Magyarhoni Földtani Társulat
Földtani Közlöny
Hungarian Geological Society
154/3, 365–381., Budapest, 2024
DOI: 10.23928/foldt.kozl.2024.154.3.365

Formation of peralkaline rhyolite in the East African Rift System: the role of assimilation – a tribute to the career of Csaba SZABÓ

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Supplementary Table 1. *Composition (in wt%) of the studied feldspar from Oldoinyo Lengai, data from groundmass crystals and relicts (core & rim). *Feldspar found as crystal inclusions in titanite. FeO^T – all Fe as FeO, sd – standard deviation, BD – below detection.*

Melléklet 1. táblázat. *A vizsgált Oldoinyo Lengai-ról származó földpát összetétele (tömeg%) mind az alapanyag, mind a relikt földpát kristályokból (mag és perem). *Földpát kristályzárvány a titanitban. FeO^T – az összes vas FeO-ban megadva, sd – szórás, BD – kimutatási határ alatti elem.*

		Feldspar inclusions in titanite	Core of relict feldspar					Rim of relict feldspar	
	sd	01*	02	03	04	05	06	07	08
Oxides wt%									
SiO_2	0.5	67.0	61.9	62.4	62.3	63.2	62.6	67.2	67.1
Al_2O_3	0.3	18.2	24.0	23.7	23.6	22.9	23.2	18.7	17.8
FeO^T	0.2	1.0	BD	BD	BD	BD	BD	1.0	1.8
SrO	0.3	BD	BD	BD	BD	BD	0.4	BD	BD
CaO	0.1	0.3	3.9	3.9	4.3	3.5	3.8	BD	BD
Na_2O	0.2	8.5	8.9	9.0	8.8	9.2	8.7	8.3	8.2
K_2O	0.1	4.2	0.9	0.8	0.9	1.0	0.9	4.8	5.0
Sum		99.6	99.9	99.9	99.9	100.0	100.0	100.0	100.0
Cation numbers									
Si		2.997	2.754	2.770	2.765	2.802	2.785	2.989	2.996
Al		0.962	1.258	1.238	1.237	1.198	1.215	0.980	0.936
Fe^{2+}		0.015	-	-	-	-	-	0.004	-
Fe^{3+}		0.023	-	-	-	-	-	0.033	0.068
Sr		-	-	-	-	-	0.010	-	-
Ca		0.016	0.185	0.188	0.206	0.167	0.182	-	0.003
Na		0.737	0.768	0.772	0.754	0.788	0.747	0.720	0.714
K		0.240	0.054	0.043	0.056	0.054	0.053	0.273	0.286
Sum		4.990	5.019	5.011	5.018	5.009	4.992	4.999	5.003
Endmembers mol%									
Orthoclase $KAlSi_3O_8$		24.2%	5.4%	4.3%	5.5%	5.3%	5.4%	27.5%	28.5%
Albite $NaAlSi_3O_8$		74.2%	76.3%	76.9%	74.2%	78.1%	76.1%	72.5%	71.2%
Anorthite $CaAl_2Si_2O_8$		1.6%	18.3%	18.8%	20.3%	16.5%	18.5%	0.0%	0.3%
Sum		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Supplementary Table 1 (continued). *Composition (in wt%) of the studied feldspar from Oldoinyo Lengai, data from groundmass crystals. FeO^T – all Fe as FeO, sd – standard deviation, BD – below detection.*

Melléklet 1. táblázat (folytatás). *A vizsgált Oldoinyo Lengai-ról származó földpát összetétele (tömeg%) mind az alapanyag mind a relikt földpát kristályokból (mag és perem). FeO^T – az összes vas FeO-ban megadva, sd – szórás, BD – kimutatási határ alatti elem.*

