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Supplement of

Halogen-bearing metasomatizing melt preserved in high-pressure (HP) eclogites of Pfaffenberg, Bohemian Massif

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SUPPLEMENTARY MATERIAL

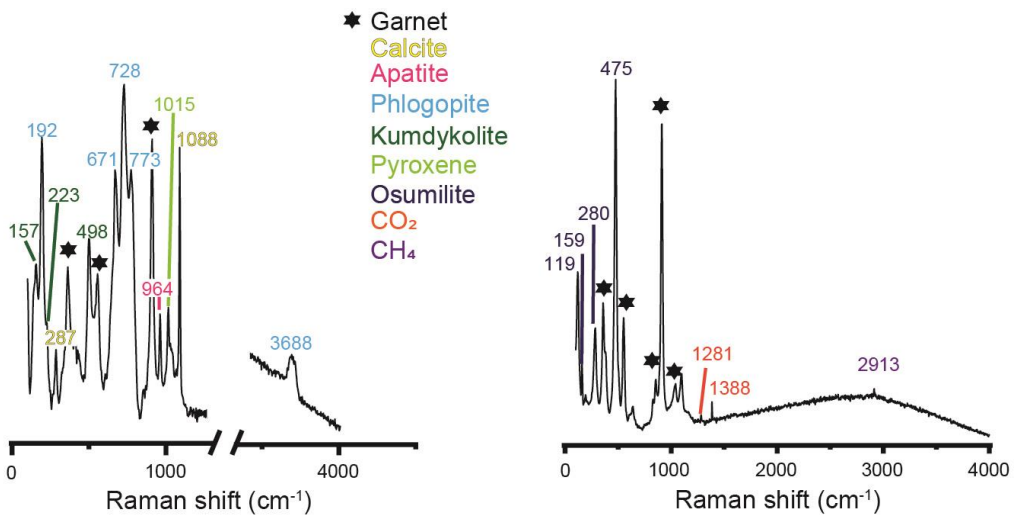

Figure S1: Raman spectra of nanogranitoids containing mineral phases and fluids.

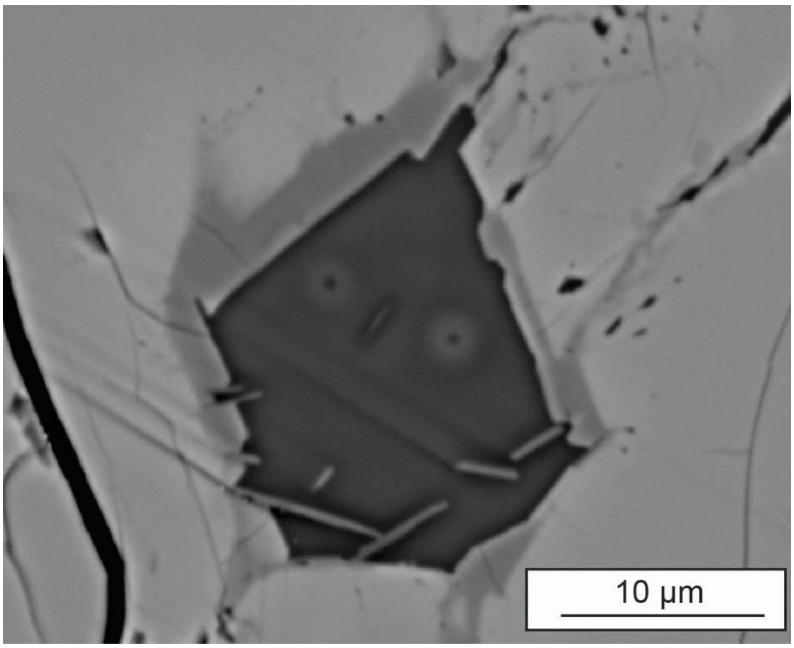

Figure S2: BSE images of re-homogenized inclusions at 1000°C and 2.2 GPa containing corundum needles

EXPERIMENTAL PARAMETERS					RESULTS		
Experiment Name	Temperature (°C)	Pressure (GPa)	Duration (h)	Matarials in the capsule	Complete re-homogenization	Decrepitation	Melt-host interaction
PF 5.1	1000	**2.2**	24	Chips + quartz powder	X	-	X Growth of new Grt + Crd needle
PF 2.5	975	**2.7**	24	Chips +quartz powder	X (with included Px sometime)	-	X (some inclusions show a thin reaction rim between them and the Grt and they were excluded)
PF 5.2	975	**3**	24	4 chips of Grt + quartz powder	X	-	-

Table S1: Summary of the experimental parameters and the results of the different re-homogenization experiments performed.

