Table S1. Representative LA-ICP-MS U-Pb apatite data from the Pluskawka stream, Poland.

Sample/spot#	$^{207}Pb/^{235}Pb$	±2σ	$^{206}Pb/^{238}U$	±2σ	ϱ	$^{238}U/^{206}Pb$	±2σ	$^{207}Pb/^{206}Pb$	±2σ	ϱ	$^{206}Pb/^{238}U$ age	±2σ Ma	$^{207}Pb/^{235}U$ age	±2σ Ma	$^{207}Pb/^{206}Pb$ age	±2σ Ma	^{207}Pb age	±2σ Ma
PL2_1	11.56	0.47	0.145	0.006	0.462	6.920	0.268	0.584	0.01	0.42	870	33.7	2569	104.5	4469	76.5	308	17.4
PL2_2	11.40	0.46	0.144	0.006	0.608	6.944	0.294	0.578	0.01	0.57	867	36.7	2556	103.2	4454	77.1	314	18.3
PL2_3	32.56	1.30	0.322	0.013	0.550	3.110	0.126	0.739	0.012	0.30	1797	72.7	3567	142.4	4808	78.1	293	36.8
PL2_4	19.23	0.80	0.202	0.008	0.584	4.950	0.199	0.687	0.013	0.39	1186	47.6	3053	127.0	4704	89.0	264	25.3
PL2_5	25.80	1.10	0.261	0.011	0.634	3.833	0.162	0.719	0.012	0.46	1494	63.0	3339	142.4	4769	79.6	277	30.5
PL2_6	3.95	0.16	0.077	0.003	0.134	13.016	0.491	0.377	0.0071	0.56	477	18.0	1625	65.7	3819	72.0	288	11.7
PL2_7	24.06	1.10	0.246	0.011	0.759	4.062	0.181	0.710	0.014	0.47	1419	63.4	3271	149.5	4751	93.7	279	32.3
PL2_8	12.44	0.52	0.151	0.007	0.681	6.609	0.293	0.597	0.015	0.48	908	40.2	2638	110.3	4501	113.1	307	23.1
PL2_9	12.37	0.51	0.152	0.006	0.747	6.596	0.270	0.594	0.0098	0.04	910	37.2	2633	108.6	4493	74.2	312	18.3
PL2_10	16.93	0.68	0.184	0.007	0.737	5.441	0.213	0.668	0.0082	0.38	1088	42.6	2931	117.7	4663	57.3	269	18.2
PL2_11	24.69	0.99	0.255	0.010	0.273	3.923	0.154	0.706	0.015	0.54	1464	57.4	3296	132.2	4743	100.8	299	34.6
PL2_12	20.53	0.84	0.215	0.009	0.593	4.662	0.185	0.691	0.011	0.32	1253	49.6	3117	127.5	4712	75.0	275	24.1
PL2_13	12.76	0.51	0.150	0.006	0.306	6.689	0.268	0.620	0.013	0.50	898	36.0	2662	106.4	4556	95.5	275	19.9
PL2_14	16.30	0.63	0.181	0.007	0.454	5.531	0.214	0.649	0.0094	0.49	1071	41.5	2895	111.9	4622	66.9	292	19.4
PL2_15	18.20	0.74	0.197	0.008	0.641	5.089	0.199	0.671	0.0092	0.23	1156	45.3	3000	122.0	4670	64.0	283	20.4
PL2_16	22.08	0.85	0.231	0.009	0.399	4.325	0.168	0.705	0.01	0.68	1341	52.2	3187	122.7	4741	67.2	270	24.2
PL2_17	19.40	0.80	0.211	0.009	0.626	4.751	0.196	0.670	0.011	0.42	1231	50.9	3062	126.3	4668	76.6	307	24.3
PL2_18	9.51	0.39	0.127	0.005	0.412	7.886	0.311	0.547	0.0095	0.56	770	30.3	2389	98.0	4372	76.0	307	16.0
PL2_19	22.45	0.91	0.234	0.009	0.352	4.274	0.170	0.693	0.014	0.47	1355	53.9	3203	129.8	4716	95.3	298	30.5
PL2_20	36.40	1.40	0.351	0.014	0.675	2.847	0.113	0.747	0.0097	0.26	1941	77.3	3677	141.4	4825	62.6	298	35.1
PL2_21	19.64	0.95	0.214	0.010	0.775	4.675	0.219	0.668	0.013	0.37	1250	58.4	3074	148.7	4663	90.8	316	28.0