					Feldspar						
	sd	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**
					Oxides wt%						
SiO_2	0.5	67.4	67.6	67.4	67.1	67.2	67.2	67.3	67.2	67.3	67.3
Al_2O_3	0.2	18.4	18.3	18.4	18.3	18.2	18.3	18.4	18.3	18.1	18.2
FeO^T	0.2	1.4	1.2	1.2	1.4	1.5	1.5	1.3	1.4	1.2	1.3
SrO	0.3	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.4
CaO	0.1	BD	BD	BD	BD	0.2	BD	BD	BD	BD	BD
Na_2O	0.2	8.2	7.9	8.1	8.2	7.9	8.0	8.2	8.0	8.1	8.1
K_2O	0.1	4.4	4.9	4.8	4.8	4.9	4.8	4.8	4.9	5.0	4.6
Sum		100.0	100.0	100.0	100.0	100.0	100.0	99.9	100.0	100.0	99.9
					Cation numbers						
Si		3.005	3.013	3.005	2.997	3.007	3.001	3.004	3.003	2.999	3.008
Al		0.968	0.963	0.969	0.964	0.957	0.963	0.965	0.964	0.953	0.960
Fe^{2+}		0.052	0.046	0.047	0.029	0.055	0.050	0.043	0.046	0.006	0.049
Fe^{3+}		-	-	-	0.024	-	0.005	0.005	0.006	0.039	-
Sr		-	-	-	-	-	-	-	-	-	0.010
Ca		0.004	-	-	-	0.010	0.005	-	0.002	0.004	-
Na		0.706	0.687	0.697	0.709	0.681	0.696	0.708	0.693	0.704	0.706
K		0.249	0.281	0.274	0.272	0.282	0.274	0.273	0.281	0.287	0.264
Sum		4.984	4.990	4.992	4.995	4.992	4.994	4.998	4.995	4.992	4.997
					Endmembers mol%						
Orthoclase $KAlSi_3O_8$		25.9%	29.0%	28.2%	27.7%	29.0%	28.1%	27.8%	28.8%	28.8%	27.2%
Albite $NaAlSi_3O_8$		73.7%	70.9%	71.8%	72.3%	70.0%	71.4%	72.0%	71.0%	70.7%	72.8%
Anorthite $CaAl_2Si_2O_8$		0.4%	0.1%	0.0%	0.0%	1.0%	0.5%	0.2%	0.2%	0.4%	0.0%
Sum		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Supplementary Table 1 (continued). *Composition (in wt%) of the studied feldspar from Oldoinyo Lengai, data from groundmass crystals. FeO^T – all Fe as FeO, sd – standard deviation, BD – below detection.*

Melléklet 1. táblázat (folytatás). *A vizsgált Oldoinyo Lengai-ról származó földpát összetétele (tömeg%) mind az alapanyag mind a relikt földpát kristályokból (mag és perem). FeO^T – az összes vas FeO-ban megadva, sd – szórás, BD – kimutatási határ alatti elem.*

					Feldspar						
	sd	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**
					Oxides wt%						
SiO_2	0.5	67.7	67.1	67.0	67.2	67.2	67.4	67.2	67.3	67.0	67.0
Al_2O_3	0.2	18.1	18.6	18.4	18.8	18.7	18.2	18.3	18.4	18.2	18.2
FeO^T	0.2	1.1	1.3	1.2	0.6	1.1	1.3	1.5	1.1	1.6	1.5
SrO	0.3	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
CaO	0.1	BD	BD	BD	BD	0.2	BD	BD	BD	BD	BD
Na_2O	0.2	8.1	8.3	8.1	8.1	7.7	8.0	8.0	8.1	8.0	8.0
K_2O	0.1	4.9	4.6	4.9	4.9	4.9	4.9	4.8	4.9	4.9	5.0
Sum		100.0	100.0	100.0	100.0	99.9	99.9	100.0	100.0	100.0	100.0
					Cation numbers						
Si		3.019	2.991	2.990	2.999	2.999	3.009	3.004	3.001	2.994	2.993
Al		0.953	0.975	0.969	0.987	0.981	0.958	0.963	0.969	0.961	0.958
Fe^{2+}		0.039	0.025	0.010	0.022	0.041	0.050	0.057	0.033	0.032	0.014
Fe^{3+}		0.000	0.025	0.037	0.000	0.000	0.000	0.000	0.006	0.027	0.042
Sr		-	-	-	-	-	-	-	-	-	-
Ca		-	-	-	-	0.009	-	-	-	-	-
Na		0.697	0.719	0.704	0.702	0.670	0.697	0.697	0.698	0.695	0.691
K		0.277	0.262	0.281	0.280	0.279	0.276	0.271	0.278	0.281	0.283
Sum		4.985	4.997	4.991	4.990	4.979	4.990	4.992	4.985	4.990	4.981
					Endmembers mol%						
Orthoclase $KAlSi_3O_8$		28.4%	26.6%	28.4%	28.5%	29.1%	28.2%	27.9%	28.4%	28.7%	28.9%
Albite $NaAlSi_3O_8$		71.6%	73.0%	71.1%	71.5%	69.9%	71.3%	71.6%	71.5%	71.1%	70.5%
Anorthite $CaAl_2Si_2O_8$		0.0%	0.3%	0.6%	0.0%	0.9%	0.5%	0.5%	0.0%	0.2%	0.7%
Sum		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Supplementary Table 2. *Composition (in wt%) of the studied clinopyroxene from Oldoinyo Lengai, data from groundmass crystals. FeO^T – all Fe as FeO, sd – standard deviation, BD – below detection.*

Melléklet 2. táblázat. Az *Oldoinyo Lengai vizsgált klinopiroxének összetétele (tömeg%), adatok az alapanyag kristályokból. FeO^T – az összes vas FeO-ban megadva, sd – szórás, BD – kimutatási határ alatti elem.*

