

Supplementary Table S1

The composition of accessory minerals from hornfels, wt. %

Sample		O	Na	Mg	Al	Si	S	P	K	Ca	Ti	Mn	Fe	Y	Sn	Zr	La	Ce	Nd	Th	Dy
ilmenite	TO-11	45.38	1.69		5.58	11.50			1.29		16.28	2.07	16.21								
ilmenite	TO-11	50.30	1.96		4.47	12.72			0.72	0.61	15.58	0.69	12.96								
ilmenite	TO-11	47.38	2.11	0.42	5.29	13.52			0.96	0.62	14.06	1.36	14.28								
ilmenite	TO-5	49.68	1.56	1.01	5.86	11.87			2.01		12.95	0.91	14.16								
ilmenite	TO-5	47.70	1.44	1.12	7.7	11.85			2.42	0.46	11.45	1.42	14.44								
magnetite	TO-5	51.16	1.13	3.15	9.72	19.13			4.87		0.94		9.9								
pyrite	TO-11	25.00	2.51		4.82	10.73	21.01		0.48	0.71			34.75								
cassiterite	TO-11	52.31	1.24		3.11	18.53							1.12		23.69						
xenotime	TO-11	52.1	2.59		6.38	16.58		5.92	1.05	1.33			1.28	12.77							
xenotime	TO-11	47.90	1.38		4.93	11.76		8.25	1.56	0.63			1.90	18.51							3.19
monazite	TO-11	46.49	1.36		6.72	13.37		7.44	1.60	0.71			1.52				4.29	12.01	4.48		
monazite	TO-11	41.36	2.53		5.99	14.27		6.43	1.09	0.99			0.95				5.49	13.1	6.02	1.79	
monazite	TO-5	43.01	1.06	1.53	7.04	13.79		6.01	2.04	0.66			4.11				4.52	11.03	4.09	1.12	
monazite	TO-5	46.09	1.65	1.62	7.49	15.51		4.50	2.62	0.63			5.27				2.37	7.92	2.77	1.58	
zircon	TO-5	55.04	1.01	0.93	5.32	25.73			1.79				3.59			6.6					
zircon	TO-5	48.51	1.36	1.22	7.6	17.32			3.12				3.69			16.02					

*Components likely captured from the host mineral are marked by red color

Supplementary Table S2

The composition of accessory minerals from Na-granites, wt. %

Sample		O	Na	Mg	Al	Si	S	P	K	Ca	Ti	Fe	W	Zn	Co	Ni	Zr	As	La	Ce	Nd
apatite	TO-4	50.13	2.12	0.24	4.39	9.49		11.44	0.17	19.50		0.89							0.38	0.89	0.38
apatite	TO-10	50.32			2.05	8.22		13.21		26.20											
zircon	TO-10	51.12	2.16	1.1	5.21	20.40				1.69		2.65					15.67				
zircon	TO-10	49.36	2.18		4.68	20.23				1.27		0.67					21.61				
zircon	TO-10	51.46		0.41	4.20	17.65				5.26		0.49					20.52				
monazite	TO-4	42.32	2.61		6.16	12.51		8.04		2.64		0.9						5.66	13.12	6.06	
sphene	TO-10	55.51	2.21	0.94	5.93	20.17				7.48	5.86	1.91									
sphalerite	TO-10	35.46		1.21	6.39	18.30	8.07			1.8		3.02		25.76							
tungstite	TO-10	45.32	3.13		6.45	17.99				1.73		0.51	24.88								
gersdorffite	TO-10	42.76	1.13		8.23	22.75	4.09		6.07	0.63		4.42			2.32	1.87		5.72			

*Components likely captured from the host mineral are marked by red color

Supplementary Table S3

The composition of accessory minerals from pegmatites, wt. %

Sample		O	Na	Al	Si	S	P	K	Ca	Ti	Fe	Mn	Zn	Sn	Nb	Ta	Zr	Y	U	Hf	La	Ce	Nd	Dy	Cu
apatite	TO-12	55.63	3.41	4.29	26.85		3.67		6.15																
apatite	TO-50	51.45	2.97	3.47	9.7		12.09	0.48	19.42			0.42													
monazite	TO-9	49.62	3.51	5.99	27.80		2.59		1.06		0.65										1.93	4.20	2.64		
monazite	TO-9	47.62	1.99	3.97	26.67		4.47		0.85		0.62										2.92	7.05	3.85		
xenotime	TO-9	52.71	2.05	5.74	21.22		5.16	0.85	0.83									10.03						1.41	
zircon	TO-9	54.64	0.51	1.51	38.97			0.36									4.01								
zircon	TO-12	53.74	3.93	4.77	27.53			0.37									9.66								
uraninite	TO-12	49.79	3.92	5.19	26.46						0.64						2.81		11.18						
rutile	TO-13	55.41	0.68	7.32	24.69			2.69		7.01	1.11				1.09										
sphalerite	TO-13	44.29		10.69	21.91	4.94					3.31		14.86												
pyrolusite	TO-50	46.71	1.01	3.33	8.17			2.99	0.94			34.48													0.60
columbite	TO-12	51.14	3.54	5.31	22.03			1.52		0.44	2.76	1.81			11.47										
columbite	TO-12	50.17	5.26	6.89	23.55						2.53	1.54			8.15	1.92									
columbite	TO-50	48.90	4.49	5.31	16.30		1.44	0.30	2.20	0.50	1.71	3.66			10.95										
columbite	TO-50	42.30	3.28	3.39	11.45					0.77	3.61	4.27			18.50										
cassiterite	TO-12	54.10	2.46	7.03	23.48						0.68			12.26											
cassiterite	TO-13	56.84	1.23	10.01	21.22						0.58			10.11											
cassiterite	TO-50	46.76	2.88	3.20	8.68		0.42							33.28											
cassiterite	TO-50	48.63	1.85	4.16	11.42						0.55			33.38											
cassiterite	TO-50	47.77	3.53	4.33	11.57						0.62			32.19											

*Components likely captured from the host mineral are marked by red color