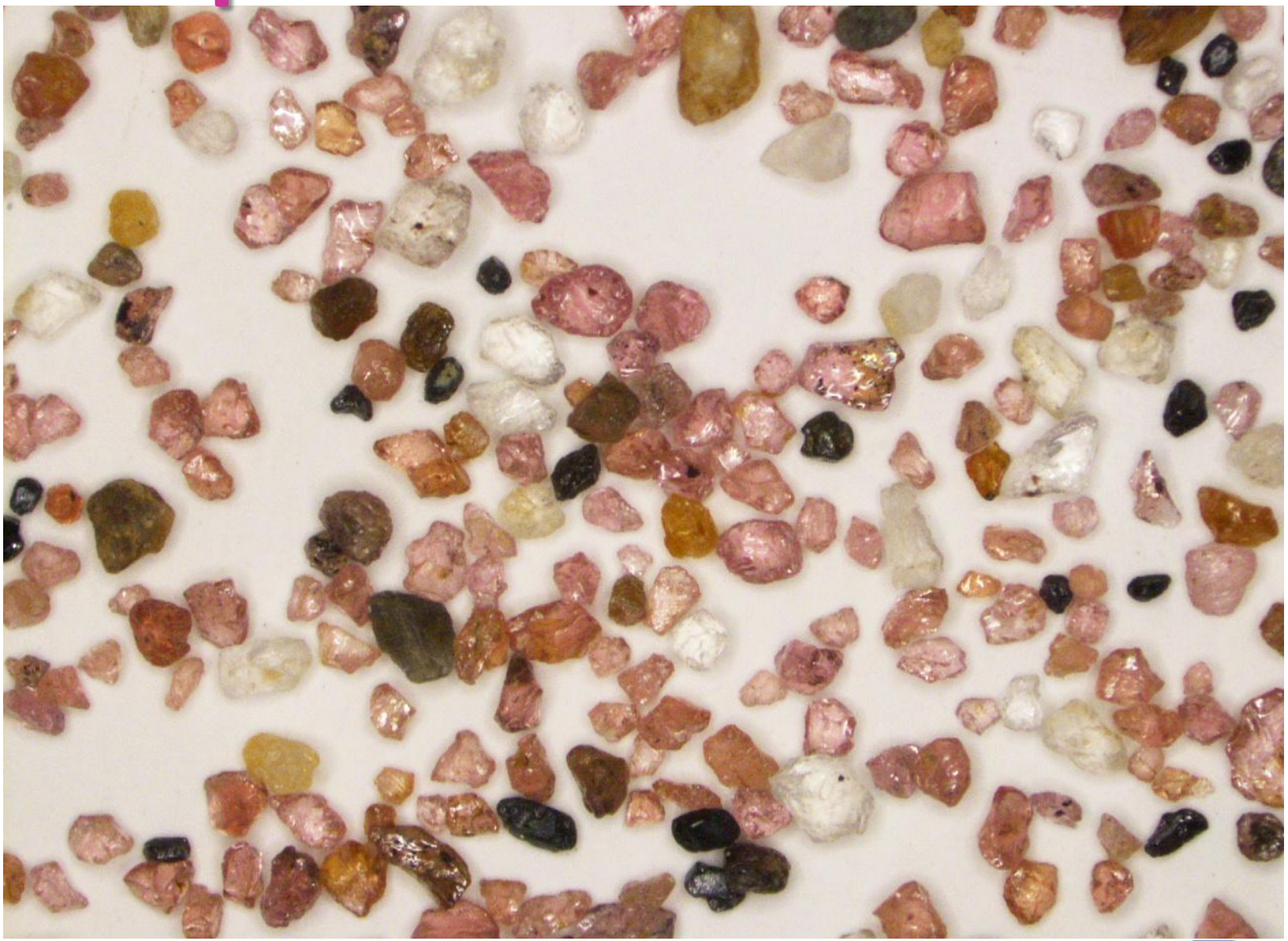
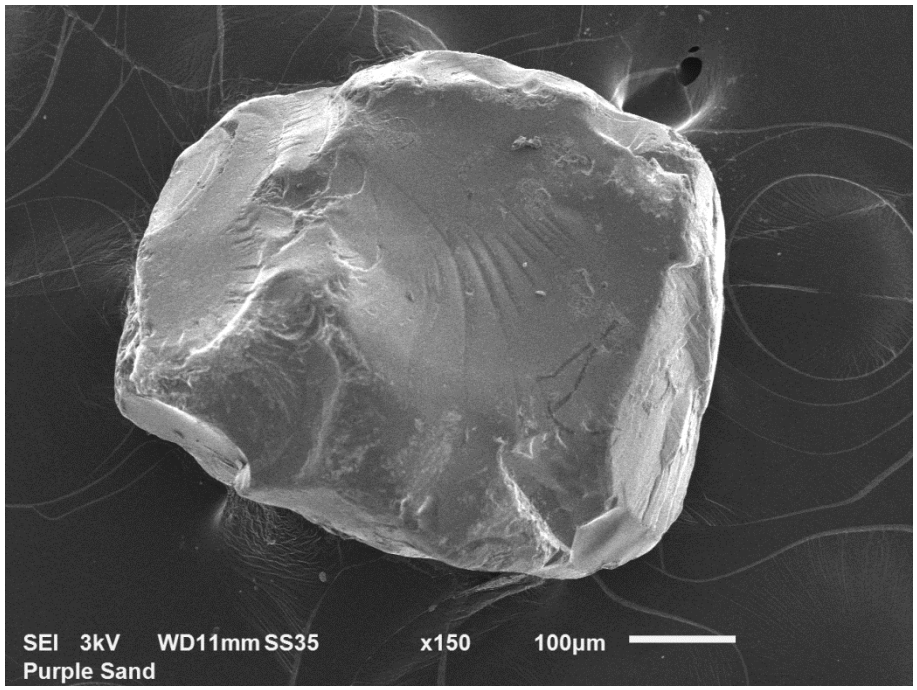
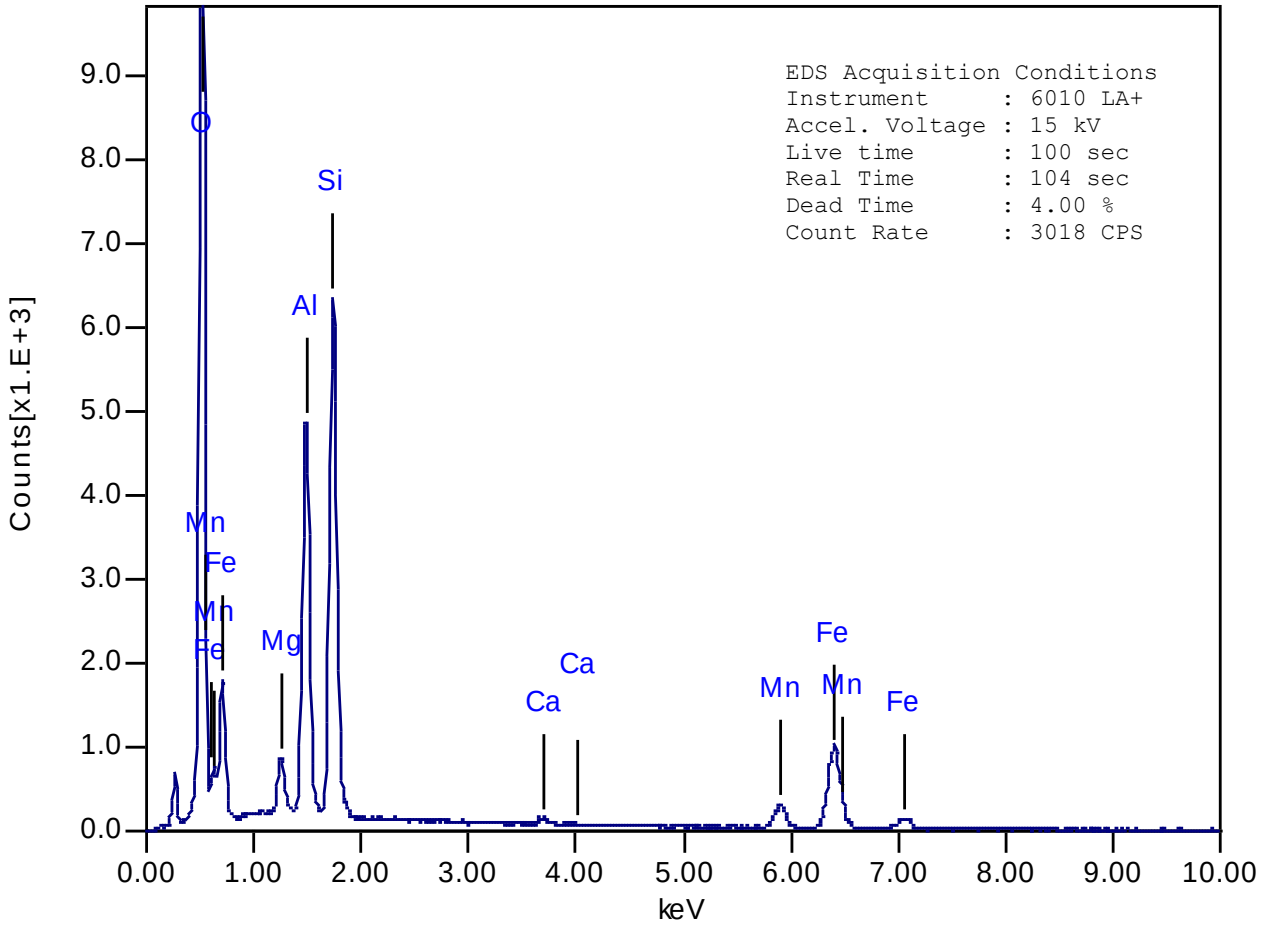
The Purple Sands of Plum Island MA