Locality	Pfaffenberg		Rubinberg		Klatschmühle				
Sample type			Eclogites						
Reference	This study			Borghini et al., 2020					
Sample name	PF 1	RUB 1	RUB 6	RUB 11	KLA1	KLA 1.2-1	KLA 2.2	RUB Average	KLA Average
wt %									
SiO_2	44.4	43.40	43.59	44.81	48.10	46.74	43.38	43.93	46.07
TiO_2	1.34	2.35	1.07	1.29	0.67	0.69	0.94	1.57	0.77
Al_2O_3	16.5	15.20	15.85	15.65	16.30	15.41	17.50	15.57	16.40
Fe_2O_3	0	0	0	0	0	0	0	0.00	0.00
FeO	12.6	15.80	12.82	13.87	10.1	11.22	13.53	14.16	11.62
MnO	0.23	0.26	0.23	0.22	0.15	0.17	0.22	0.24	0.18
MgO	9.19	9.23	14.04	10.41	10.3	11.14	8.89	11.23	10.11
CaO	12.6	12.2	11.34	12.61	11.3	11.61	12.76	12.05	11.89
Na_2O	2.15	1.82	1.14	1.82	2.86	2.03	1.76	1.59	2.22
K_2O	0.25	0.04	0.02	0.15	0.52	0.53	0.21	0.07	0.42
P_2O_5	1.25	0.08	0.19	0.08	0.05	0.08	0.36	0.12	0.16
LOI	0.14	0.04	0.34	-0.03	0.24	0.78	-0.16	0.12	0.29
TOTAL	100.51	100.38	100.29	100.91	100.35	99.62	99.55	100.53	99.84
Mg#	57	51	66	57	64	64	54	58	62
ppm									
Cr	300	200	400	500	500	700	300	367	500
Ni	31	80	106	89	90	107	27	91	74
Rb	11	14	2	9	18	31	17	8	22
Cs	11	49	4	12	11	37	14	22	21
Ba	78	99	92	225	186	184	55	139	142
Th	3.0	0.50	2.2	1.8	0.50	0.30	1.0	2	0.60
U	0.9	0.80	1.3	1.0	0.20	0.10	0.30	1	0.20
Nb	11	9.9	19	4.3	4.0	4.9	11	11	6.5
Ta	0.70	0.70	1.5	0.30	0.40	0.60	1.1	1	0.70
La	36	5.8	9.9	12	6.0	6.4	17	9	10
Ce	91	14	22	27	14	18	34	21	22
Pb	1.8	1.1	7.9	3.2	1.2	1.8	1.8	4	1.6
Pr	13	2.2	3.0	3.4	2.2	2.7	4.1	3	3.0
P	12500	800	1900	800	500	800	3600	1167	1633
Sr	141	62	117	115	185	142	131	98	153
Nd	56	11	13	15	10	13	17	13	14
Zr	138	74	62	71	73	73	49	69	65
Hf	4.0	2.3	2	2	2.3	2.5	1.6	2.1	2.1
Sm	11	3.3	4.0	4.0	3.2	3.6	4.3	3.8	3.7
Eu	2.2	1.0	1.1	1.2	1.0	1.1	1.2	1.1	1.1
Gd	9.0	4.4	5.1	5.2	3.6	4.3	4.8	4.9	4.2
Tb	1.3	0.87	0.91	0.91	0.56	0.66	0.77	0.90	0.66
Dy	7.0	5.8	5.9	6.1	3.1	3.7	4.4	5.9	3.7
Ti	13400	23500	10700	12900	6700	6900	9400	15700	7667
Y	37	37	33	33	16	19	21	34	19
Ho	1.4	1.5	1.2	1.3	0.56	0.72	0.89	1.3	0.72
Er	3.9	4.6	3.5	4.1	1.5	2.0	2.2	4.1	1.9
Tm	0.54	0.72	0.47	0.55	0.20	0.27	0.29	0.58	0.25
Yb	3.4	4.7	2.9	3.8	1.2	1.5	1.8	3.8	1.5
Lu	0.51	0.71	0.41	0.59	0.18	0.23	0.25	0.57	0.22
Li	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
B	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.