Clinopyroxene												
	sd	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
Oxides wt%												
SiO_2	0.4	51.8	51.7	52.1	51.9	51.8	52.0	52.5	51.5	52.0	51.7	52.0
TiO_2	0.2	0.8	0.8	0.8	0.7	0.6	0.5	0.3	0.6	0.5	0.7	1.2
Al_2O_3	0.1	0.6	0.5	0.4	0.7	0.6	0.6	0.7	0.6	0.8	0.5	0.7
Cr_2O_3	0.1	BD	0.2	BD	0.3	BD	0.2	0.2	BD	0.2	0.2	BD
FeO^T	0.4	22.5	23.2	23.2	22.0	23.2	22.9	21.4	23.0	22.7	23.1	23.2
MnO	0.2	BD	BD	BD	0.3	0.3	BD	0.3	BD	BD	BD	0.3
MgO	0.2	4.2	3.9	3.9	4.4	3.9	4.2	4.6	4.1	3.9	4.0	3.7
CaO	0.2	11.2	10.9	10.3	11.0	10.6	11.0	10.9	10.8	10.4	10.4	8.9
Na_2O	0.2	7.0	7.1	7.2	7.1	7.2	7.1	7.4	7.3	7.6	7.5	8.2
Sum		98.4	98.3	98.4	98.4	98.3	98.3	98.3	98.2	98.2	98.2	98.2
Cation numbers												
Si		1.998	1.990	2.010	1.993	1.994	1.996	2.005	1.983	1.995	1.988	1.994
Ti		0.023	0.022	0.024	0.020	0.017	0.015	0.009	0.018	0.016	0.020	0.034
Al		0.025	0.024	0.022	0.030	0.026	0.027	0.030	0.028	0.038	0.023	0.030
Cr		-	0.006	-	0.010	-	0.005	0.006	-	0.005	0.005	-
Fe^{2+}		0.263	0.269	0.292	0.244	0.260	0.252	0.193	0.225	0.220	0.227	0.217
Fe^{3+}		0.462	0.478	0.457	0.462	0.488	0.476	0.488	0.518	0.508	0.517	0.525
Mn		-	-	-	0.011	0.010	-	0.010	-	-	-	0.010
Mg		0.240	0.228	0.226	0.252	0.225	0.242	0.260	0.239	0.224	0.232	0.215
Ca		0.463	0.450	0.429	0.450	0.440	0.455	0.448	0.445	0.426	0.428	0.364
Na		0.525	0.533	0.541	0.528	0.538	0.530	0.551	0.544	0.568	0.558	0.611
Sum		4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000
Endmembers mol%												
Diopside $CaMgSi_2O_6$		21.7%	19.3%	16.3%	21.9%	19.1%	21.4%	26.0%	23.5%	21.4%	21.4%	17.5%
Hedenbergite $I^{2+}Si_2O_6$		24.0%	24.7%	27.0%	22.4%	24.4%	23.6%	18.4%	20.9%	20.5%	21.0%	18.2%
Aegirine $NaFe^{3+}Si_2O_6$		46.3%	47.8%	46.2%	46.2%	48.9%	47.6%	48.8%	49.4%	50.6%	49.9%	52.6%
Ti-Aegirine $Na(Fe^{2+}.Ti)Si_2O_6$		4.7%	4.4%	4.9%	4.0%	3.4%	3.1%	1.8%	3.0%	3.1%	2.9%	6.8%
Kosmochlor $NaCrSi_2O_6$		0.0%	0.7%	0.0%	1.0%	0.0%	0.5%	1.3%	0.0%	0.5%	1.6%	0.0%
Jadeite $NaAlSi_2O_6$		1.1%	0.3%	2.1%	1.6%	1.3%	1.8%	3.0%	0.6%	2.4%	0.9%	1.7%
Enstatite $Mg_2Si_2O_6$		1.5%	1.7%	3.5%	2.2%	2.2%	1.5%	0.4%	0.5%	0.8%	1.0%	2.5%
Wollastonite $Ca_2Si_2O_6$		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%
Tschermak's $CaAlAlSiO_6$		0.7%	1.0%	0.0%	0.7%	0.7%	0.5%	0.0%	0.0%	0.7%	0.0%	0.6%
Fe-Tschermak's café$^{3+}AlSiO_6$		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.1%	0.0%	1.3%	0.0%
Sum		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Supplementary Table 2 (continued). *Composition (in wt%) of the studied clinopyroxene from Oldoinyo Lengai, data from groundmass crystals. *Clinopyroxene found as crystal inclusions in titanite. FeO^T – all Fe as FeO, sd – standard deviation, BD – below detection.*

Melléklet 2. táblázat (folytatás). *A vizsgált Oldoinyo Lengai-ról származó alapanyag klinopiroxén összetételek (tömeg%). * Klinopiroxén kristályzárvány a titanitban. FeO^T – az összes vas FeO-ban megadva, sd – szórás, BD – kimutatási határ alatti elem.*

