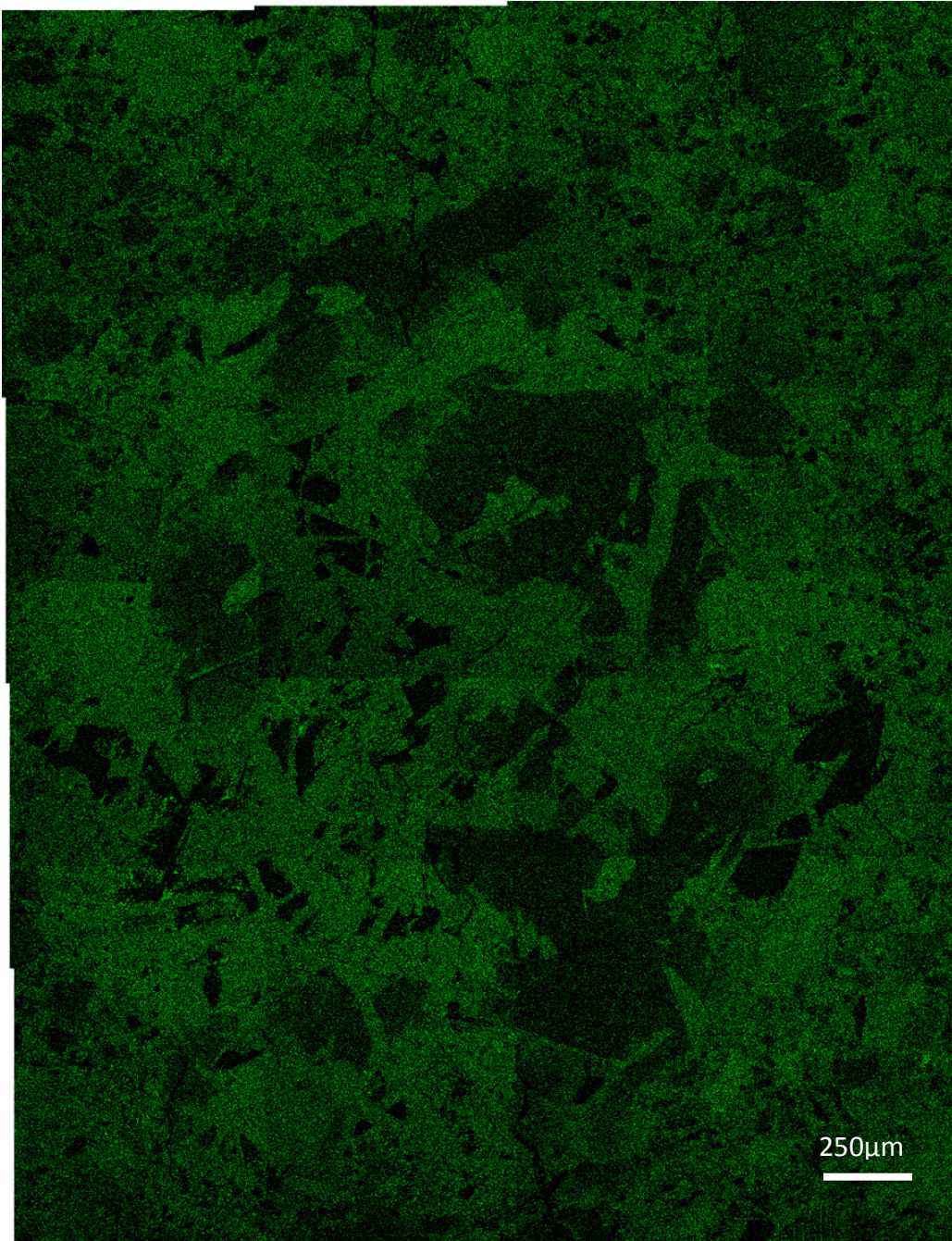
**G2. SEM Elemental X-ray maps** (All clasts were analyzed for eleven elements (Al, Ca, Fe, Si, Mg, Cr, K, Mn, Na, S, and Ti); however if some are extremely dark, this is due to the fact that the element appeared below the detection limit of the SEM, thus showing a colored map with no distinguishable data. For this reason, we have not included a full size element map of K, Mn, and Na.