n.d. = not determined

Table S2: Whole rock major and trace element composition of Pfaffenberg eclogites compared with the nearby eclogites of Rubinberg and Klatschmühle (Borghini et al., 2020) **(Mg# = [molar Mg / (Mg + Fe^{2+}_{tot}) x 100]).**

Sample name	Apatite in matrix																			Apatite in garnet												
	PF5-1_M	PF5-1_M	PF5-1_M	PF5-1_M	PF5-1_M	PF5-1_M	PF5-1_M	PF5-1_M	PF5-1_M	PF5-1_M	PF5-1_M	PF5-1_M	PF5-1_M	PF5-1_M	PF5-1_M	PF5-1_M	PF5-1_M	PF5-1_M	PF5-1_M	PF4-1_M	PF4-1_M	PF4-1_M	PF4-1_M	PF4-1_M	PF4-1_M	PF4-1_M	PF4-1_M	PF4-1_M	PF4-1_M	PF4-1_M	PF4-1_M	PF4-1_M
apfu																																
F	0.47	0.51	0.45	0.55	0.50	0.51	0.54	0.57	0.45	0.49	0.43	0.48	0.52	0.49	0.54	0.57	0.42	0.42	0.39	0.71	0.65	0.64	0.65	0.64	0.62	0.53	0.63	0.59	0.63	0.53	0.57	0.57
Cl	0.23	0.22	0.22	0.22	0.34	0.33	0.30	0.30	0.24	0.24	0.24	0.23	0.20	0.19	0.17	0.17	0.21	0.21	0.21	0.19	0.20	0.21	0.20	0.15	0.15	0.14	0.15	0.13	0.13	0.13	0.13	0.19
OH	1.30	1.27	1.33	1.23	1.16	1.16	1.16	1.12	1.31	1.27	1.32	1.29	1.29	1.32	1.29	1.26	1.37	1.37	1.41	1.10	1.15	1.15	1.15	1.21	1.23	1.32	1.22	1.28	1.24	1.34	1.30	1.24
XF	0.24	0.25	0.22	0.28	0.25	0.25	0.27	0.29	0.22	0.25	0.22	0.24	0.26	0.24	0.27	0.29	0.21	0.21	0.19	0.36	0.33	0.32	0.33	0.32	0.31	0.27	0.32	0.29	0.32	0.27	0.28	0.28
XCl	0.11	0.11	0.11	0.11	0.17	0.17	0.15	0.15	0.12	0.12	0.12	0.12	0.10	0.10	0.08	0.08	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.08	0.08	0.07	0.08	0.07	0.07	0.06	0.07	0.10
XOH	0.65	0.64	0.67	0.61	0.58	0.58	0.58	0.56	0.66	0.63	0.66	0.64	0.64	0.66	0.65	0.63	0.68	0.69	0.70	0.55	0.57	0.58	0.57	0.61	0.62	0.66	0.61	0.64	0.62	0.67	0.65	0.62
F in melt:																																
XF in melt	0.013	0.013	0.013	0.013	0.011	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.013	0.013	0.013	0.013	0.013	0.013	0.012	0.012	0.012	0.012	0.012	0.013	0.013	0.013	0.013	0.013	0.013	0.014	0.013	0.013
F in melt in wt%	**0.24**	**0.24**	**0.24**	**0.24**	**0.22**	**0.22**	**0.22**	**0.22**	**0.24**	**0.24**	**0.23**	**0.24**	**0.24**	**0.25**	**0.25**	**0.25**	**0.24**	**0.24**	**0.24**	**0.23**	**0.23**	**0.23**	**0.23**	**0.25**	**0.25**	**0.26**	**0.25**	**0.25**	**0.25**	**0.26**	**0.26**	**0.24**

Table S3: Representative results of F calculated based on the F content of apatite, both the one scattered in the matrix and the one included in the garnet.

