

Supplemental data 1. U-Th-Pb isotopic data of two natural zircons (GJ-1 and Plešovice) obtained by Femtosecond LA-ICP-MS technique shown in fig.3

Sample name	Isotope ratios						Age (Ma)						Elemental concentration ($\mu\text{g/g}$) and ratio												
	$^{207}\text{Pb}/^{235}\text{U}$	2σ	$^{206}\text{Pb}/^{238}\text{U}$	2σ	$^{208}\text{Pb}/^{232}\text{Th}$	2σ	$^{207}\text{Pb}/^{206}\text{Pb}$	2σ	$^{235}\text{U}/^{207}\text{Pb}$	2σ	$^{238}\text{U}/^{206}\text{Pb}$	2σ	$^{232}\text{Th}/^{208}\text{Pb}$	2σ	$^{207}\text{Pb}/^{206}\text{Pb}$	2σ	U	2σ	Th	2σ	Pb	2σ	Th/U	2σ	
Single Collector-ICP-MS 20shots data																									
GJ1																									
GJ1-1	0.7733	0.0556	0.0936	0.0059	0.0325	0.0018	0.0599	0.0020	581.6	32.4	577.0	35.1	646.9	34.7	599.7	75.5	428.55	86.89	24.65	10.00	36.75	7.55	0.06	0.00	
GJ1-2	0.8326	0.0599	0.0981	0.0062	0.0344	0.0019	0.0615	0.0021	615.1	33.8	603.4	36.6	683.3	36.6	658.1	74.7	396.47	80.38	23.32	9.46	35.71	7.34	0.06	0.00	
GJ1-3	0.7801	0.0561	0.0960	0.0061	0.0323	0.0018	0.0590	0.0020	585.6	32.5	590.6	35.9	642.3	34.5	566.0	75.9	403.53	81.82	22.74	9.22	35.39	7.27	0.06	0.00	
GJ1-4	0.7898	0.0568	0.0944	0.0060	0.0350	0.0019	0.0607	0.0021	591.0	32.8	581.2	35.3	694.6	37.2	629.1	75.1	416.36	84.42	23.49	9.52	36.03	7.40	0.06	0.00	
GJ1-5	0.8573	0.0617	0.0977	0.0062	0.0373	0.0020	0.0636	0.0022	628.7	34.3	601.1	36.5	740.5	39.6	729.0	73.8	402.89	81.69	23.82	9.66	36.30	7.46	0.06	0.00	
GJ1-6	0.8163	0.0587	0.0972	0.0062	0.0364	0.0020	0.0609	0.0021	606.0	33.4	598.0	36.3	722.7	38.7	635.8	75.0	413.80	83.90	24.16	9.79	36.93	7.59	0.06	0.00	
GJ1-7	0.8339	0.0600	0.0988	0.0063	0.0396	0.0022	0.0612	0.0021	615.8	33.8	607.3	36.9	785.4	42.0	647.1	74.8	415.72	84.29	23.66	9.59	37.76	7.76	0.06	0.00	
GJ1-8	0.8383	0.0603	0.0991	0.0063	0.0412	0.0022	0.0613	0.0021	618.2	33.9	609.3	37.0	815.9	43.6	650.9	74.8	402.89	81.69	22.99	9.32	36.75	7.55	0.06	0.00	
GJ1-9	0.8698	0.0626	0.0983	0.0062	0.0377	0.0021	0.0642	0.0022	635.4	34.6	604.3	36.7	748.0	40.0	747.9	73.6	407.38	82.60	23.32	9.46	36.88	7.58	0.06	0.00	
GJ1-10	0.8058	0.0580	0.0968	0.0061	0.0391	0.0021	0.0604	0.0021	600.1	33.1	595.6	36.2	776.0	41.5	616.9	75.2	366.96	74.40	20.24	8.21	32.64	6.71	0.06	0.00	
GJ1-11	0.8314	0.0598	0.0982	0.0062	0.0349	0.0019	0.0614	0.0021	614.4	33.7	603.8	36.6	694.1	37.2	653.6	74.8	346.43	70.24	19.32	7.84	31.19	6.41	0.06	0.00	