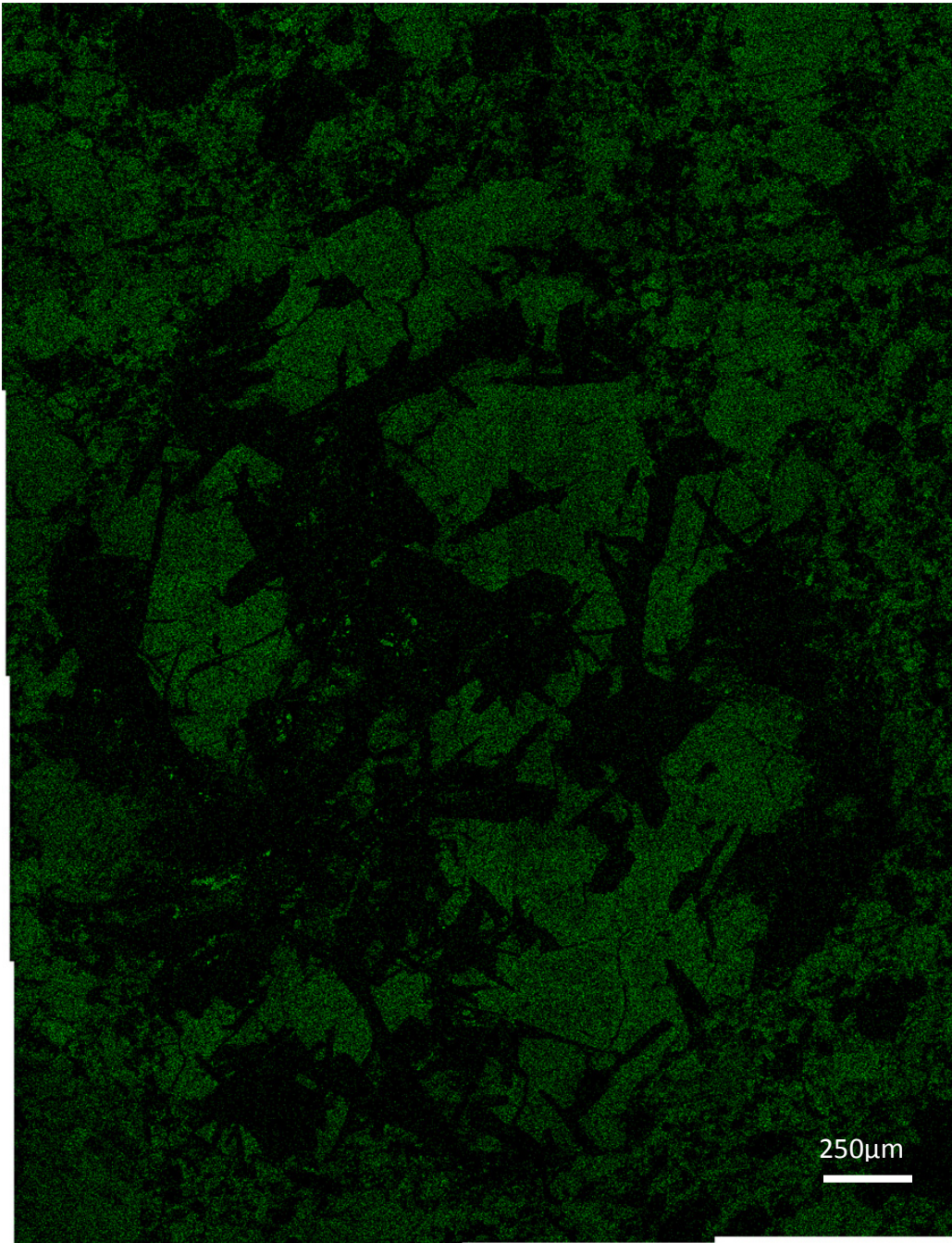
Al



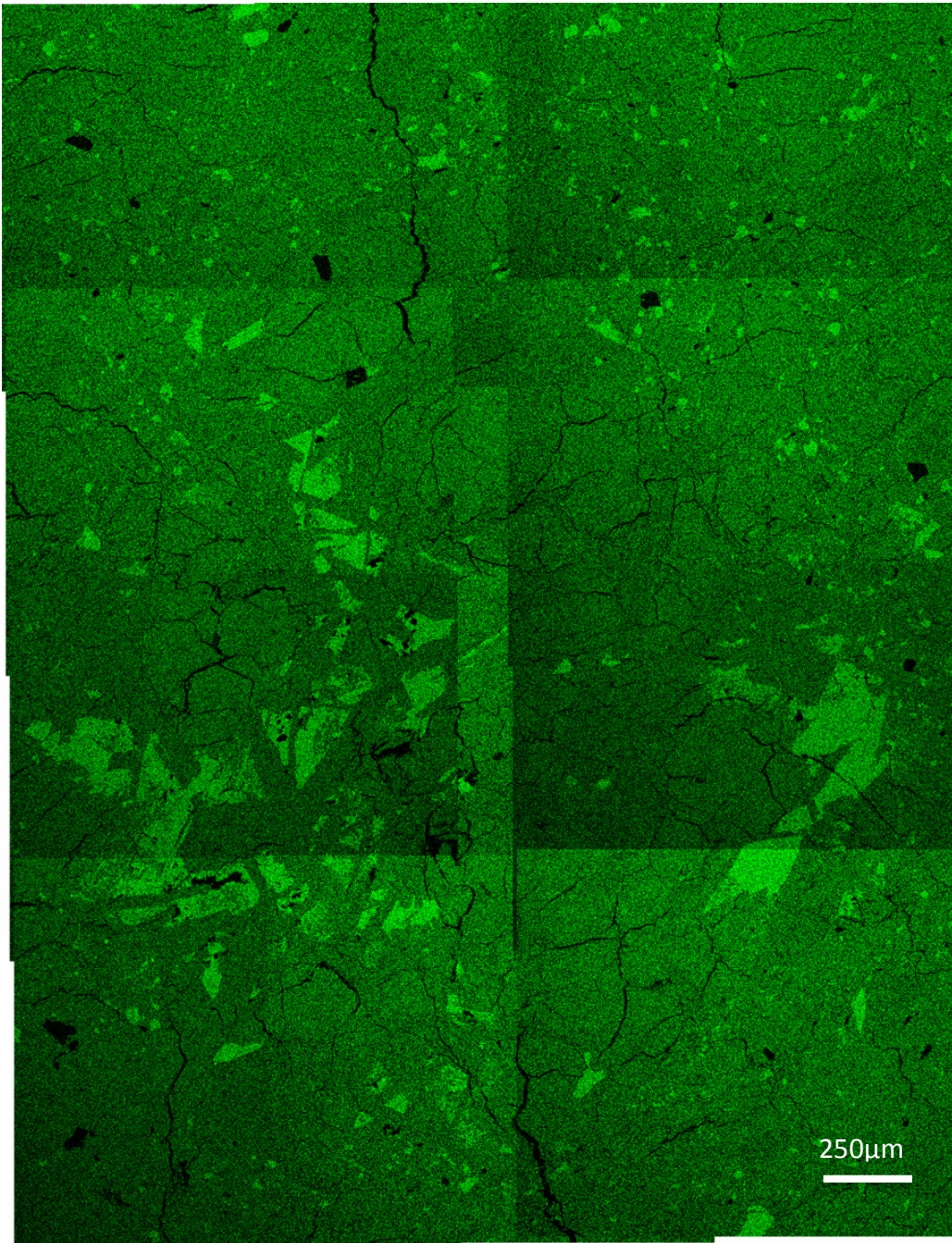
Ca



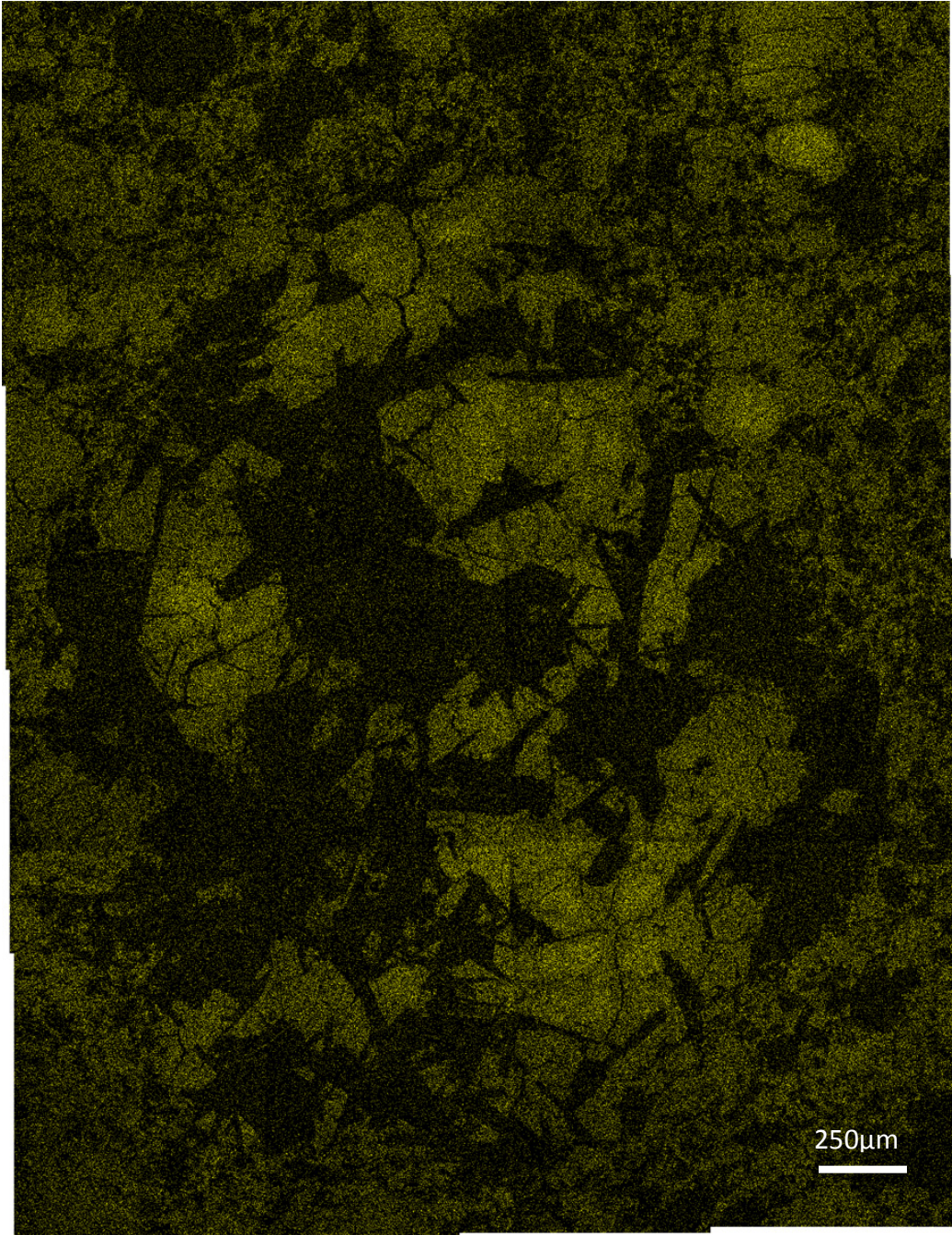
**Fe**



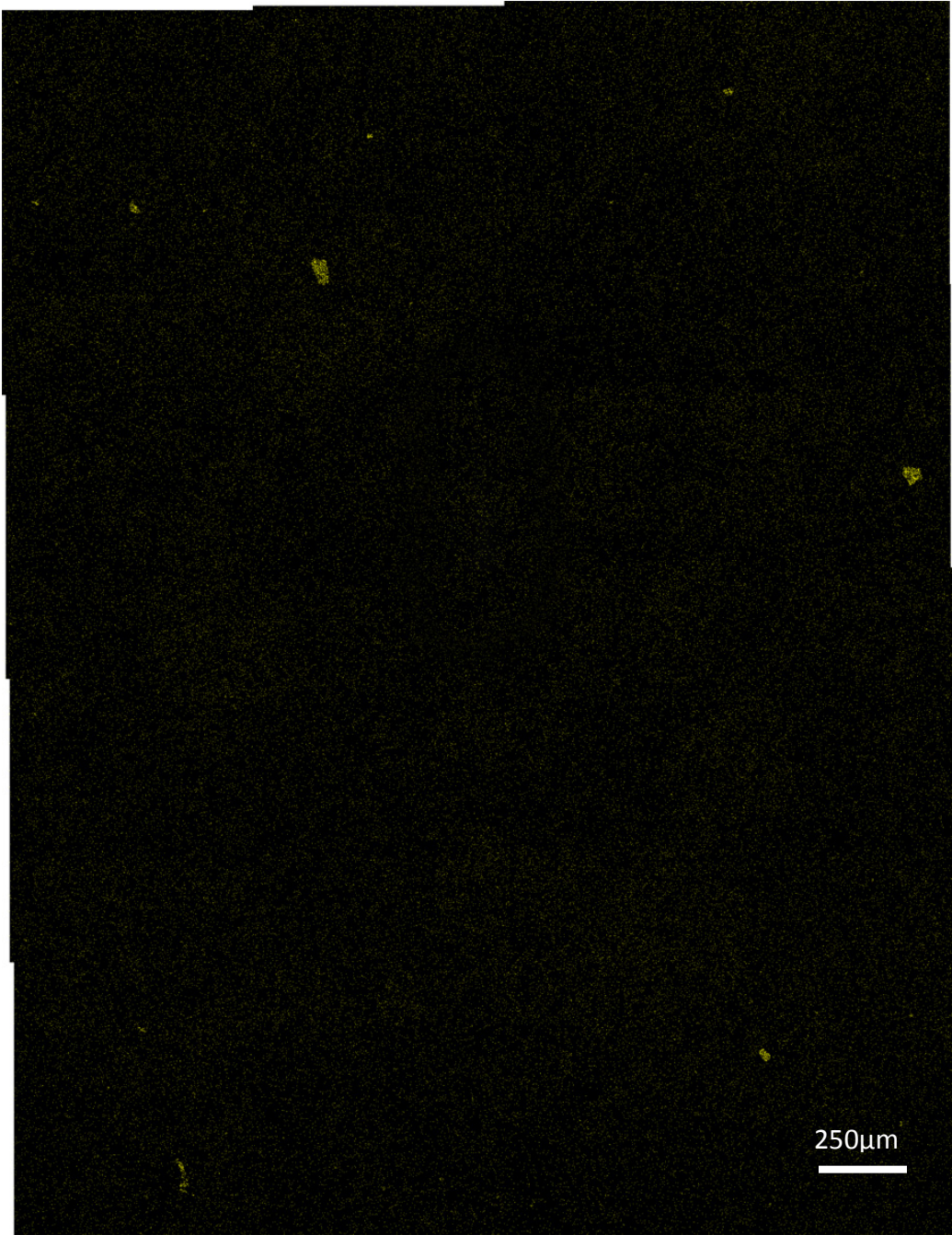
Si



Mg

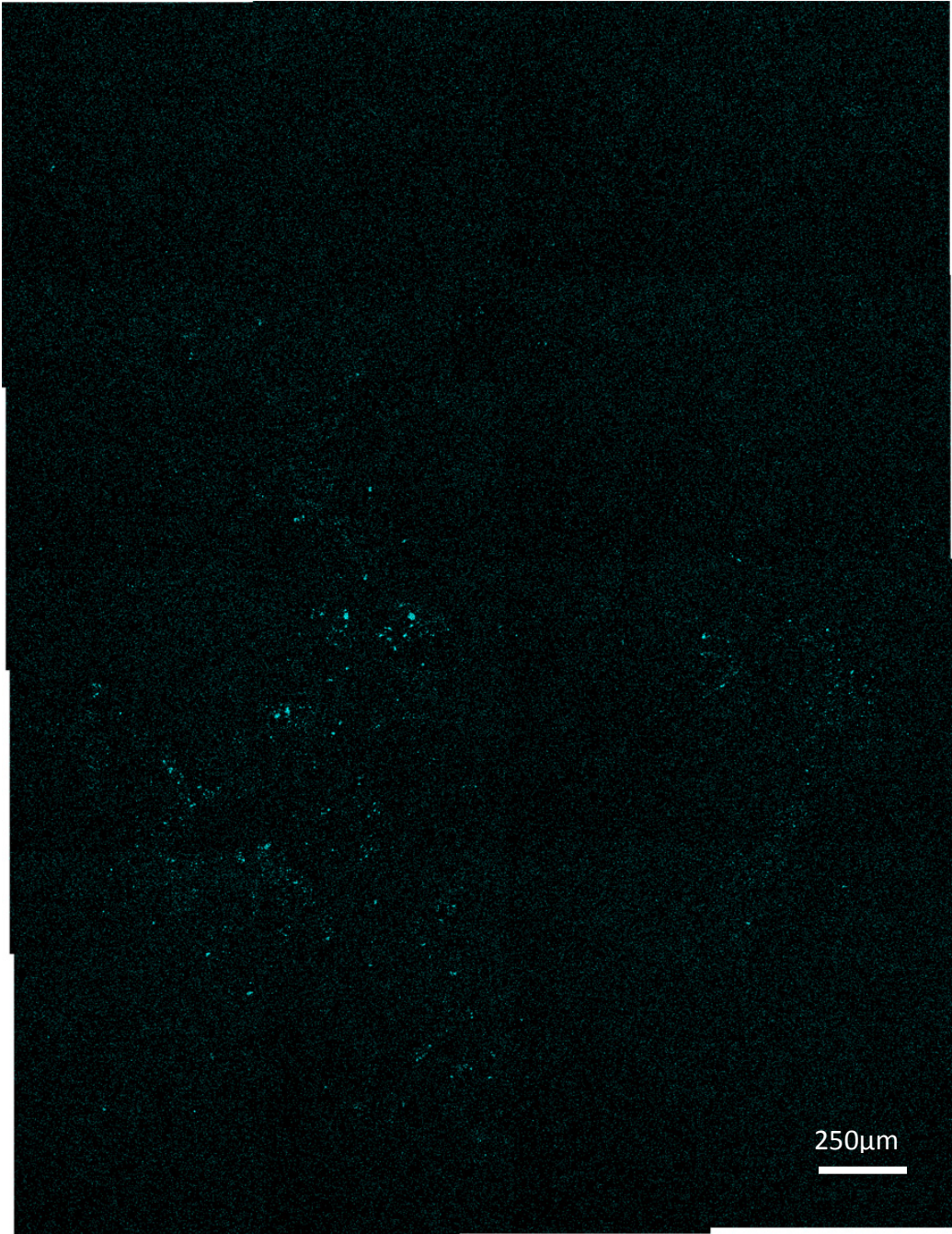


Cr

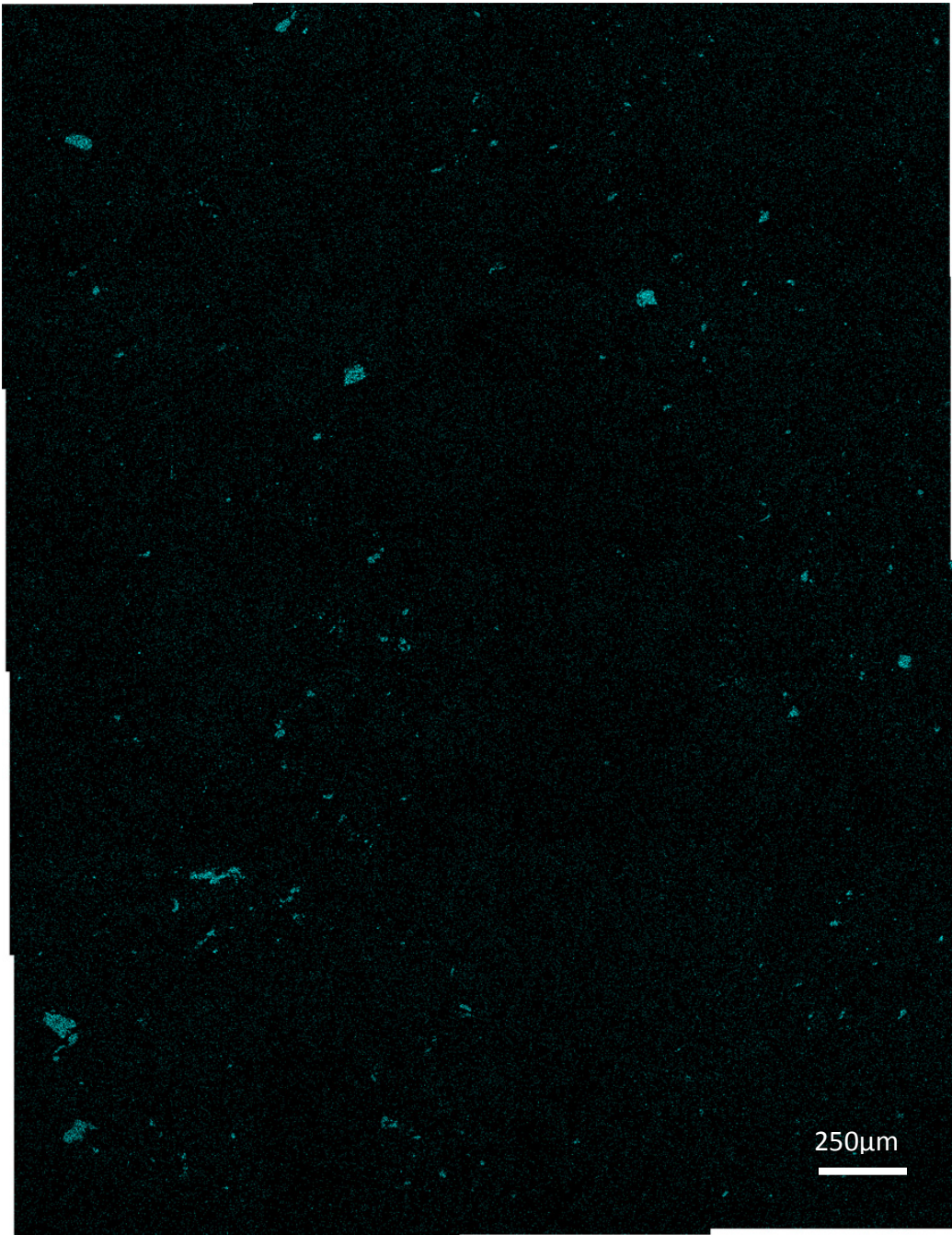




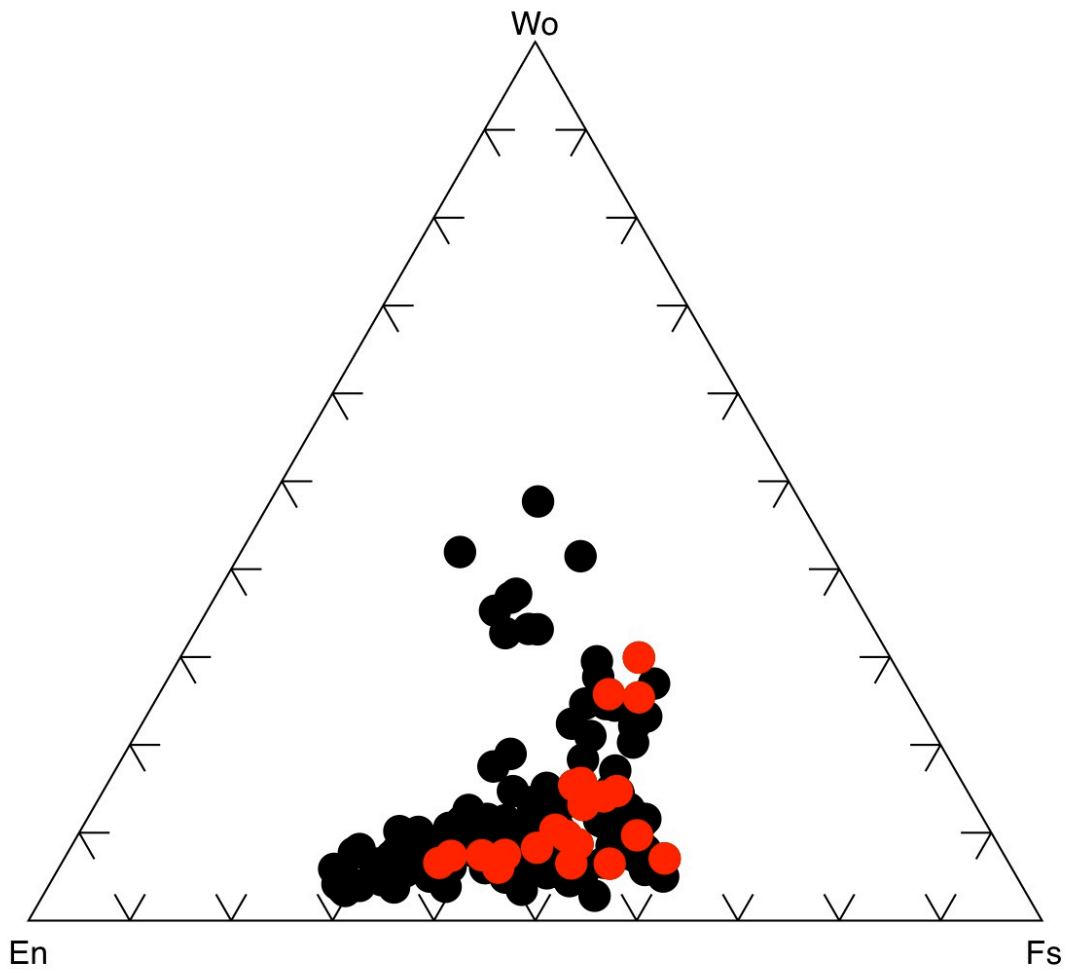
S



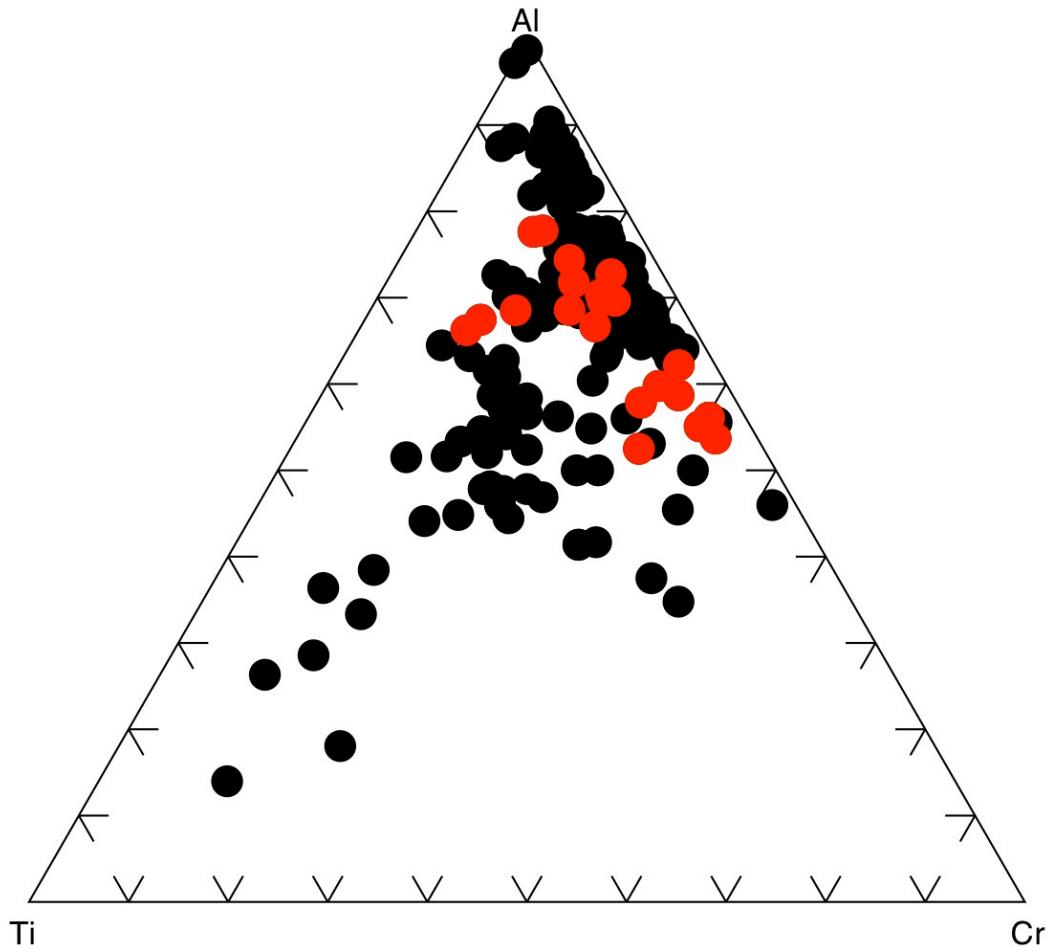
**Ti**



***G3. Major element data of pyroxene (red) compared to all other samples***



***G4. Minor element data of pyroxene (red) compared to all other samples***



## G5. Pyroxene analyses

SiO <sub>2</sub>	49.18	48.75	49.07	48.72	50.91	48.52	50.46	48.93	49.34	49.66