Locality	Pfaffenberg																			
Name	**PF-A-001**	**PF-A-005**	**PF-A-006**	**PF-A-007**	**PF-A-008**	**PF-B1-004**	**PF-B1-005**	**PF-B1-006**	**PF-B1-007**	**PF-B2-006**	**PF-B2-007**	**PF-B2-008**	**PF-E-001**	**PF-E-002**	**PF-E-003**	**PF-E-004**	**PF-E-005**	**PF-E-006**	**PF-E-007**	**PF-E-008**
ppm																				
Rb	239.31	265.20	725.08	339.41	258.45	484.21	299.71	372.67	326.65	415.02	191.43	270.84	417.70	363.50	690.06	330.56	169.62	522.01	449.56	333.93
Cs	15.06	19.85	99.77	23.79	16.86	36.54	14.32	38.15	10.15	35.23	6.77	24.74	37.43	13.36	61.73	10.97	3636.36	33.56	19.10	11.08
Ba	1252.37	831.53	944.74	1870.16	690.27	712.11	1698.66	745.85	1217.28	904.28	704.55	194.29	794.27	480.00	643.89	849.30	645.96	547.48	1159.58	835.89
Th	37.29	b.d.l.	17.84	37.26	31.39	50.38	69.97	26.66	16.64	64.31	73.31	64.93	77.28	23.60	38.25	70.50	127.73	34.57	105.89	52.39
U	2.84	1.58	9.46	20.99	6.15	33.54	7.00	5.24	8.54	26.00	5.28	26.43	36.48	19.61	6.96	10.76	44.75	18.60	58.93	24.78
Nb	5.41	3.52	2.36	5.31	3.34	4.10	6.59	5.61	9.81	4.34	2.23	4.36	6.24	3.90	6.95	4.37	9.17	3.46	9.77	4.47
Ta	b.d.l.	b.d.l.	b.d.l.	b.d.l.	0.40	b.d.l.	0.74	0.39	b.d.l.	0.42	b.d.l.	0.40	0.49	b.d.l.	0.81	b.d.l.	0.58	b.d.l.	0.65	0.51
La	22.28	8.39	16.02	33.97	23.42	26.30	27.26	20.58	18.80	41.42	32.13	26.50	42.00	5.92	24.44	30.71	64.71	8.13	68.91	8.49
Ce	54.85	12.51	34.22	74.40	44.23	51.63	45.50	52.99	31.90	75.43	62.56	49.65	79.45	13.59	59.22	77.24	123.86	17.42	135.47	21.68
Pb	23.28	58.27	45.26	80.77	34.10	63.92	53.28	27.55	63.32	67.03	44.15	99.88	66.16	29.83	28.00	17.34	50.64	32.22	92.05	68.80
Pr	7.57	2.28	4.54	6.23	4.71	5.75	4.49	7.33	b.d.l.	9.39	8.43	6.14	7.54	2.01	7.16	11.76	15.08	1.91	16.17	3.13
P	b.d.l.	b.d.l.	789.74	1259.84	238.38	604.90	b.d.l.	482.37	b.d.l.	886.30	616.89	763.28	577.15	b.d.l.	297.59	b.d.l.	642.52	585.60	1527.22	486.16
Sr	286.40	83.41	95.35	196.68	100.44	107.23	331.97	27.13	b.d.l.	209.00	189.53	38.14	122.42	56.58	105.04	43.95	107.13	49.24	124.46	69.38
Nd	29.02	6.77	6.18	26.32	15.84	11.23	16.24	28.30	b.d.l.	31.66	36.09	20.73	22.15	5.33	23.72	35.02	49.98	b.d.l.	50.91	9.31
Zr	226.37	134.23	161.60	246.97	219.25	238.87	74.53	236.42	b.d.l.	278.42	210.47	301.17	241.91	143.62	147.09	194.09	290.87	160.46	332.95	203.22
Hf	6.54	1.97	3.22	9.93	5.83	8.23	2.22	8.72	b.d.l.	6.63	7.50	7.75	5.16	4.69	5.74	6.18	7.54	4.41	8.57	6.46
Sm	5.47	7.04	b.d.l.	6.29	1.97	b.d.l.	6.36	0.52	b.d.l.	4.17	5.39	1.57	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	7.74	3.26