JEOL
Solutions for Innovation

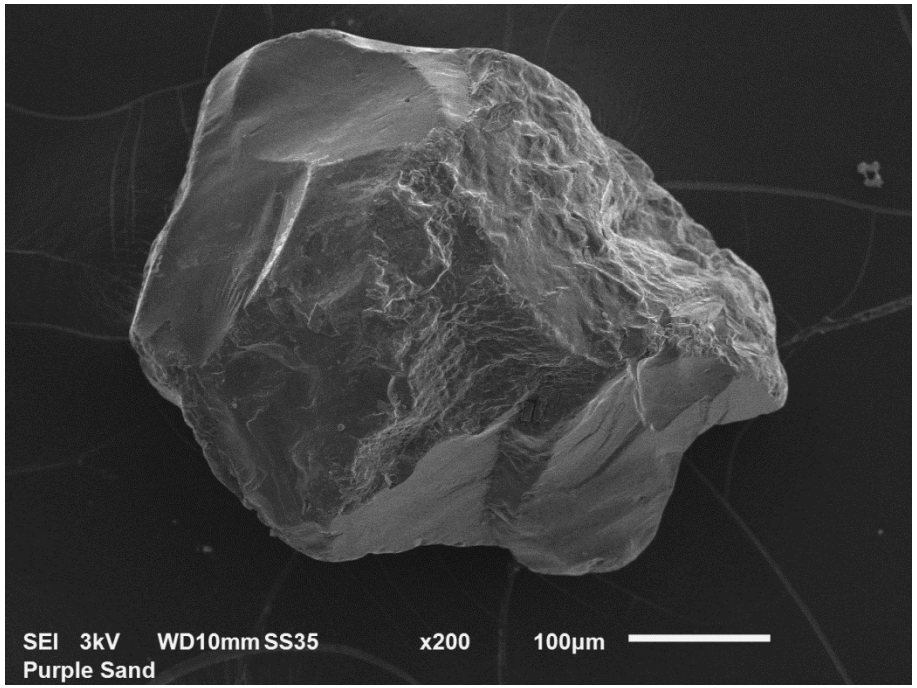
Clear Angular Pink Grains – Almandine Pyrope Garnet ($Fe_3,(Mg_3)Al_2Si_3O_{12}$)