Clinopyroxene												
	sd	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21***	**22***
Oxides wt%												
SiO_2	0.4	52.4	53.0	51.5	51.9	52.3	51.5	52.0	52.3	51.9	52.7	52.1
TiO_2	0.2	1.2	0.6	0.8	1.1	0.8	1.1	0.9	1.4	1.5	2.4	2.4
Al_2O_3	0.1	0.4	0.7	0.7	0.9	0.7	0.7	0.6	0.7	0.6	0.6	0.5
Cr_2O_3	0.1	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.2	BD
FeO^T	0.4	24.0	22.2	23.8	22.8	22.1	23.8	23.2	23.3	24.4	24.1	24.0
MnO	0.2	0.2	0.2	BD	0.3	0.2	BD	0.4	0.1	0.3	0.2	0.2
MgO	0.2	3.0	4.3	3.7	3.8	4.2	3.7	4.1	3.4	2.9	2.4	2.7
CaO	0.2	7.3	9.9	9.8	9.3	9.9	9.5	9.3	8.1	7.1	5.4	6.1
Na_2O	0.2	9.4	7.5	7.8	8.1	7.8	7.9	7.7	8.8	9.2	10.1	9.6
Sum		97.9	98.5	98.1	98.2	98.2	98.1	98.2	98.1	97.9	98.1	97.7
Cation numbers												
Si		2.006	2.027	1.983	1.989	1.999	1.981	1.994	1.999	1.993	2.013	2.001
Ti		0.036	0.019	0.022	0.031	0.025	0.030	0.027	0.041	0.043	0.070	0.069
Al		0.018	0.032	0.033	0.042	0.033	0.029	0.025	0.033	0.027	0.026	0.024
Cr		-	-	-	-	-	-	-	-	-	0.004	-
Fe^{2+}		0.172	0.276	0.227	0.212	0.206	0.228	0.240	0.202	0.196	0.216	0.218
Fe^{3+}		0.596	0.432	0.537	0.518	0.502	0.538	0.504	0.541	0.587	0.554	0.555
Mn		0.007	0.007	-	0.009	0.009	-	0.015	0.004	0.011	0.007	0.006
Mg		0.169	0.244	0.214	0.216	0.239	0.212	0.238	0.195	0.163	0.135	0.157
Ca		0.298	0.407	0.403	0.382	0.406	0.391	0.383	0.331	0.293	0.223	0.252
Na		0.697	0.556	0.580	0.601	0.582	0.590	0.573	0.654	0.686	0.752	0.718
Sum		4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000
Endmembers mol%												
Diopside $CaMgSi_2O_6$		16.3%	15.6%	19.5%	19.0%	22.3%	19.1%	16.5%	16.9%	13.2%	7.5%	10.4%
Hedenbergite $CaFeSi_2O_6$		13.7%	26.7%	20.1%	18.0%	18.1%	19.4%	21.3%	16.1%	15.4%	14.4%	14.7%
Aegirine $NaFeSi_2O_6$		60.2%	45.0%	51.9%	51.8%	50.3%	51.6%	50.4%	54.1%	58.7%	55.1%	55.6%
Ti-Aegirine $Na(Fe,Ti)Si_2O_6$		7.3%	4.0%	4.4%	6.2%	4.9%	6.1%	5.4%	8.2%	8.5%	13.9%	13.8%
Kosmochlor $NaCrSi_2O_6$		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.2%	0.0%
Jadeite $NaAlSi_2O_6$		1.8%	3.4%	1.5%	2.1%	3.0%	1.0%	1.4%	3.1%	1.3%	2.6%	2.5%
Enstatite $Mg_2Si_2O_6$		0.7%	5.3%	0.8%	1.8%	1.2%	0.9%	4.4%	1.5%	2.1%	3.3%	2.9%
Wollastonite $Ca_2Si_2O_6$		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Tschermak's $CaAlAlSiO_6$		0.0%	0.0%	0.0%	1.1%	0.1%	0.0%	0.6%	0.1%	0.7%	0.0%	0.0%
Fe-Tschermak's $CaFeAlSiO_6$		0.0%	0.0%	1.8%	0.0%	0.0%	1.9%	0.0%	0.0%	0.0%	0.0%	0.0%
Sum		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Supplementary Table 3. *Composition (in wt%) of the studied titanite from Oldoinyo Lengai, data from groundmass crystals (core & rim). *Only core measurement. FeO^T – all Fe as FeO, sd – standard deviation, BD – below detection.*

Melléklet 3. táblázat. *A vizsgált Oldoinyo Lengai-ról származó titanit összetétele (tömeg%) alapanyag kristályokból (mag és perem). *Csak mag mérés. FeO^T – az összes vas FeO-ban megadva, sd – szórás, BD – kimutatási határ alatti elem.*