Eu	b.d.l.	3.16	b.d.l.	b.d.l.	1.03	b.d.l.	b.d.l.	b.d.l.	b.d.l.	0.98	b.d.l.	b.d.l.	2.47	1.58	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	0.66
Gd	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Tb	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Dy	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Ti	2189.39	1648.88	1260.37	2377.47	1331.39	2180.20	5087.99	2336.05	3338.81	3125.79	1765.68	2778.56	2568.43	1398.60	2232.03	2426.86	2670.00	882.98	3739.83	1161.07
Y	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Ho	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Er	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Tm	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Yb	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Lu	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Li	b.d.l.	b.d.l.	b.d.l.	b.d.l.	34.13	b.d.l.	b.d.l.	219.14	b.d.l.	35.22	24.27	32.06	b.d.l.	b.d.l.	73.24	b.d.l.	946.64	b.d.l.	58.98	b.d.l.
B	b.d.l.	b.d.l.	b.d.l.	b.d.l.	38.21	b.d.l.	b.d.l.	25.87	b.d.l.	38.12	b.d.l.	43.52	38.31	b.d.l.	b.d.l.	b.d.l.	62.03	b.d.l.	64.68	40.76
Detection limits																				
Name	**PF-A-001**	**PF-A-005**	**PF-A-006**	**PF-A-007**	**PF-A-008**	**PF-B1-004**	**PF-B1-005**	**PF-B1-006**	**PF-B1-007**	**PF-B2-006**	**PF-B2-007**	**PF-B2-008**	**PF-E-001**	**PF-E-002**	**PF-E-003**	**PF-E-004**	**PF-E-005**	**PF-E-006**	**PF-E-007**	**PF-E-008**
ppm																				
Rb	2.64	2.71	2.58	2.04	0.56	2.51	1.09	0.42	6.77	0.52	0.58	0.64	1.18	1.76	0.62	1.70	1.02	1.80	0.58	1.55
Cs	2.07	1.66	1.53	1.40	0.38	1.40	0.69	0.15	3.48	0.47	0.38	0.38	0.77	1.16	0.36	1.00	0.54	1.48	0.54	0.86
Ba	21.93	21.46	25.19	18.83	6.17	26.30	10.20	4.31	74.44	5.72	4.69	5.39	6.92	16.29	4.64	11.87	8.21	12.64	4.75	10.32
Th	0.29	0.36	0.36	0.26	0.08	0.59	0.19	0.04	0.82	0.09	0.09	0.10	0.09	0.23	0.07	0.17	0.19	0.18	0.06	0.11
U	0.35	0.34	0.34	0.24	0.12	0.36	0.18	0.04	0.76	0.09	0.09	0.10	0.09	0.22	0.07	0.16	0.10	0.17	0.09	0.19
Nb	1.10	1.10	1.35	0.56	0.29	1.64	0.76	0.23	1.71	0.19	0.18	0.21	0.39	0.62	0.28	0.79	0.43	0.75	0.32	0.50
Ta	1.59	1.19	1.21	0.72	0.32	1.06	0.39	0.15	2.38	0.27	0.34	0.22	0.30	0.62	0.25	0.42	0.29	0.70	0.27	0.40
La	1.11	0.71	1.59	1.17	0.41	2.16	0.66	0.33	1.62	0.42	0.31	0.29	0.48	1.02	0.34	0.95	0.61	0.68	0.31	0.69
Ce	1.26	1.06	1.30	0.53	0.18	1.33	0.58	0.08	2.99	0.51	0.31	0.45	0.35	0.88	0.36	0.62	0.45	0.86	0.31	0.59
Pb	1.19	1.59	1.87	1.75	0.48	1.97	0.67	0.30	6.42	0.41	0.41	0.43	0.41	0.79	0.29	0.71	0.48	0.72	0.32	0.46