CaO	6.22	4.57	7.32	3.05	3.20	3.02	3.63	6.62	3.92	4.10
Na <sub>2</sub> O	n.d.	0.04	0.08	n.d.	0.05	0.02	n.d.	0.02	n.d.	0.02
MgO	13.09	14.33	12.64	14.57	19.66	13.21	19.26	12.17	15.49	14.11
TiO <sub>2</sub>	0.28	0.16	0.28	0.15	0.13	0.09	0.15	0.28	0.19	0.16
FeO	29.08	29.28	27.94	30.23	23.24	32.34	23.90	29.79	27.83	30.20
Al <sub>2</sub> O <sub>3</sub>	1.09	1.23	1.38	1.17	0.88	1.16	1.32	1.34	1.20	0.78
K <sub>2</sub> O	n.d.	n.d.	0.01	n.d.	n.d.	n.d.	n.d.	n.d.	0.01	n.d.
MnO	0.90	0.91	0.90	0.83	0.80	0.94	0.75	0.90	0.86	0.87
Cr <sub>2</sub> O <sub>3</sub>	0.44	1.24	0.50	1.27	0.40	0.88	0.57	0.29	0.93	0.39
Total	100.29	100.50	100.11	99.99	99.27	100.18	100.03	100.34	99.75	100.29
Si	1.94	1.91	1.93	1.92	1.95	1.93	1.93	1.93	1.93	1.95
Ca	0.26	0.19	0.31	0.13	0.13	0.13	0.15	0.28	0.16	0.17
Na	n.d.	n.d.	0.01	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Mg	0.77	0.84	0.74	0.86	1.12	0.78	1.10	0.72	0.90	0.83
Ti	0.01	0.01	0.01	n.d.	n.d.	n.d.	n.d.	0.01	0.01	0.01
Fe	0.96	0.96	0.92	1.00	0.74	1.08	0.76	0.99	0.91	0.99
Al	0.05	0.05	0.06	0.05	0.04	0.05	0.06	0.06	0.05	0.03
K	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Mn	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.03	0.03	0.03