Titanite										
		Crystal cores					Crystal rims			
	sd	**01**	**02***	**03**	**04**	**05**	**01**	**03**	**04**	**05**
Oxides wt%										
SiO_2	0.4	31.0	30.9	31.2	31.1	31.3	30.7	31.2	30.7	31.1
TiO_2	0.5	38.1	38.7	39.5	39.1	38.6	39.7	37.6	40.1	40.3
Al_2O_3	0.2	BD	BD	BD	0.3	0.3	BD	0.3	0.5	0.3
FeO^T	0.2	0.5	0.6	0.4	0.6	0.6	0.5	1.9	1.0	0.5
MnO	0.2	BD	BD	BD	BD	BD	0.3	BD	BD	BD
MgO	0.1	BD	BD	BD	BD	BD	BD	BD	BD	BD
SrO	0.3	0.6	0.5	0.5	0.1	0.4	0.3	0.2	0.1	0.4
CaO	0.3	24.8	24.6	24.1	25.0	24.6	26.4	26.7	26.8	26.0
Na_2O	0.1	1.7	1.7	1.7	1.6	1.6	0.9	0.6	0.7	0.7
Nb_2O_5	0.3	2.7	2.3	1.0	2.0	1.1	0.6	BD	BD	0.5
Sum		99.4	99.3	98.4	99.8	98.5	99.4	98.5	99.9	99.8
Cation numbers										
Si		1.023	1.033	1.038	1.031	1.042	1.011	1.036	1.004	1.019
Ti		0.945	0.976	0.988	0.977	0.969	0.982	0.939	0.986	0.992
Al		-	-	-	0.012	0.013	-	0.013	0.018	0.012
Fe^{2+}		0.013	0.017	0.012	-	0.016	-	0.054	0.028	0.013
Fe^{3+}		-	-	-	0.016	0.000	0.015	-	-	-
Mn		-	-	-	-	-	0.010	-	-	-
Mg		-	-	-	-	-	-	-	-	-
Sr		0.011	0.010	0.009	0.003	0.009	0.005	0.005	0.003	0.009
Ca		0.877	0.884	0.860	0.888	0.879	0.930	0.949	0.939	0.913
Na		0.112	0.112	0.108	0.103	0.103	0.059	0.037	0.046	0.043
Nb		0.040	0.035	0.014	0.031	0.017	0.009	-	-	0.007
Sum		3.021	3.067	3.029	3.061	3.048	3.021	3.033	3.024	3.008

Supplementary Table 3 (continued). *Composition (in wt%) of the studied titanite from Oldoinyo Lengai, data from groundmass crystals. FeO^T – all Fe as FeO, sd – standard deviation, BD – below detection.*

Melléklet 3. táblázat (folytatás). *A vizsgált Oldoinyo Lengai-ról származó alapanyag titanit összetétele (tömeg%). FeO^T – az összes vas FeO-ban megadva, sd – szórás, BD – kimutatási határ alatti elem.*

Titanite												
	sd	**06**	**07**	**08**	**09**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
Oxides wt%												
SiO_2	0.4	32.5	31.6	30.8	31.1	30.5	31.5	31.0	31.7	31.3	31.4	31.0
TiO_2	0.5	39.3	39.7	39.1	39.4	39.4	40.2	40.0	39.5	40.4	40.2	38.6
Al_2O_3	0.2	BD	0.4	0.3	0.4	0.4	0.4	0.3	0.4	0.4	BD	0.4
FeO^T	0.2	0.5	0.8	0.6	0.7	0.8	0.4	0.6	1.0	0.4	0.4	0.4
MnO	0.2	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
MgO	0.1	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
SrO	0.3	BD	BD	0.6	BD	BD	BD	BD	BD	BD	BD	BD
CaO	0.3	26.0	26.3	25.8	25.3	25.9	25.6	26.4	25.3	26.3	26.4	25.2
Na_2O	0.1	1.0	0.7	1.3	1.1	1.0	1.0	0.9	1.3	0.9	0.8	1.3
Nb_2O_5	0.3	BD	BD	1.5	0.6	BD	BD	BD	BD	BD	BD	1.5
Sum		99.3	99.5	100	98.6	98	99.1	99.2	99.2	99.7	99.2	98.4
Cation numbers												
Si		1.057	1.032	1.023	1.029	1.014	1.029	1.017	1.037	1.019	1.026	1.035
Ti		0.962	0.973	0.975	0.981	0.986	0.988	0.986	0.971	0.988	0.987	0.971
Al		-	0.014	0.012	0.016	0.014	0.016	0.011	0.017	0.016	-	0.015
Fe^{2+}		0.013	0.023	0.017	0.019	0.024	0.012	0.018	0.028	0.011	0.012	0.011
Fe^{3+}		-	-	-	-	-	-	-	-	-	-	-
Mn		-	-	-	-	-	-	-	-	-	-	-
Mg		-	-	-	-	-	-	-	-	-	-	-
Sr		-	-	0.011	-	-	-	-	-	-	-	-
Ca		0.906	0.918	0.917	0.898	0.922	0.898	0.928	0.887	0.917	0.921	0.901
Na		0.061	0.045	0.084	0.069	0.063	0.063	0.056	0.085	0.056	0.053	0.086
Nb		0.001	0.002	0.022	0.008	0.003	0.005	0.005	0.004	0.003	0.001	0.023
Sum		3.000	3.007	3.061	3.020	3.026	3.011	3.021	3.029	3.010	3.000	3.042