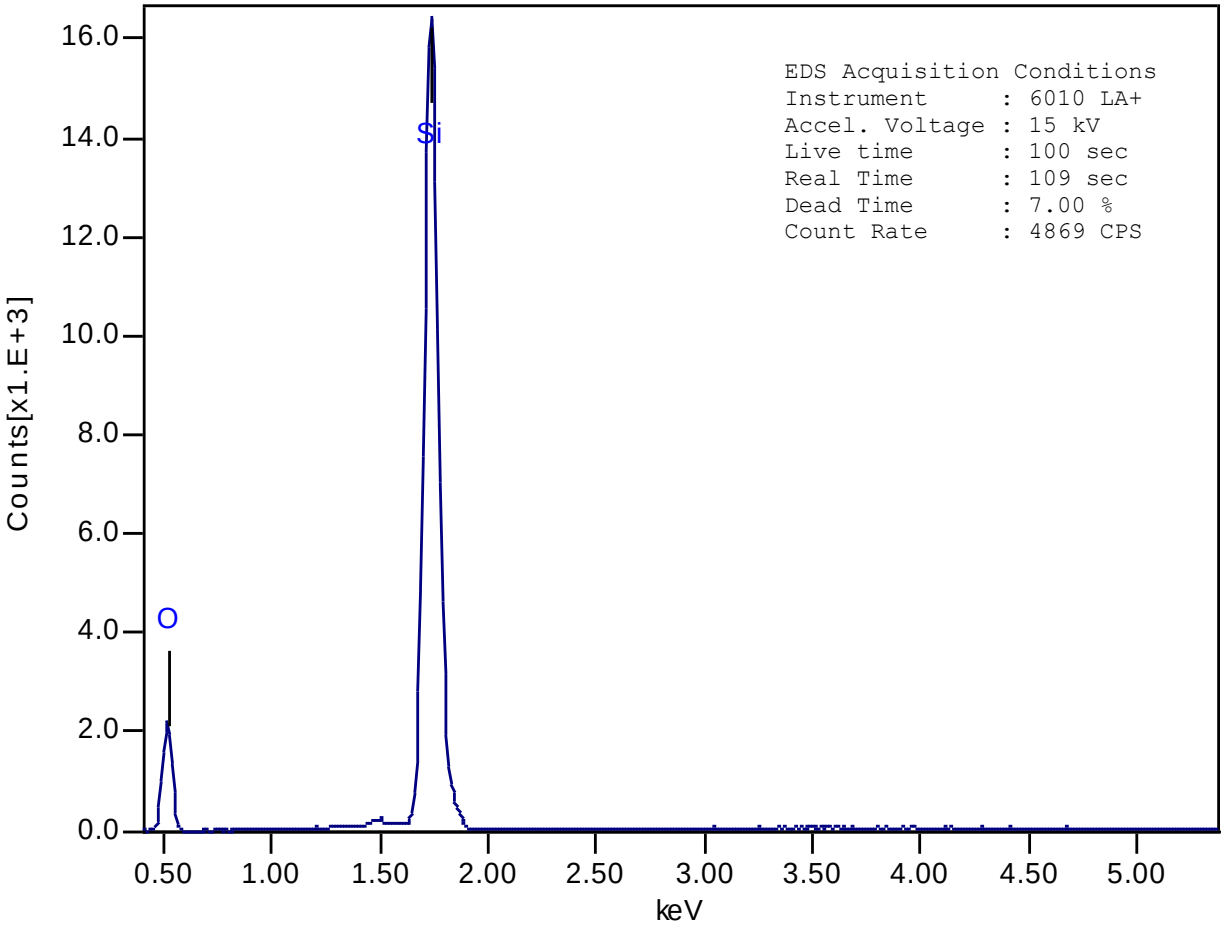




Element	Mass%	Atom%	Sigma
O	44.33	64.17	0.05
Mg	1.81	1.73	0.02
Al	11.11	9.54	0.04
Si	16.44	13.55	0.06
Ca	0.43	0.25	0.02
Mn	4.83	2.04	0.06
Fe	21.05	8.73	0.09
Total	100.00	100.	

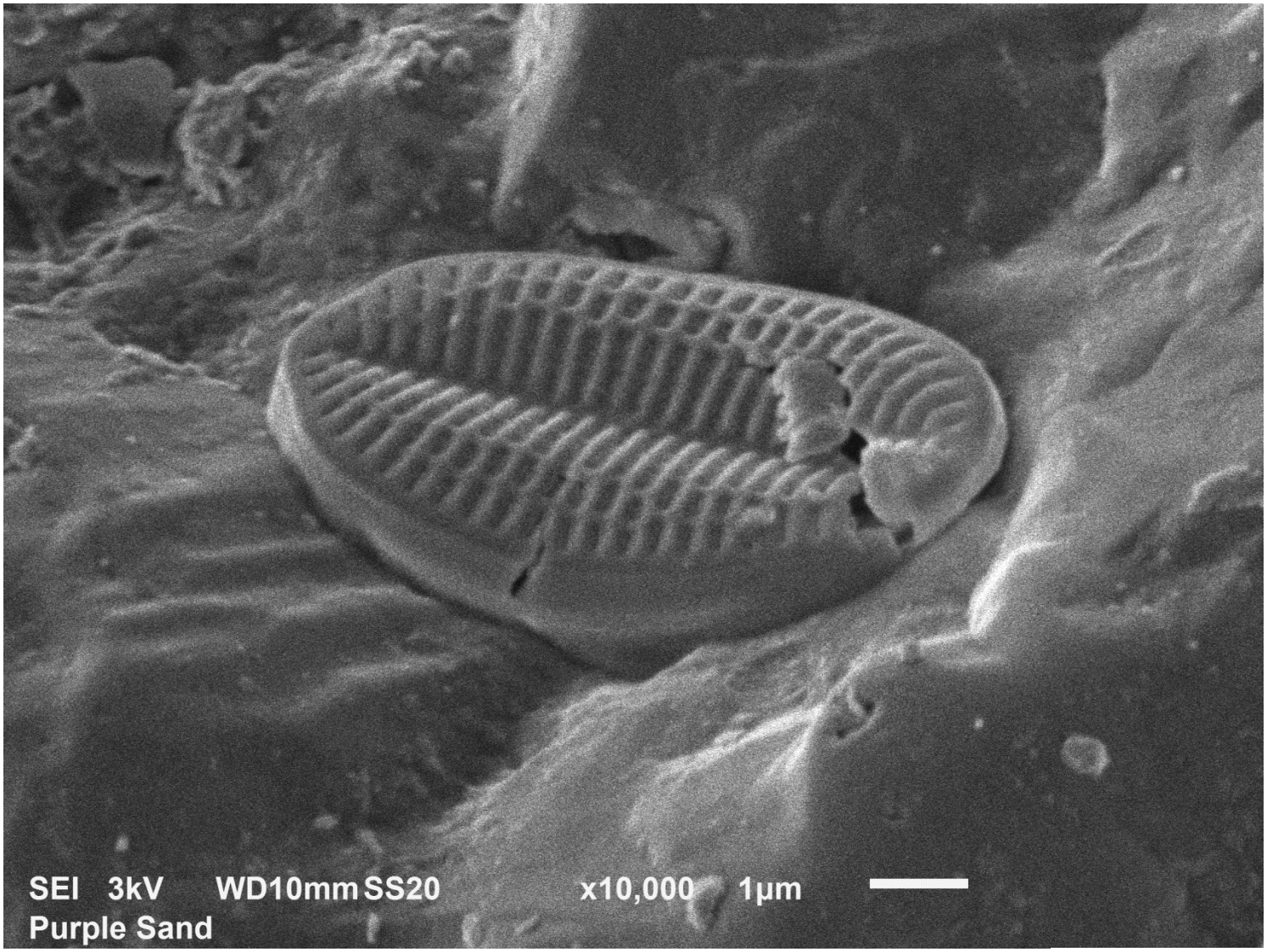
Clear Grains – Quartz (SiO_2)