Cr	0.01	0.04	0.02	0.04	0.01	0.03	0.02	0.01	0.03	0.01
Total	4.03	4.03	4.02	4.03	4.02	4.03	4.03	4.02	4.03	4.02
Wo	13.17	9.64	15.68	6.50	6.57	6.49	7.37	14.13	8.29	8.69
En	38.66	42.12	37.65	43.20	56.19	39.41	54.61	36.18	45.68	41.49
Fs	48.16	48.24	46.68	50.30	37.24	54.10	38.02	49.70	46.03	49.82
SiO <sub>2</sub>	48.02	48.29	47.21	48.31	48.12	49.75	50.62	49.06	48.75	
CaO	11.71	13.87	4.51	11.84	3.23	4.88	3.57	3.54	7.27	
Na <sub>2</sub> O	0.02	0.08	0.01	0.07	0.06	0.01	0.03	n.d.	0.04	
MgO	8.96	8.26	11.73	9.85	11.10	14.54	17.83	16.71	13.02	
TiO <sub>2</sub>	0.48	0.32	0.56	0.59	0.19	0.22	0.16	0.10	0.22	
FeO	28.07	26.88	32.88	26.09	34.78	28.31	25.29	26.16	27.86	
Al <sub>2</sub> O <sub>3</sub>	1.36	0.95	1.08	1.30	1.08	1.27	1.28	1.04	1.39	
K <sub>2</sub> O	n.d.	0.01	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	
MnO	0.87	0.87	0.96	0.83	1.02	0.82	0.80	0.78	0.88	
Cr <sub>2</sub> O <sub>3</sub>	0.41	0.90	0.26	0.33	0.25	0.58	0.63	1.06	0.46	
Total	99.90	100.42	99.19	99.21	99.84	100.37	100.22	98.45	99.89	
Si	1.93	1.93	1.91	1.93	1.94	1.94	1.94	1.93	1.92	
Ca	0.50	0.59	0.20	0.51	0.14	0.20	0.15	0.15	0.31	
Na	n.d.	0.01	n.d.	0.01	n.d.	n.d.	n.d.	n.d.	n.d.	
Mg	0.54	0.49	0.71	0.59	0.67	0.85	1.02	0.98	0.77	
Ti	0.02	0.01	0.02	0.02	0.01	0.01	0.01	n.d.	0.01	
Fe	0.94	0.90	1.12	0.87	1.17	0.92	0.81	0.86	0.92	
Al	0.06	0.04	0.05	0.06	0.05	0.06	0.06	0.05	0.06	
K	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	
Mn	0.03	0.03	0.03	0.03	0.04	0.03	0.03	0.03	0.03	
Cr	0.01	0.03	0.01	0.01	0.01	0.02	0.02	0.03	0.01	
Total	4.02	4.03	4.04	4.02	4.02	4.02	4.02	4.03	4.03	
Wo	25.40	29.94	9.70	25.78	7.06	10.34	7.44	7.49	15.40	
En	27.07	24.80	35.10	29.84	33.70	42.85	51.54	49.25	38.47	
Fs	47.53	45.26	55.20	44.38	59.23	46.81	41.01	43.27	46.14	