PL2_22	16.89	0.73	0.186	0.008	0.942	5.388	0.226	0.659	0.011	-0.63	1097	46.1	2929	126.6	4644	77.5	285	21.8
PL2_23	13.72	0.53	0.159	0.006	0.249	6.277	0.244	0.632	0.012	0.58	953	37.1	2731	105.5	4583	87.0	278	19.8
PL2_24	17.19	0.68	0.189	0.007	0.510	5.283	0.207	0.656	0.01	0.47	1118	43.7	2945	116.5	4637	70.7	296	20.8
PL2_25	9.67	0.39	0.126	0.005	0.666	7.949	0.310	0.556	0.0086	0.24	764	29.8	2404	96.9	4398	68.0	295	15.0
PL2_26	18.04	0.71	0.196	0.008	0.492	5.110	0.201	0.668	0.012	0.43	1152	45.3	2992	117.8	4663	83.8	287	23.5
PL2_27	34.77	1.40	0.339	0.014	0.468	2.949	0.122	0.738	0.012	0.60	1882	77.7	3632	146.2	4807	78.2	315	38.9
PL2_28	42.09	1.70	0.397	0.016	0.603	2.516	0.101	0.766	0.013	0.27	2157	86.8	3821	154.3	4860	82.5	275	47.7
PL2_29	53.30	2.20	0.491	0.020	0.373	2.037	0.083	0.784	0.013	0.49	2574	104.9	4056	167.4	4893	81.1	268	58.8
PL2_30	2.77	0.12	0.066	0.003	0.404	15.060	0.658	0.300	0.0088	0.43	414	18.1	1347	58.4	3470	101.8	289	13.3
PL2_31	30.38	1.20	0.303	0.012	0.402	3.296	0.130	0.728	0.013	0.47	1708	67.6	3499	138.2	4787	85.5	304	36.8

PL2_32	12.10	0.49	0.149	0.006	0.497	6.716	0.275	0.591	0.012	0.52	895	36.7	2612	105.8	4486	91.1	309	19.7
PL2_33	14.23	0.58	0.164	0.006	0.372	6.086	0.233	0.628	0.011	0.24	981	37.6	2765	112.7	4574	80.1	293	19.5
PL2_34	47.64	2.00	0.457	0.019	0.648	2.189	0.091	0.770	0.013	0.46	2425	100.9	3944	165.6	4867	82.2	308	54.6
PL2_35	38.60	1.80	0.373	0.015	0.622	2.680	0.108	0.752	0.017	0.14	2044	82.2	3735	174.2	4833	109.3	304	54.8
PL2_36	47.20	1.90	0.445	0.018	0.506	2.249	0.091	0.773	0.014	0.42	2371	96.0	3935	158.4	4873	88.3	285	56.2
PL2_37	38.67	1.50	0.379	0.015	0.519	2.636	0.104	0.743	0.012	0.56	2073	82.0	3737	145.0	4816	77.8	341	43.0
PL2_38	2.23	0.09	0.061	0.002	0.218	16.447	0.649	0.265	0.0056	0.60	380	15.0	1190	47.0	3277	69.2	282	11.3
PL2_39	2.18	0.09	0.060	0.002	0.435	16.551	0.630	0.260	0.0035	0.27	378	14.4	1174	46.9	3247	43.7	282	10.8
PL2_40	20.21	0.81	0.218	0.009	0.254	4.593	0.179	0.677	0.014	0.54	1270	49.6	3101	124.3	4683	96.8	305	28.6
PL2_41	11.34	0.45	0.141	0.006	0.320	7.117	0.279	0.586	0.012	0.53	847	33.2	2552	101.3	4474	91.6	297	18.4
PL2_42	11.40	0.45	0.141	0.005	0.341	7.072	0.270	0.586	0.0096	0.39	853	32.6	2556	100.9	4472	73.3	299	16.6
PL2_43	24.10	1.00	0.249	0.011	0.644	4.016	0.177	0.708	0.013	0.37	1433	63.3	3272	135.8	4747	87.2	287	31.1
PL2_44	35.38	1.40	0.343	0.014	0.392	2.912	0.119	0.746	0.014	0.52	1903	77.6	3649	144.4	4822	90.5	294	43.7