GJ1-12	0.8160	0.0587	0.0970	0.0062	0.0341	0.0019	0.0610	0.0021	605.8	33.4	596.9	36.2	678.0	36.4	639.1	75.0	395.19	80.12	22.66	9.19	35.17	7.23	0.06	0.00	
GJ1-13	0.8607	0.0619	0.0997	0.0063	0.0367	0.0020	0.0626	0.0021	630.5	34.4	612.8	37.2	727.6	39.0	694.5	74.3	393.91	79.86	22.41	9.09	36.11	7.42	0.06	0.00	
GJ1-14	0.8275	0.0596	0.0985	0.0063	0.0408	0.0022	0.0609	0.0021	612.2	33.6	605.9	36.8	808.6	43.2	635.8	75.0	388.13	78.69	22.49	9.12	35.21	7.23	0.06	0.00	
GJ1-15	0.8190	0.0589	0.0968	0.0061	0.0387	0.0021	0.0613	0.0021	607.5	33.4	595.8	36.2	766.9	41.0	651.0	74.8	420.21	85.20	23.99	9.73	37.41	7.68	0.06	0.00	
Plešovice																									
Plešovice-1	0.3949	0.0228	0.0526	0.0021	0.0190	0.0013	0.0544	0.0022	338.0	16.7	330.7	13.0	379.9	26.8	388.3	95.2	921.41	94.03	90.93	18.56	45.71	5.01	0.10	0.00	
Plešovice-2	0.4034	0.0232	0.0536	0.0022	0.0176	0.0013	0.0546	0.0022	344.1	17.0	336.3	13.2	353.4	24.9	397.0	95.0	757.03	77.25	69.02	14.09	38.04	4.17	0.09	0.00	
Plešovice-3	0.3987	0.0230	0.0531	0.0021	0.0173	0.0012	0.0545	0.0022	340.7	16.8	333.4	13.1	347.3	24.5	390.9	95.1	886.80	90.49	84.91	17.33	44.21	4.85	0.10	0.00	
Plešovice-4	0.4221	0.0243	0.0531	0.0021	0.0172	0.0012	0.0577	0.0024	357.6	17.5	333.3	13.1	345.1	24.3	518.4	93.0	882.48	90.05	85.45	17.44	44.11	4.84	0.10	0.00	
Plešovice-5	0.4018	0.0232	0.0537	0.0022	0.0170	0.0012	0.0543	0.0022	342.9	16.9	337.2	13.3	340.0	24.0	381.8	95.3	852.20	86.96	81.62	16.66	42.95	4.71	0.10	0.00	
Plešovice-6	0.4008	0.0231	0.0550	0.0022	0.0173	0.0012	0.0529	0.0022	342.2	16.9	345.0	13.6	346.2	24.4	323.4	96.3	839.22	85.64	80.52	16.43	43.22	4.74	0.10	0.00	
Plešovice-7	0.4115	0.0237	0.0545	0.0022	0.0181	0.0013	0.0548	0.0023	350.0	17.2	342.1	13.4	361.9	25.5	402.2	94.9	873.83	89.17	81.07	16.55	44.72	4.90	0.09	0.00	
Plešovice-8	0.4159	0.0240	0.0558	0.0023	0.0180	0.0013	0.0541	0.0022	353.1	17.3	349.7	13.7	360.3	25.4	375.6	95.4	852.20	86.96	82.17	16.77	44.59	4.89	0.10	0.00	
Plešovice-9	0.3966	0.0229	0.0549	0.0022	0.0181	0.0013	0.0524	0.0022	339.2	16.7	344.7	13.5	363.0	25.6	301.4	96.7	748.38	76.37	70.12	14.31	38.51	4.22	0.09	0.00	
Plešovice-10	0.3965	0.0229	0.0541	0.0022	0.0184	0.0013	0.0532	0.0022	339.1	16.7	339.5	13.3	367.8	25.9	336.5	96.1	726.75	74.16	66.28	13.53	36.87	4.04	0.09	0.00	
Plešovice-11	0.4072	0.0235	0.0532	0.0021	0.0162	0.0012	0.0555	0.0023	346.9	17.1	334.1	13.1	325.1	23.0	433.3	94.4	722.42	73.72	70.12	14.31	36.09	3.96	0.10	0.00	