Element	Mass%	Atom%	Sigma
O	24.94	36.83	0.07
Si	75.06	63.17	0.15
Total	100.00	100.00	

Clear Grains – Quartz
With attached diatoms showing evidence of its “aqueous” environment



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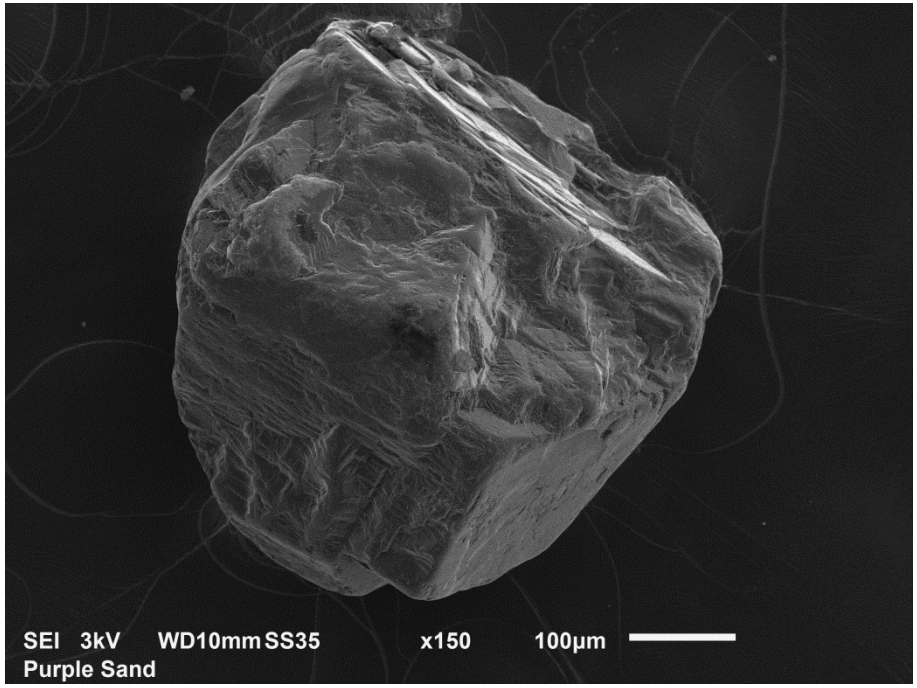
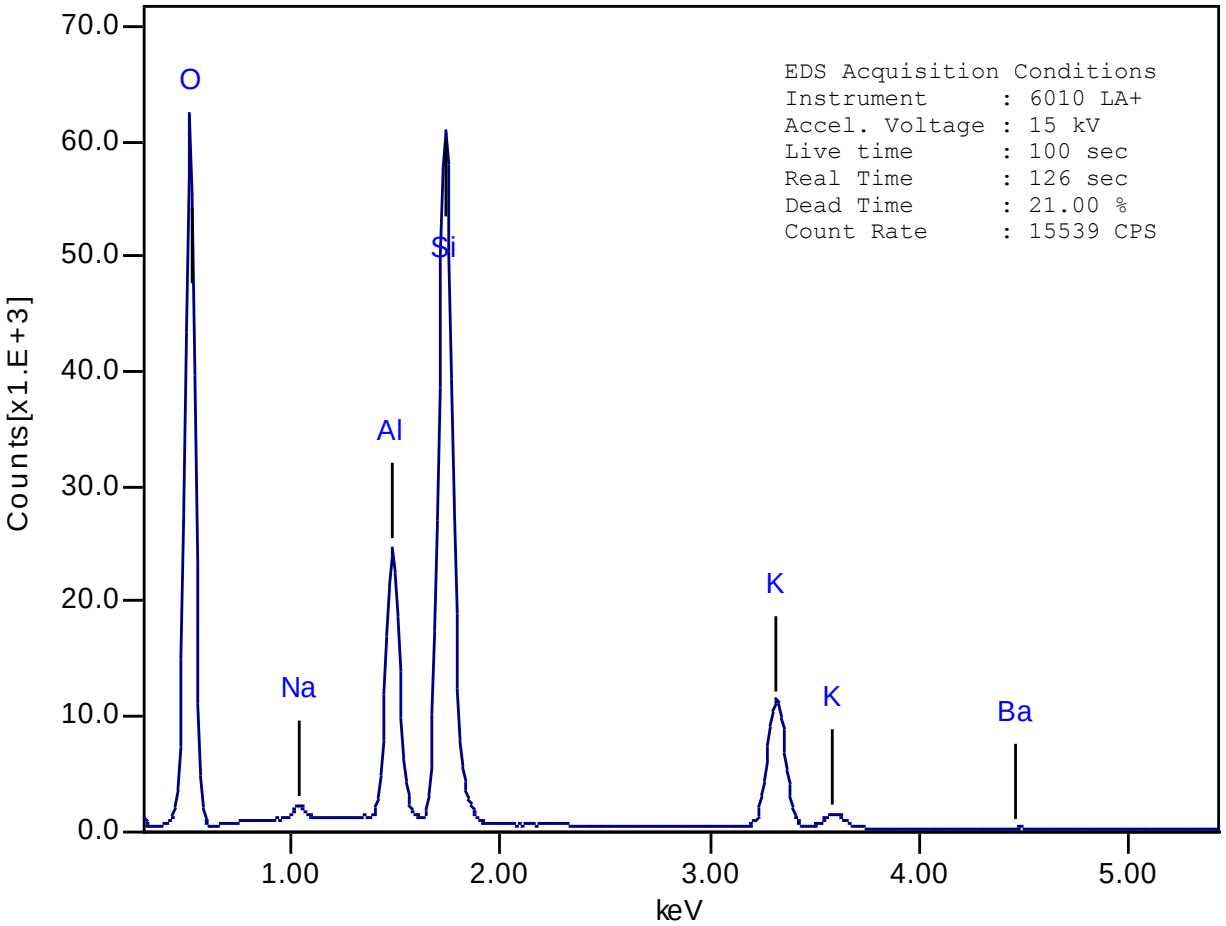
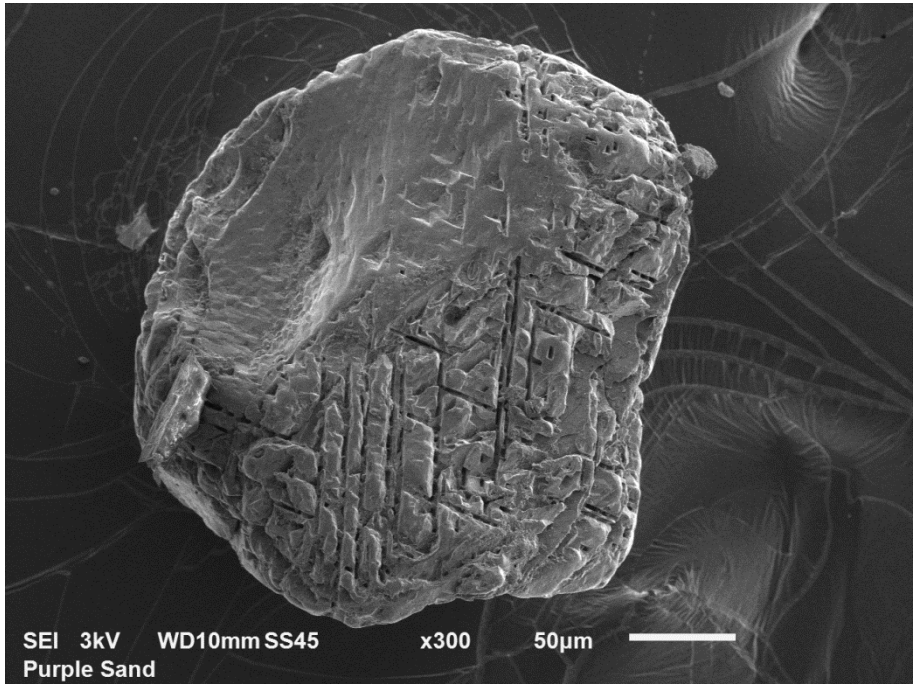
Opaque White Grains - K-feldspar ($KAlSi_3O_8$)