Supplementary Table 4. *Composition (in wt%) of the studied glass from Oldoinyo Lengai. PI – peralkalinity index = (Na+K) / Al, as molar portions. FeO^T – all Fe as FeO, sd – standard deviation, BD – below detection.*

Melléklet 4. táblázat. *A vizsgált Oldoinyo Lengai-ról származó kőzetüveg összetétele (tömeg%). PI – peralkalinitási index = (Na+K) / Al, moláris arány. FeO^T – az összes vas FeO-ban megadva, sd – szórás, BD – kimutatási határ alatti elem.*

		Glass													
	sd	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**10**	**11**	**12**	**13**	**14**	**15**
							Oxides wt%								
SiO_2	0.6	71.8	72.1	72.4	72.3	73.3	72.6	72.4	73.4	73.3	73.2	73.1	72.1	72.6	72.8
TiO_2	0.2	1.0	1.1	0.8	1.0	0.8	0.9	1.4	1.3	1.1	0.9	0.9	1.0	1.0	1.2
Al_2O_3	0.2	7.7	7.4	7.5	7.7	7.4	7.7	7.7	7.6	7.7	7.2	7.9	7.1	6.9	7.2
FeO^T	0.3	5.5	5.5	5.7	5.3	5.0	5.3	5.7	5.7	5.7	4.9	4.9	5.9	5.8	6.0
MnO	0.1	BD	BD	BD	0.2	0.3	0.2	BD	0.2	BD	BD	BD	BD	BD	BD
MgO	0.1	BD	0.2	0.3	0.2	BD	0.2	0.2	BD	0.3	0.4	BD	0.2	0.3	BD
SrO	0.4	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
CaO	0.1	0.9	1.1	1.1	1.0	0.9	0.9	0.4	0.5	0.6	0.6	0.9	1.0	1.0	1.0
BaO	0.3	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD
Na_2O	0.2	7.6	7.4	7.5	7.7	7.8	7.3	7.3	5.9	6.4	7.6	7.5	7.5	7.7	5.8
K_2O	0.1	4.5	4.6	4.5	4.5	4.4	4.7	4.7	4.8	4.4	4.5	4.5	4.8	4.5	5.1
P_2O_5	0.1	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.2	BD	BD	BD	0.2
SO_3	0.1	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.3
Sum		99.0	99.4	99.8	99.9	99.9	99.8	99.8	99.4	99.5	99.5	99.7	99.6	99.8	99.6
PI		2.24	2.31	2.30	2.27	2.37	2.22	2.23	1.95	1.99	2.42	2.17	2.46	2.52	2.08
Na_2O+K_2O		12.1	12.0	12.0	12.1	12.2	11.9	12.0	10.7	10.9	12.1	12.0	12.2	12.1	10.8

Supplementary Table 5. *Composition (in wt%) of the studied melt inclusions from Oldoinyo Lengai and the estimated original melt. PI – peralkalinity index = (Na+K) / Al, as molar portions. FeO^T – all Fe as FeO, sd – standard deviation, BD – below detection.*

Melléklet 5. táblázat. *A vizsgált Oldoinyo Lengai-ról származó olvadékzárványok és a becsült eredeti olvadék összetétele (tömeg%). PI – peralkalinitási index = (Na+K) / Al, moláris arány. FeO^T – az összes vas FeO-ban megadva, sd – szórás, BD – kimutatási határ alatti elem.*