Plešovice-12	0.4244	0.0245	0.0558	0.0023	0.0179	0.0013	0.0552	0.0023	359.2	17.6	349.7	13.7	359.0	25.3	420.9	94.6	709.44	72.40	67.93	13.86	37.16	4.07	0.10	0.00	
Plešovice-13	0.3842	0.0221	0.0543	0.0022	0.0189	0.0013	0.0514	0.0021	330.1	16.4	340.6	13.4	378.9	26.7	256.6	97.5	826.24	84.31	76.69	15.65	42.02	4.61	0.09	0.00	
Plešovice-14	0.3914	0.0226	0.0548	0.0022	0.0180	0.0013	0.0518	0.0021	335.4	16.6	343.7	13.5	360.7	25.4	278.4	97.1	817.59	83.43	76.14	15.54	41.92	4.60	0.09	0.00	
Plešovice-15	0.3959	0.0228	0.0551	0.0022	0.0184	0.0013	0.0521	0.0021	338.7	16.7	346.0	13.6	367.9	25.9	289.0	96.9	497.48	50.77	46.62	9.51	25.70	2.82	0.09	0.00	
Multi Collector-ICP-MS 20shots data																									
GJ1																									
GJ1-1	0.8392	0.0291	0.1005	0.0013	0.0313	0.0069	0.0606	0.0020	618.7	16.2	617.2	7.5	622.3	136.0	624.3	71.1	494.58	37.80	30.91	4.73	49.73	3.46	0.06	0.01	
GJ1-2	0.8138	0.0282	0.1003	0.0013	0.0288	0.0064	0.0588	0.0019	604.6	15.9	616.3	7.4	574.3	125.9	560.9	71.9	508.19	38.84	30.91	4.73	50.82	3.53	0.06	0.01	
GJ1-3	0.8477	0.0290	0.0995	0.0013	0.0291	0.0065	0.0618	0.0020	623.4	16.1	611.6	7.4	580.1	127.1	666.3	69.7	505.78	38.66	30.91	4.73	50.32	3.50	0.06	0.01	
GJ1-4	0.8494	0.0292	0.0997	0.0013	0.0289	0.0064	0.0618	0.0020	624.3	16.2	612.8	7.4	575.2	126.1	666.4	70.0	499.38	38.17	30.91	4.73	49.79	3.46	0.06	0.01	
GJ1-5	0.8327	0.0290	0.0995	0.0013	0.0305	0.0067	0.0607	0.0020	615.1	16.2	611.4	7.4	606.6	132.7	628.7	71.3	492.98	37.68	30.91	4.73	49.04	3.41	0.06	0.01	
GJ1-6	0.8291	0.0288	0.0991	0.0013	0.0298	0.0066	0.0607	0.0020	613.1	16.1	609.3	7.4	594.2	130.1	627.2	71.3	496.98	37.99	30.91	4.73	49.23	3.42	0.06	0.01	
GJ1-7	0.8247	0.0287	0.0985	0.0013	0.0281	0.0062	0.0607	0.0020	610.6	16.1	605.8	7.4	559.4	122.8	628.7	71.3	497.78	38.05	30.91	4.73	48.98	3.41	0.06	0.01	
GJ1-8	0.8242	0.0286	0.1001	0.0013	0.0298	0.0066	0.0597	0.0019	610.4	16.0	615.0	7.4	593.4	129.9	593.2	71.5	501.78	38.35	30.91	4.73	50.20	3.49	0.06	0.01	
GJ1-9	0.8133	0.0286	0.0984	0.0013	0.0216	0.0048	0.0600	0.0020	604.3	16.1	604.9	7.4	432.3	95.0	602.0	72.5	489.78	37.43	41.21	6.30	48.12	3.35	0.08	0.01	
GJ1-10	0.8314	0.0292	0.0997	0.0013	0.0288	0.0064	0.0605	0.0020	614.4	16.3	612.9	7.5	574.3	125.9	619.9	72.2	480.98	36.76	30.91	4.73	47.94	3.33	0.06	0.01	
GJ1-11	0.8632	0.0297	0.0994	0.0013	0.0285	0.0063	0.0630	0.0020	631.9	16.3	610.8	7.4	567.7	124.5	708.2	69.5	491.38	37.56	30.91	4.73	48.8				