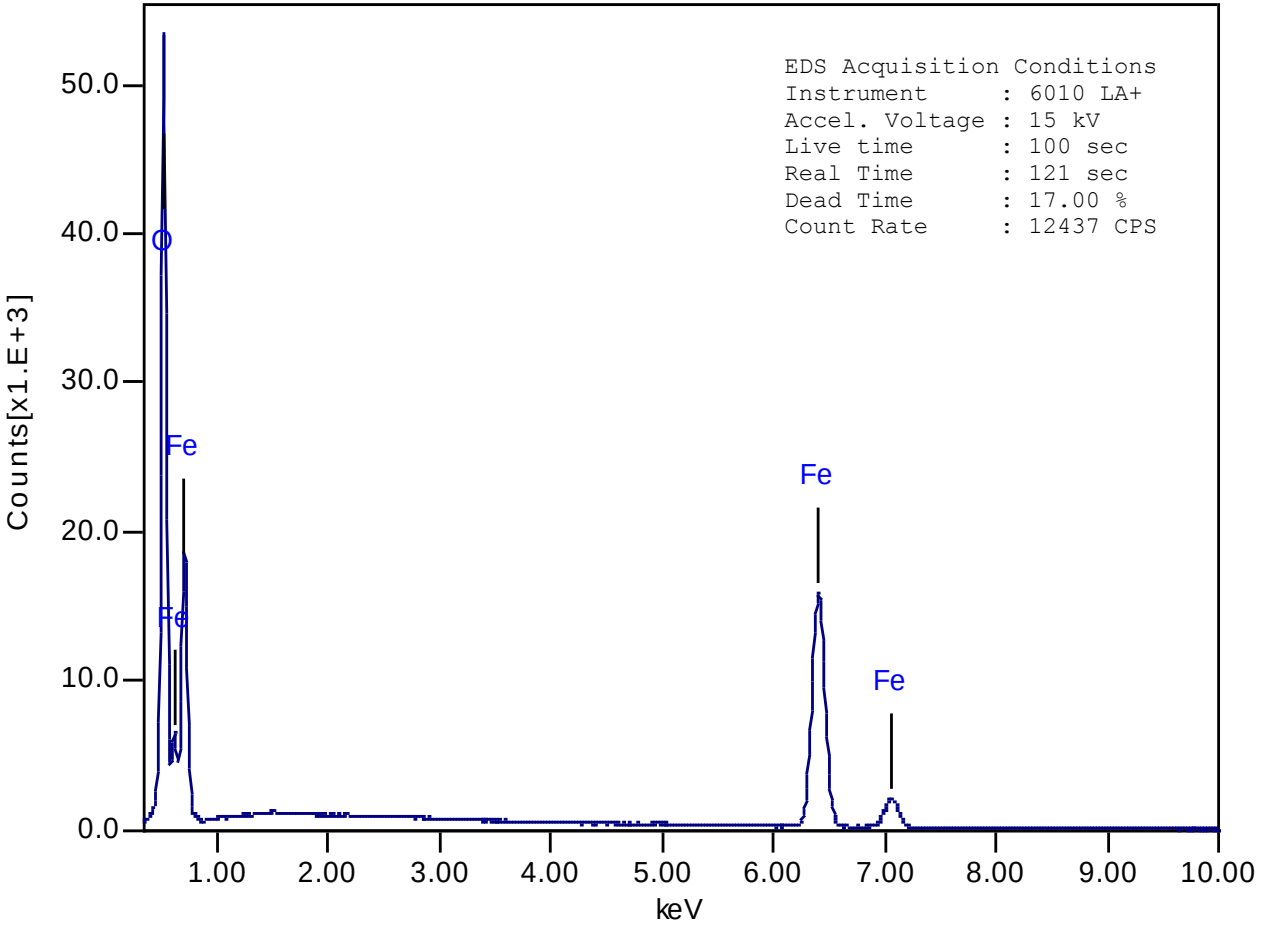




Element	Mass%	Atom%	Sigma
O	52.12	67.07	0.03
Na	0.61	0.54	0.01
Al	9.12	6.96	0.02
Si	26.62	19.52	0.03
K	11.09	5.84	0.02
Ba	0.44	0.07	0.02
Total	100.00	100.00	