	Melt inclusions							Original melt
	sd	**01**	**02**	**03**	**04**	**05**	**06**	
				Oxides wt%				
SiO_2	0.6	66.3	66.2	67.7	66.0	66.9	67.0	58.2
TiO_2	0.2	2.5	2.8	2.2	2.6	2.4	1.8	2.7
Al_2O_3	0.2	8.1	8.4	8.8	7.2	7.2	8.2	7.5
FeO^T	0.2	4.1	5.3	3.7	6.8	7.1	4.3	12.3
MnO	0.1	0.4	0.7	0.3	0.3	0.3	0.5	0.1
MgO	0.1	0.5	0.3	0.7	0.7	0.5	0.4	1.6
SrO	0.4	BD	BD	BD	BD	BD	BD	-
CaO	0.1	1.1	1.0	1.3	1.2	0.9	2.1	3.4
BaO	0.3	BD	0.6	BD	BD	0.4	0.5	-
Na_2O	0.2	10.5	7.7	8.7	8.9	9.0	9.3	8.4
K_2O	0.1	5.1	6.0	5.1	5.2	4.9	5.1	5.6
P_2O_5	0.1	0.3	0.2	0.3	0.3	0.2	0.2	-
SO_3	0.1	BD	BD	BD	BD	BD	BD	-
Sum		98.9	99.2	98.8	99.2	99.8	99.4	100.0
PI		2.82	2.28	2.26	2.82	2.79	2.54	2.66
Na_2O+K_2O		15.6	13.7	13.8	14.1	13.8	14.4	14.0

Supplementary Table 6. *Trace element composition (in ppm) of the studied peralkaline rhyolite glass from Oldoinyo Lengai.*

Melléklet 6. táblázat. *Oldoinyo Lengai-ról származó vizsgált peralkáli riolitüveg nyomelem-összetétele (ppm).*

	Glass					
	29d06	**29d07**	**29d08**	**29d16**	**29d37**	**29d39**
Li	12.7	10.1	11.6	11.6	8.4	10.4
Cs	0.6	0.9	0.7	0.8	0.5	0.8
Rb	93.5	160.9	143.0	162.8	130.0	174.8
Th	6.3	12.9	9.4	12.4	9.4	6.7
U	2.2	4.4	4.0	3.8	2.6	1.9
Nb	29.1	54.5	43.4	52.3	29.0	35.2
Ta	1.1	2.2	1.6	1.9	0.8	1.1
La	8.8	15.2	10.9	15.1	10.2	9.5
Ce	31.6	33.2	25.1	32.1	21.9	21.3
Pb	23.0	18.6	16.1	15.9	12.3	12.9
Pr	4.3	3.9	2.9	3.8	2.6	2.6
Sr	147.3	186.7	154.7	199.0	166.1	218.0
Nd	9.3	14.1	10.6	14.3	10.1	10.5
Zr	540.0	947.9	760.6	1007.7	360.7	338.8
Hf	14.0	24.8	18.2	24.3	10.3	9.3
Sm	1.5	2.8	1.9	2.5	1.7	1.7
Eu	0.5	0.6	0.5	0.8	0.5	0.5
Gd	1.2	2.2	1.6	2.4	1.4	1.3
Ti	5482.5	6098.7	5722.6	7026.7	4932.4	6478.0
Tb	0.2	0.3	0.2	0.3	0.2	0.3
Dy	1.5	2.4	1.8	2.6	1.7	1.2
Y	7.8	13.9	10.5	14.4	8.5	8.5
Ho	0.3	0.5	0.3	0.5	0.3	0.3
Er	0.9	1.6	1.3	1.9	1.0	0.8
Tm	0.2	0.2	0.2	0.3	0.1	0.2
Yb	1.3	2.0	1.4	1.8	1.1	0.9
Lu	0.2	0.3	0.2	0.3	0.2	0.2
Zn	314.2	96.2	127.0	124.6	75.2	84.6
W	7.0	3.3	2.9	2.7	0.7	0.7
Mo	3.4	6.6	4.7	5.3	1.8	1.3
Sc	44.5	5.3	29.1	15.4	6.9	4.9
V	507.5	104.9	424.9	207.3	134.6	105.7

Supplementary Table 6 (continued). *Trace element composition (in ppm) of the studied peralkaline rhyolite glass from Oldoinyo Lengai.*

Melléklet 6. táblázat (folytatás). *Oldoinyo Lengai-ról származó vizsgált peralkáli riolitüveg nyomelem-összetétele (ppm).*