Pr	0.57	0.60	0.94	0.98	0.14	0.64	0.32	0.15	2.50	0.15	0.14	0.24	0.33	0.46	0.26	0.58	0.19	0.76	0.23	0.21
P	352.03	515.24	586.13	446.25	154.97	600.77	266.19	111.16	1855.55	152.71	138.52	138.77	186.62	307.53	122.36	325.32	221.80	393.46	128.57	292.09
Sr	35.47	31.94	36.48	28.26	9.58	37.66	16.41	6.97	111.83	8.52	7.60	7.36	9.34	15.26	5.70	15.57	10.13	17.57	5.85	12.95
Nd	3.06	5.39	3.78	2.72	0.89	3.95	3.42	0.92	8.42	0.96	1.40	1.04	1.11	2.81	0.88	3.11	1.18	3.92	0.70	2.24
Zr	1.86	3.11	2.69	1.76	0.31	2.36	1.46	0.38	5.26	0.52	0.31	0.68	0.74	1.44	0.32	1.65	0.99	1.25	0.48	0.83
Hf	1.28	1.48	1.50	1.08	0.35	1.59	0.79	0.37	3.36	0.36	0.34	0.58	0.61	0.98	0.31	0.69	0.41	0.74	0.39	0.45
Sm	4.11	4.29	4.36	3.15	1.03	7.08	2.30	0.51	9.89	1.09	1.03	1.18	1.27	3.21	1.47	4.50	1.35	2.44	0.81	1.46
Eu	2.65	1.35	2.10	2.03	0.60	2.53	0.72	0.51	5.63	0.35	0.69	0.63	0.40	1.41	0.52	1.28	0.69	1.40	0.55	0.45
Gd	4.66	4.49	6.33	3.72	0.95	4.01	2.72	1.08	19.92	1.53	0.78	1.12	1.75	3.23	1.19	3.45	1.40	2.99	0.81	2.19
Tb	0.29	0.68	0.69	0.23	0.15	0.34	0.25	0.12	2.38	0.18	0.15	0.13	0.17	0.30	0.11	0.28	0.15	0.31	0.06	0.18
Dy	1.67	1.30	1.32	0.95	0.31	1.40	0.69	0.32	7.22	0.32	0.47	0.58	0.54	0.87	0.27	0.62	0.37	0.66	0.40	0.40
Ti	86.64	123.25	112.62	74.97	34.08	97.05	41.27	16.53	365.66	33.94	29.87	30.20	47.52	83.47	30.08	67.15	62.06	104.98	33.38	55.26
Y	1.41	2.01	1.72	1.33	0.36	1.21	0.68	0.22	4.85	0.34	0.43	0.37	0.51	1.04	0.31	0.90	0.52	0.86	0.32	0.68
Ho	0.26	0.47	0.33	0.24	0.16	0.35	0.17	0.04	0.75	0.08	0.12	0.09	0.09	0.38	0.07	0.32	0.19	0.28	0.11	0.11
Er	1.79	1.78	1.78	1.36	0.24	2.09	0.82	0.12	2.31	0.25	0.23	0.45	0.26	0.67	0.21	0.47	0.28	0.50	0.31	0.30
Tm	0.79	0.47	0.72	0.24	0.20	0.61	0.17	0.12	0.75	0.09	0.08	0.16	0.09	0.35	0.12	0.16	0.20	0.28	0.12	0.34
Yb	1.96	2.13	2.15	1.55	0.94	4.75	1.99	0.26	10.66	1.16	0.98	0.57	1.22	2.23	0.45	1.00	0.59	1.71	0.56	1.62
Lu	0.33	0.37	0.58	0.44	0.18	0.41	0.35	0.04	0.86	0.10	0.19	0.11	0.16	0.25	0.08	0.18	0.11	0.40	0.14	0.12
Li	138.66	102.52	118.60	86.01	29.86	114.45	48.27	21.03	339.00	26.55	23.69	23.36	32.21	55.14	20.66	58.40	38.24	66.70	21.93	48.84
B	95.45	79.42	92.31	70.41	26.48	109.13	47.11	17.07	282.82	23.82	22.87	20.89	27.11	43.03	16.66	45.81	29.05	53.36	17.97	37.99

b.d.l= below detection limit

Table S4: Representative trace element laser ablation ICP-MS analyses of nanogranitoids with the corresponding detection limits.

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