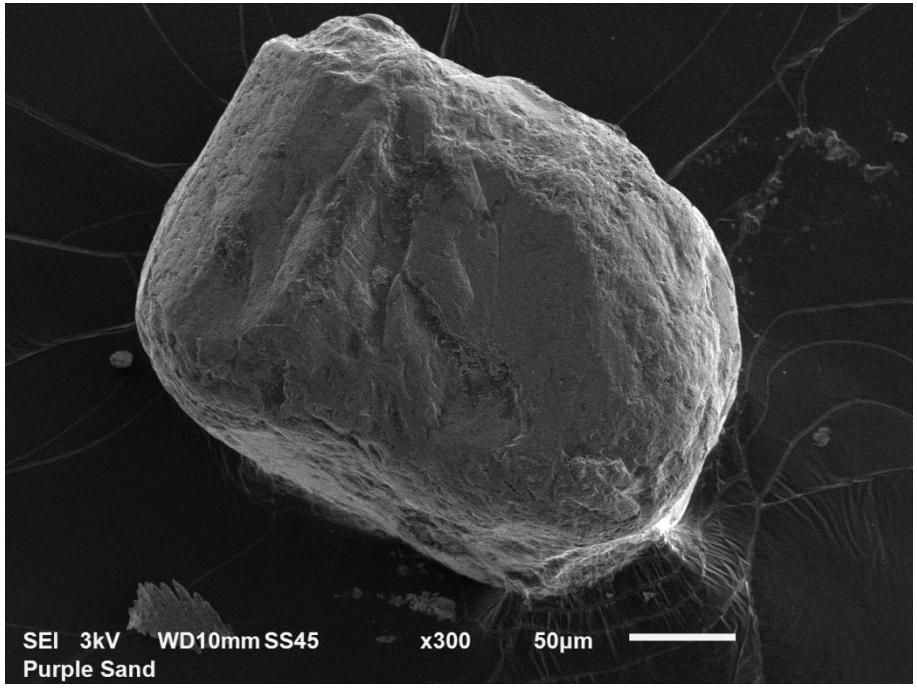
Black Magnetic Grains – Hematite (Fe_2O_3)

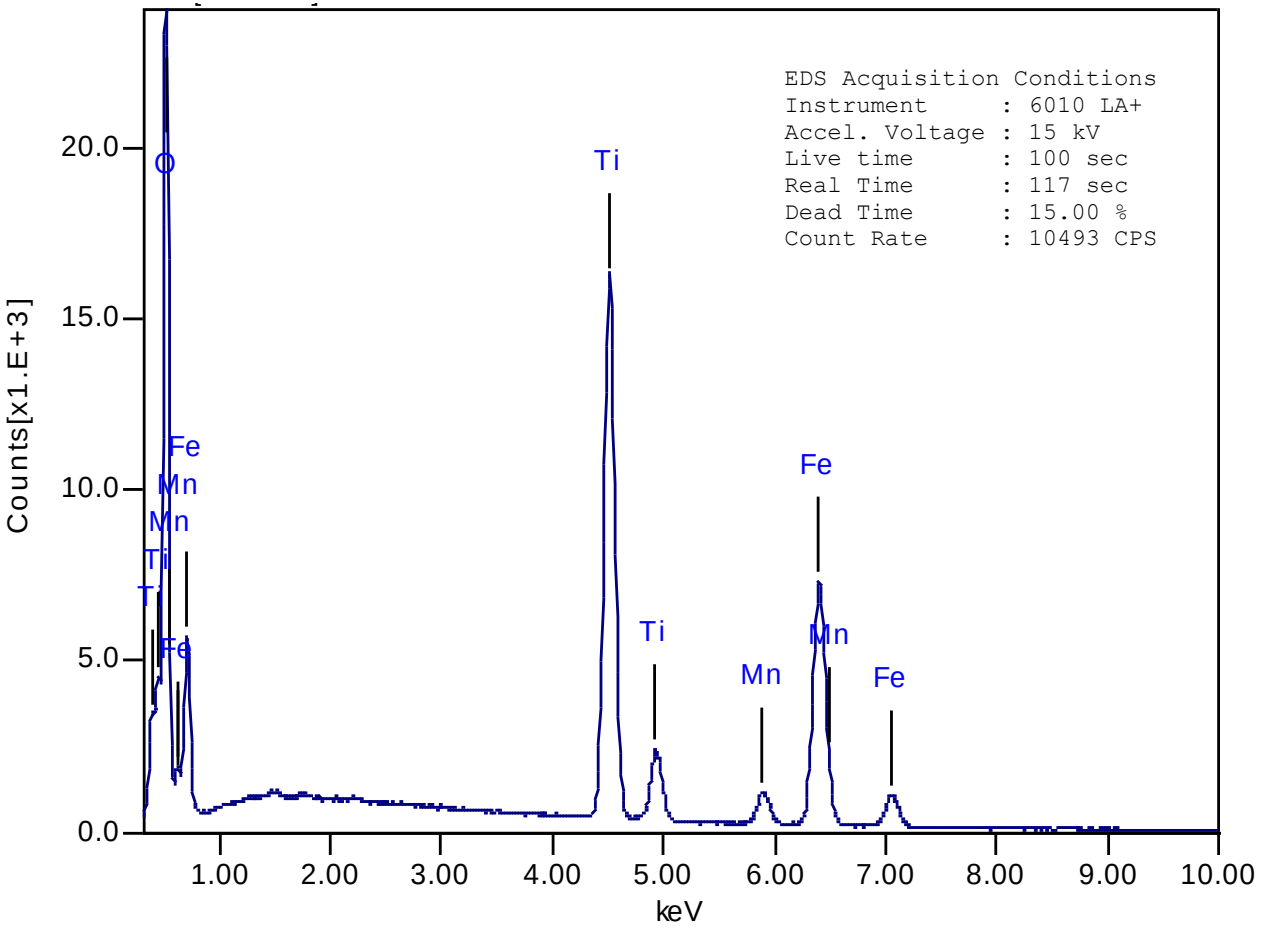




Element	Mass%	Atom%	Sigma
O	29.53	59.40	0.02
Fe	70.47	40.60	0.07
Total	100.00	100.00	