	Glass					
	29d41	**29d45**	**30a05**	**30a07**	**30a10**	**30a11**
Li	8.6	7.3	5.9	10.9	8.1	6.6
Cs	0.7	0.4	0.4	0.8	0.6	0.5
Rb	134.9	103.5	94.6	170.7	142.1	115.4
Th	4.3	10.5	5.7	13.0	11.4	7.6
U	1.4	2.6	2.1	4.4	3.6	2.6
Nb	28.2	31.3	28.8	53.9	47.3	34.1
Ta	0.9	0.9	1.0	2.1	1.8	1.3
La	6.8	9.8	7.5	15.8	12.7	9.0
Ce	17.0	21.8	16.7	31.6	27.2	18.9
Pb	11.3	9.5	12.7	16.6	13.3	10.8
Pr	2.1	2.7	2.1	3.8	3.1	2.2
Sr	175.8	161.7	122.8	180.2	158.6	136.0
Nd	8.5	9.9	7.4	14.8	11.8	8.2
Zr	229.1	420.6	453.0	988.3	866.4	602.9
Hf	6.8	10.9	10.9	24.5	20.9	14.7
Sm	1.2	1.6	1.3	2.9	2.1	1.5
Eu	0.4	0.4	0.4	0.7	0.6	0.4
Gd	1.3	1.4	1.1	2.6	1.8	1.3
Ti	4344.8	3972.1	3248.0	6234.1	5042.8	3834.7
Tb	0.2	0.3	0.2	0.4	0.3	0.2
Dy	1.0	1.6	1.2	2.4	2.0	1.5
Y	5.0	9.0	6.9	14.5	12.4	8.6
Ho	0.2	0.3	0.3	0.5	0.5	0.3
Er	0.6	1.1	0.7	1.7	1.4	1.0
Tm	0.1	0.1	0.1	0.2	0.2	0.1
Yb	0.6	1.2	0.9	1.6	1.4	1.2
Lu	0.1	0.2	0.1	0.3	0.3	0.2
Zn	66.8	68.4	143.4	87.0	96.7	70.2
W	0.6	1.0	3.4	2.8	2.4	1.9
Mo	1.5	1.7	3.0	5.8	5.3	3.6
Sc	3.8	3.7	3.4	11.1	4.2	5.3
V	92.1	76.1	61.6	188.5	83.9	89.8

Supplementary Table 7. *Trace element composition (in ppm) of the studied titanite from Oldoinyo Lengai.*

Melléklet 7. táblázat. *A vizsgált Oldoinyo Lengai titanitok nyomelem-összetétele (ppm).*

	Titanite							
	29d04	**29d22**	**29d44**	**30a04a**	**30a04b**	**30a12**	**30a17**	**30a19**
Li	<0.27	1.2	0.9	1.7	1.2	0.61	2.0	0.8
Cs	<0.07	0.1	<0.06	<0.06	0.1	<0.11	0.1	0.1
Rb	0.6	9.1	1.1	4.2	1.8	0.5	7.9	3.4
Th	0.3	3.0	4.0	3.4	3.8	3.2	4.0	2.9
U	0.8	8.9	10.4	9.8	13.4	8.5	13.2	5.8
Nb	2514.1	4396.4	6190.7	4137.7	2799.0	2903.0	2742.7	2702.6
Ta	145.6	183.1	287.2	144.8	100.9	109.4	95.1	90.6
La	246.0	632.0	707.5	695.3	653.1	642.7	622.4	523.3
Ce	853.5	2462.1	2606.3	2821.9	2226.4	2265.4	2152.9	1911.2
Pb	2.8	2.6	1.9	1.9	2.8	1.7	3.2	1.4
Pr	131.5	391.2	412.5	431.3	316.4	310.2	305.1	270.1
Sr	3121.3	1975.7	1862.6	1779.0	1909.7	2639.6	1815.0	2584.6
Nd	535.9	1484.4	1620.1	1624.1	1154.1	1248.0	1139.4	1065.6
Zr	151.4	1151.0	949.4	1365.6	1197.8	420.0	1367.0	348.9
Hf	5.9	29.0	24.4	38.5	25.8	12.3	29.6	10.7
Sm	76.9	211.5	240.1	230.6	166.1	162.8	161.4	143.4
Eu	16.7	43.2	52.3	50.8	37.0	34.1	35.7	33.2
Gd	38.5	118.8	137.0	129.6	107.6	103.1	106.6	95.7
Ti	234419.5	227382.9	242301.8	209543.9	209382.2	235491.5	196505.6	233095.2
Tb	4.0	14.6	16.7	16.1	14.1	12.9	13.9	11.4
Dy	17.2	78.8	92.1	88.4	77.3	65.1	77.2	60.5
Y	31.0	211.3	243.1	235.8	221.9	191.9	227.3	170.4
Ho	1.8	11.5	13.0	13.0	11.7	9.2	11.9	9.4
Er	3.3	22.8	26.7	27.5	22.8	18.5	23.2	18.3
Tm	0.2	1.8	1.9	2.1	1.6	1.3	1.7	1.3
Yb	0.8	6.1	6.8	7.0	5.1	4.0	5.4	4.2
Lu	0.1	0.4	0.5	0.4	0.3	0.2	0.3	0.2
Zn	4.4	8.2	7.9	24.7	9.0	4.4	14.9	5.1
W	0.2	0.6	0.9	0.7	0.8	0.6	0.9	0.3
Mo	3.7	4.2	3.5	4.5	4.3	4.3	4.3	3.1
Sc	1.2	2.2	2.1	8.8	6.7	2.3	9.1	2.6
V	71.4	62.0	62.7	128.9	113.6	64.6	134.8	68.7