PL2_45	27.36	1.10	0.276	0.011	0.469	3.619	0.144	0.724	0.011	0.36	1573	62.6	3396	136.6	4779	72.6	283	30.2
PL2_46	25.63	1.00	0.260	0.010	0.443	3.854	0.148	0.716	0.013	0.49	1487	57.3	3333	130.0	4763	86.5	282	31.6
PL2_47	22.34	0.93	0.230	0.009	0.639	4.348	0.176	0.702	0.011	0.39	1334	54.0	3199	133.2	4735	74.2	275	25.7
PL2_48	11.78	0.50	0.143	0.006	0.226	7.018	0.310	0.605	0.017	0.68	859	38.0	2587	109.8	4520	127.0	279	23.3
PL2_49	18.62	0.85	0.199	0.008	0.736	5.023	0.207	0.675	0.013	-0.11	1170	48.2	3022	138.0	4678	90.1	280	25.2
PL2_50	13.23	0.52	0.157	0.006	0.422	6.361	0.251	0.613	0.0099	0.47	941	37.1	2696	106.0	4540	73.3	299	18.2
PL2_51	26.00	1.90	0.262	0.018	0.962	3.817	0.262	0.719	0.013	-0.42	1500	103.1	3347	244.6	4769	86.2	278	35.5
PL2_52	19.40	1.30	0.209	0.012	0.944	4.789	0.275	0.669	0.014	-0.54	1222	70.3	3062	205.2	4666	97.6	306	30.3
PL2_53	13.29	0.56	0.156	0.006	0.593	6.431	0.265	0.623	0.011	0.39	932	38.3	2700	113.8	4563	80.6	283	19.0
PL2_54	25.61	1.00	0.261	0.011	0.613	3.836	0.162	0.709	0.012	0.55	1493	63.0	3332	130.1	4749	80.4	299	30.6

Table S2: Trace elements content in apatite from Pluskawka microgranite (PL 2)

No.	Trace elements content [ppm]																	Petrogenetic indices		
sample	Mn	Sr	Y	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Total REE	Eu/Eu*	Ce/Yb
PL2_1	1008	939	380	1256	3120	345	1293	180	29.37	117	12.62	67.3	12.43	33.9	4.62	29.1	4.4	6504.44	0.62	28.88
PL2_2	1021	1006	376	1360	3300	378	1300	184	28.74	119.2	12.55	66.9	11.91	32.51	4.22	26.4	3.79	6828.22	0.59	33.67
PL2_3	700	1495	214	1928	3870	407	1461	188	24.93	114.5	11	51.9	8.35	19.61	2.06	10.93	1.431	8098.81	0.52	95.39
PL2_4	686	1529	261	2190	4260	473	1749	222	34.87	132.8	12.68	61.4	9.9	23.05	2.638	14.36	1.847	9187.65	0.62	79.92
PL2_5	1005	1110	297	2452	4970	520	1887	232	33.3	141.3	14.29	69.5	11.45	26.55	3.11	17.1	2.195	10379.90	0.56	78.30
PL2_6	556	1094	414	2925	5980	622	2260	302	39.6	187.9	19.09	94.1	15.02	36	4.46	24.33	3.228	12512.23	0.51	66.21
PL2_7	709	1368	227	1898	3750	399	1486	190	29.63	116.1	11.1	52.2	8.4	19.04	2.148	11.96	1.547	7975.63	0.61	84.47
PL2_8	824	746	420	938	2600	281	1126	167	25.3	114.5	12.47	65.2	12.63	34.9	4.51	33.2	5.2	5419.71	0.56	21.10
PL2_9	795	656	358	889	2477	303	1157	171	25.5	116.8	12.19	63.2	11.18	30.42	4.058	26.02	4.132	5290.30	0.55	25.65
PL2_10	933	1290	393	2819	5890	638	2409	301	40.53	179.1	18.87	90.1	14.6	35.3	4.08	23	2.862	12465.14	0.53	68.99
PL2_11	1046	1011	315	2377	4860	521	1894	240	33.2	146.4	14.52	71.2	11.64	27.43	3.18	17.01	2.268	10219.15	0.54	76.97