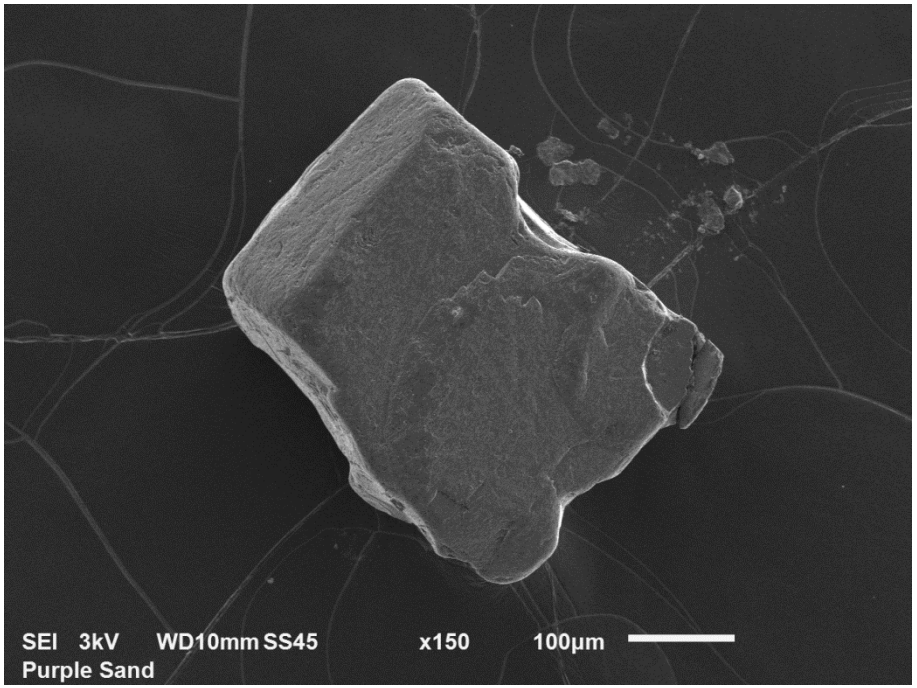
Black Magnetic Grains – Ilmenite ($FeTiO_3$)

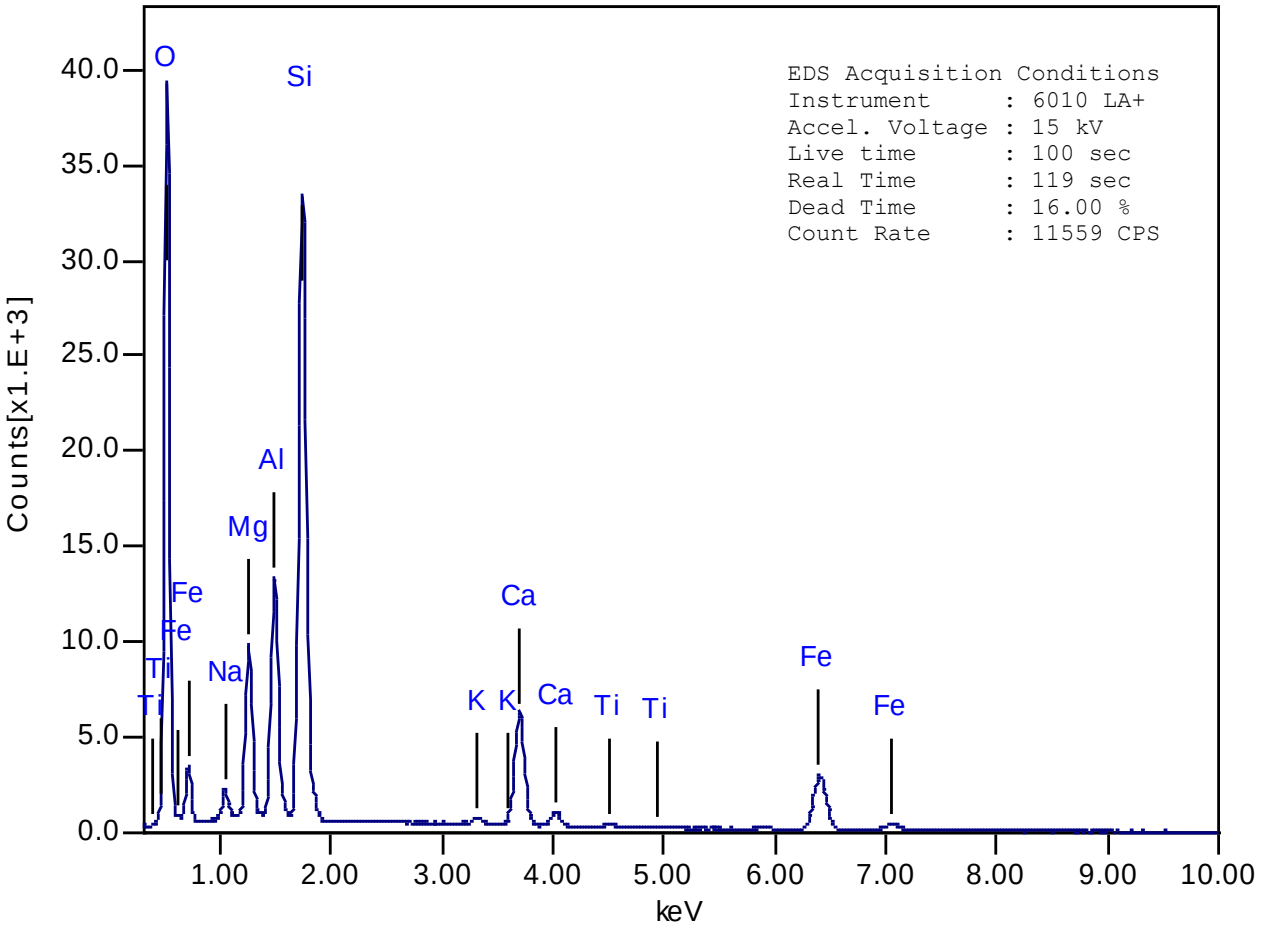




Element	Mass%	Atom%	Sigma
O	33.49	62.04	0.07
Ti	29.88	18.48	0.08
Mn	3.49	1.88	0.05
Fe	33.14	17.59	0.11
Total	100.00	100.00	