## G6. Plagioclase analyses

SiO <sub>2</sub>	45.04	47.03	44.47	44.51	45.09	45.00
CaO	17.97	16.02	17.83	16.64	17.84	17.59
Na <sub>2</sub> O	1.46	2.34	1.50	1.55	1.45	1.56
MgO	0.02	0.01	0.01	0.38	0.02	n.d.
TiO <sub>2</sub>	0.04	n.d.	n.d.	n.d.	0.03	0.01
FeO	0.15	0.22	0.23	1.96	0.60	0.34
Al <sub>2</sub> O <sub>3</sub>	34.17	32.29	33.51	31.88	34.20	33.77
K <sub>2</sub> O	0.08	0.21	0.08	0.09	0.06	0.08
MnO	n.d.	n.d.	0.02	0.05	0.03	n.d.
Cr <sub>2</sub> O <sub>3</sub>	n.d.	-0.02	n.d.	0.03	0.02	n.d.
Total	98.93	98.11	97.65	97.09	99.35	98.34
Si	2.10	2.20	2.11	2.13	2.10	2.11
Ca	0.90	0.80	0.90	0.85	0.89	0.89
Na	0.13	0.21	0.14	0.14	0.13	0.14
Mg	n.d.	n.d.	n.d.	0.03	n.d.	n.d.
Ti	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Fe	0.01	0.01	0.01	0.08	0.02	0.01
Al	1.88	1.78	1.87	1.80	1.88	1.87
K	0.01	0.01	0.01	0.01	n.d.	0.01
Mn	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Cr	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Total	5.02	5.02	5.03	5.04	5.02	5.03
An	86.78	78.06	86.34	85.06	86.91	85.76
Ab	12.74	20.68	13.18	14.34	12.79	13.76
Or	0.48	1.26	0.48	0.60	0.29	0.48
SiO <sub>2</sub>	45.11	46.17	45.35	45.52	46.38	45.60
CaO	17.42	17.28	17.25	17.45	16.82	17.62
Na <sub>2</sub> O	1.68	1.73	1.53	1.75	2.06	1.60
MgO	0.01	0.23	0.05	0.02	n.d.	0.02
TiO <sub>2</sub>	n.d.	n.d.	n.d.	0.03	n.d.	n.d.
FeO	0.12	0.51	1.00	0.15	0.43	0.19
Al <sub>2</sub> O <sub>3</sub>	33.41	32.74	33.31	33.71	32.91	33.85
K <sub>2</sub> O	0.10	0.09	0.07	0.09	0.17	0.08
MnO	n.d.	0.01	0.01	n.d.	0.01	0.01
Cr <sub>2</sub> O <sub>3</sub>	n.d.	0.01	n.d.	n.d.	n.d.	n.d.
Total	97.85	98.76	98.58	98.71	98.78	98.97
Si	2.13	2.16	2.13	2.13	2.17	2.12
Ca	0.88	0.87	0.87	0.87	0.84	0.88
Na	0.15	0.16	0.14	0.16	0.19	0.15
Mg	n.d.	0.02	n.d.	n.d.	n.d.	n.d.
Ti	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Fe	0.01	0.02	0.04	0.01	0.02	0.01
Al	1.86	1.80	1.84	1.86	1.81	1.86
K	0.01	0.01	n.d.	0.01	0.01	0.01
Mn	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Cr	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Total	5.03	5.02	5.02	5.02	5.03	5.02
An	84.70	84.23	85.84	84.27	81.02	85.44
Ab	14.73	15.29	13.76	15.25	18.02	14.08
Or	0.58	0.49	0.40	0.48	0.96	0.49

**G7. BSE image with microprobe points (rotated 90° counter clockwise from original SEM map).**