PL2_12	1037	1132	335	2574	5230	556	2061	266	37.59	162.3	16.21	79.1	12.79	30.16	3.52	18.82	2.473	11049.96	0.55	74.86
PL2_13	833	1401	284	1819	3980	424	1616	217	41.7	131.2	13.36	68.1	11.06	26.46	3.231	18.37	2.489	8372.37	0.75	58.37
PL2_14	977	1610	279	2325	4740	528	1979	253	37.7	149	14.28	67.4	11.01	24.95	2.882	15.4	2.067	10149.39	0.59	82.92
PL2_15	1303	1276	344	2923	5870	608	2223	277	41.3	161	16.13	76.8	12.5	30.03	3.487	19.06	2.474	12263.48	0.59	82.97
PL2_16	1251	1272	327	2499	5060	542	2039	258	38.25	159	15.96	77.5	12.41	29.54	3.293	17.59	2.249	10753.39	0.57	77.50
PL2_17	1316	1241	336	2667	5780	587	2190	276	39.49	164.2	16.27	78.7	12.81	30.38	3.49	19.29	2.451	11867.48	0.56	80.72
PL2_18	1304	1288	452	2915	6110	651	2382	344	47.3	219.4	22.71	111.9	18.11	41.21	4.62	24.73	3.101	12894.78	0.52	66.56
PL2_19	452	3449	149	758	1717	200	799	119	26.88	74.2	7.25	34.61	5.47	12.45	1.432	7.38	0.961	3764.33	0.87	62.68
PL2_20	549	2195	369	2057	4190	489	1887	277	42.3	170.9	17.34	84.4	13.76	32.25	3.599	18.87	2.464	9285.48	0.59	59.82
PL2_21	684	2686	192	1238	2740	305	1206	169	35.6	97.9	9.59	43.1	6.69	15	1.747	9.73	1.289	5878.05	0.84	75.86
PL2_22	1075	1056	375	2812	5800	604	2233	280	38.7	167.9	17.02	83.3	13.49	32.67	3.861	20.85	2.71	12109.50	0.54	74.94
PL2_23	1070	1299	388	2864	5900	628	2299	290	38.81	175.6	17.9	85.9	13.86	33.32	3.835	21.4	2.782	12374.01	0.52	74.27
PL2_24	748	1412	276	2202	4390	446	1593	206	31.92	126.8	12.89	62.2	10.42	25.32	2.96	16.24	2.312	9127.56	0.60	72.82
PL2_25	822	1472	392	2540	4820	504	1727	231	37.9	148	16.41	82.9	14.7	35.52	4.21	23.57	3.434	10188.84	0.62	55.09
PL2_26	1034	964	375	2850	5780	611	2219	278	39.65	168.7	17.32	85	13.95	33.4	3.82	20.71	2.75	12123.00	0.56	75.19
PL2_27	1117	994	265	2190	4410	462	1648	207	27.69	125.9	12.41	61.4	9.71	22.82	2.691	14.47	1.841	9195.43	0.52	82.10
PL2_28	1061	992	257	2161	4296	441	1592	193	27.85	118.4	12.02	57.6	9.4	22.03	2.532	14.25	1.78	8949.06	0.56	81.22
PL2_29	698	1500	180	1633	3400	357	1285	158	24.66	93	8.7	41.2	6.54	15.2	1.691	9.17	1.191	7034.75	0.62	99.89

PL2_30	1098	1068	310	2270	4750	557	1840	237	37.9	131.7	14.56	69.6	11.06	26.6	3.39	18.5	2.62	9969.93	0.65	69.17
PL2_31	1215	1140	289	2192	4550	467	1722	222	31.42	132.5	13.59	66.6	10.72	25.38	2.974	16.56	2.163	9454.71	0.56	74.02
PL2_32	1033	1378	369	3110	6330	677	2352	295	41.8	164.6	16.76	78.7	12.74	31.2	3.69	21.12	2.81	13137.42	0.58	80.74