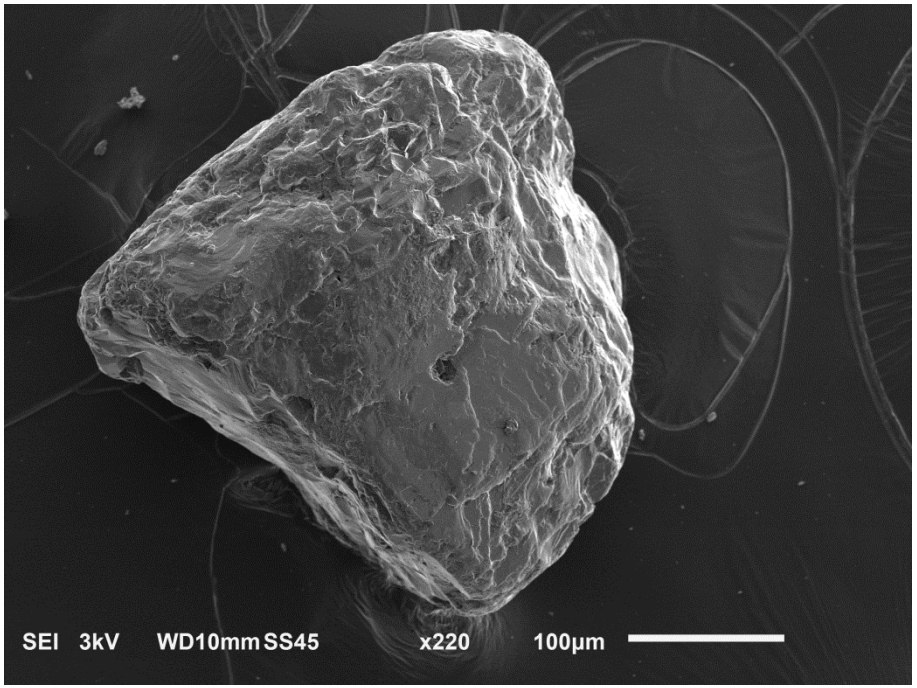
Black Non Magnetic Grains – Augite $(Ca,Na)(Mg,Fe,Al)(Si,Al)_2O_6$

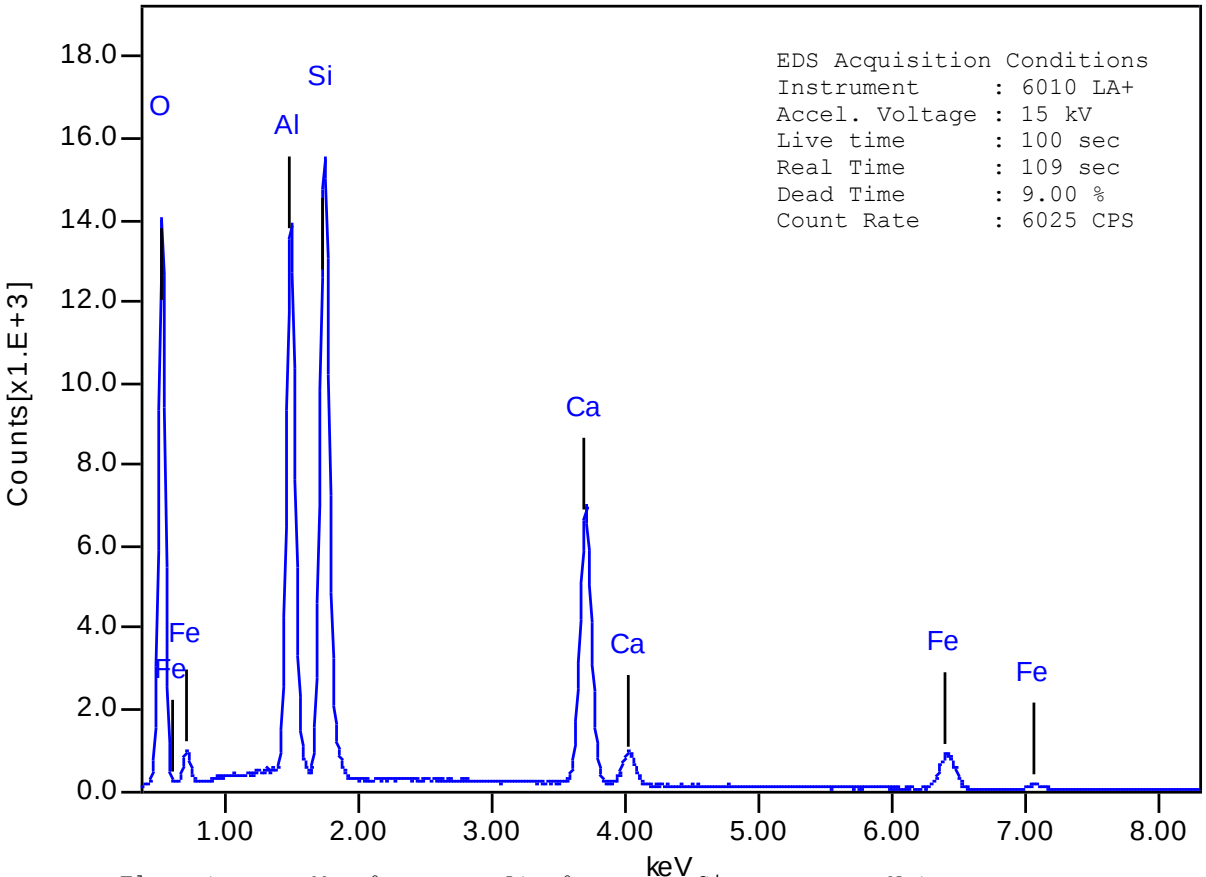




Element	Mass%	Atom%	Sigma
O	41.26	59.25	0.03
Na	1.23	1.23	0.01
Mg	5.74	5.43	0.02
Al	7.17	6.11	0.02
Si	20.10	16.44	0.03
K	0.45	0.26	0.01
Ca	8.35	4.79	0.03
Ti	0.34	0.16	0.01
Fe	15.36	6.3	
Total	100.00	100.	

Glassy Green Grains – Epidote $Ca_2(Al,Fe)_3(SiO_4)_3(OH)$





Element	Mass%	Atom%	Sigma	Net
O	42.67	61.16	0.05	361700
Al	12.51	10.63	0.03	402541
Si	16.56	13.53	0.04	500267
Ca	19.01	10.88	0.05	376399
Fe	9.25	3.80	0.05	57788
Total	100.00	100.00		