PL2_33	1445	861	376	2697	5580	612	2265	291	36.3	170.3	17.2	82.8	13.63	33.06	3.8	21.05	2.833	11825.87	0.50	71.41
PL2_34	981	1118	245	2103	4100	423	1523	188	27.03	110.6	11	53.5	8.73	20.86	2.372	12.97	1.711	8585.67	0.57	85.16
PL2_35	1028	1040	262	1827	3720	392	1468	189	27.55	119	12.01	60.1	9.87	22.8	2.585	13.99	1.685	7865.89	0.56	71.63
PL2_36	1070	1242	259	1930	3969	412	1559	193	25.19	120.3	12.07	56.2	9.4	21.77	2.502	13.49	1.692	8325.31	0.50	79.26
PL2_37	1027	1286	278	2188	4530	458	1677	205	28.54	124.9	12.7	62.2	10.12	23.76	2.664	14.5	1.864	9339.05	0.54	84.16
PL2_38	381	875	520	2920	6260	665	2550	353	33.7	231	23.66	113.5	18.22	42.3	5.04	27	3.41	13246.23	0.36	62.46
PL2_39	381	868	501	2895	6300	669	2465	352	33.6	223.2	23.12	112.4	18.18	42	4.91	26.99	3.396	13169.20	0.36	62.88
PL2_40	1260	1136	301	2466	4950	515	1882	235	33.8	137	13.84	67.8	11.22	26.51	3.13	17.12	2.225	10360.55	0.57	77.89
PL2_41	1148	1152	385	2404	5150	579	2088	287	40.3	171.7	17.27	85.9	13.96	32.92	3.884	21.68	2.864	10898.78	0.55	63.99
PL2_42	1091	1167	391	3089	6270	656	2432	301	43.02	175.7	17.99	89.1	14.48	34.73	4.05	21.85	2.802	13151.22	0.57	77.31
PL2_43	536	2660	268	1330	2840	339	1406	202	40.1	128.9	13.07	61	9.86	22.28	2.493	13.35	1.722	6409.98	0.75	57.31
PL2_44	855	1539	245	1976	4120	452	1677	213	26.87	127.9	12.39	59.6	9.33	21.5	2.459	13	1.632	8712.18	0.49	85.38
PL2_45	860	1451	275	2224	4640	494	1815	233	31.27	141	13.91	64.4	10.34	23.57	2.727	14.44	1.866	9709.92	0.52	86.57
PL2_46	1003	1341	291	2409	4970	503	1826	228	31.06	134.2	13.42	64.1	10.66	25.34	2.991	16.53	2.095	10236.70	0.54	81.00
PL2_47	1029	1345	292	2399	4900	505	1834	232	32.07	138.8	13.78	67.9	10.8	26.08	3.023	15.98	2.082	10180.12	0.54	82.61
PL2_48	1139	1042	405	704	1314	139	569	125	54.6	108.3	13.68	76.3	14.56	37.25	4.61	27.96	4.28	3192.44	1.43	12.66
PL2_49	987	1383	305	2290	4730	508	1880	242	33.26	145.1	14.71	69.6	11.38	27.18	3.146	16.83	2.236	9973.24	0.54	75.71
PL2_50	1317	1219	1041	2143	4640	536	2090	385	23.57	303.5	38.5	220.9	39.21	95.8	11.2	56.1	6.25	10589.13	0.21	22.28
PL2_51	1070	1076	346	2617	5310	545	1994	249	36.5	149.9	15.29	74.8	12.48	29.5	3.37	18.66	2.391	11057.39	0.57	76.66
PL2_52	1067	1017	344	2682	5460	562	2034	255	35.8	153.7	15.46	74.8	12.46	29.31	3.44	18.85	2.499	11339.62	0.55	78.03
PL2_53	964	1150	294	2475	4920	508	1823	229	32.65	136	13.59	66	10.85	25.56	2.969	16.09	2.12	10260.73	0.56	82.38
PL2_54	1022	1360	273	2211	4550	471	1751	216	30.34	128.9	12.91	64.5	10.49	24.91	2.796	15.29	2.022	9490.96	0.55	80.17