

Supplemental File 2. Additional information on U/Pb methodology and U-Pb analytical data

U/Pb LA-ICP-MS dating

U/Pb ages on individual zircons were obtained by laser ablation–inductively coupled plasma–mass spectrometry (LA-ICP-MS) at Laboratorio de Estudios isotópicos, Centro de Geociencias, Universidad Nacional Autónoma de México (UNAM), according to the procedures described in Solari *et al.* (2010). The Pleišovice reference zircon (*ca.* 337 Ma; Sláma *et al.*, 2008) was used in combination with NIST 610 standard glass to correct for instrumental drift and down-hole fractionation and to recalculate elemental concentrations, using the U-Pb.Age software (Solari and Tanner, 2011). Precision on the measured $^{207}\text{Pb}/^{206}\text{Pb}$, $^{206}\text{Pb}/^{238}\text{U}$, and $^{208}\text{Pb}/^{232}\text{Th}$ ratios was typically ~0.8%, 0.7%, and 0.9% 1σ relative standard deviation, respectively. Replicate analyses of the Pleišovice zircon indicate an external reproducibility of 0.75%, 0.6%, and 1.6% on the measured $^{207}\text{Pb}/^{206}\text{Pb}$, $^{206}\text{Pb}/^{238}\text{U}$, and $^{208}\text{Pb}/^{232}\text{Th}$ ratios, respectively. These errors are quadratically included in the quoted uncertainties for individual analyses of the analyzed zircons. Because its signal is swamped by the ^{204}Hg contained in the carrier gases, ^{204}Pb was not analyzed during this study. Common Pb correction was thus performed employing the algebraic method of Andersen (2002). A filter was then applied to ensure the quality of selected analyses, which consisted in the evaluation of the concordance. For grains with ages younger than 1000 Ma, the analysis was considered concordant if the $^{206}\text{Pb}/^{238}\text{U}$ and $^{207}\text{Pb}/^{235}\text{U}$ ages differed by <10%. The concordia and age distribution plots, as well as age error calculations, were performed using Isoplot v. 3.70 (Ludwig, 2004). The $^{206}\text{Pb}/^{238}\text{U}$ ages are preferred for grains younger than 1000 Ma because of the uncertainty involved in determining the ^{207}Pb isotope in young crystals. The U-Pb analytical data are in the following table.

References

- Andersen, T., 2002, Correction of common lead in U–Pb analyses that do not report ^{204}Pb . *Chemical Geology*, 192(1), 59-79.
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- Sláma, J., Košler, J., Condon, D., Crowley, J., Gerdes, A., Hanchar, J., Horstwood, M., Morris, G., Nasdala, L., Norberg, N., Schaltegger, U., Schoene, B., Tubrett, M., Whitehouse, M., 2008, A new natural reference material for U–Pb and Hf isotopic microanalysis: *Chemical Geology*, 249(1), 1-35.
- Solari, L. A., Gómez-Tuena, A., Bernal, J.P., Pérez-Arvizu, O., Tanner, M., 2010, U/Pb zircon geochronology with an integrated LA-ICP-MS Microanalytical Workstation: Achievements in precision and accuracy: *Geostandards and Geoanalytical Research*, 34(1), 5-18.

U-Pb analytical data

Spot name	U (ppm)	Th (ppm)	Th/U	²⁰⁷ Pb/ ²⁰⁶ Pb	CORRECTED RATIOS				CORRECTED AGES (Ma)				Best age (Ma)	±1s				
					²⁰⁷ Pb/ ²³⁵ U	±1s	²⁰⁶ Pb/ ²³⁸ U	±1s	²⁰⁶ Pb/ ²³⁸ U	±1s	²⁰⁷ Pb/ ²³⁵ U	±1s						
Sample: Cajón 06 (21.42845°N, 104.57444°W)																		
Zircon_07_015	839	668	0.75	0.05634	0.00282	0.02609	0.00133	0.00339	0.00003	0.19	21.8	0.2	26	1	466	109	22	0.2
Zircon_11_020	237	172	0.69	0.08838	0.02339	0.04214	0.01195	0.00346	0.00012	0.31	22.3	0.8	42	12	1391	580	22	0.8
Zircon_04_011	238	126	0.50	0.06113	0.00623	0.02964	0.00321	0.00352	0.00006	0.24	22.6	0.4	30	3	644	222	23	0.4
Zircon_05_012	254	205	0.76	0.07583	0.00463	0.03651	0.00230	0.00352	0.00006	0.25	22.7	0.4	36	2	1091	121	23	0.4
Zircon_09_017	1097	410	0.35	0.05240	0.00168	0.02542	0.00086	0.00353	0.00004	0.32	22.7	0.3	25.5	0.9	303	71	23	0.3
Zircon_22_033	281	226	0.76	0.07259	0.00850	0.03541	0.00443	0.00354	0.00007	0.19	22.8	0.4	35	4	1003	225	23	0.4
Zircon_31_044	193	149	0.73	0.06871	0.01403	0.03377	0.00751	0.00356	0.00010	0.37	22.9	0.6	34	7	890	393	23	0.6
Zircon_03_010	269	143	0.50	0.07560	0.00705	0.03755	0.00373	0.00360	0.00006	0.22	23.2	0.4	37	4	1084	189	23	0.4
Zircon_18_028	597	291	0.46	0.06143	0.00640	0.03091	0.00332	0.00365	0.00004	0.13	23.5	0.3	31	3	654	210	24	0.3
Zircon_02_009	259	187	0.68	0.07597	0.00952	0.03849	0.00516	0.00367	0.00007	0.25	23.6	0.4	38	5	1094	260	24	0.4
Zircon_12_021	722	235	0.31	0.05426	0.00327	0.02749	0.00174	0.00367	0.00004	0.21	23.6	0.3	28	2	382	133	24	0.3
Zircon_20_030	270	200	0.70	0.07408	0.00619	0.03754	0.00345	0.00367	0.00006	0.26	23.6	0.4	37	3	1044	158	24	0.4
Zircon_27_039	326	185	0.54	0.05886	0.00658	0.02976	0.00362	0.00367	0.00007	0.26	23.6	0.5	30	4	562	228	24	0.5
Zircon_28_040	3627	1832	0.48	0.05053	0.00126	0.02561	0.00066	0.00369	0.00002	0.26	23.7	0.1	25.7	0.7	219	54	24	0.1
Zircon_23_034	177	128	0.69	0.09109	0.01505	0.04666	0.00829	0.00372	0.00009	0.27	23.9	0.5	46	8	1449	305	24	0.5
Zircon_32_045	216	129	0.56	0.06191	0.00800	0.03201	0.00451	0.00375	0.00008	0.28	24.1	0.5	32	4	671	261	24	0.5
Zircon_01_Cajon6_008	264	153	0.55	0.06309	0.00901	0.03316	0.00509	0.00381	0.00008	0.26	24.5	0.5	33	5	711	317	25	0.5
Zircon_08_016	171	142	0.78	0.08025	0.01161	0.04213	0.00660	0.00381	0.00009	0.22	24.5	0.6	42	6	1203	301	25	0.6
Zircon_15_024	130	70	0.51	0.10065	0.00891	0.0529	0.00522	0.00381	0.00009	0.33	24.5	0.6	52	5	1636	165	25	0.6
Zircon_29_041	133	84	0.59	0.08887	0.01416	0.04682	0.00826	0.00382	0.00012	0.42	24.6	0.8	46	8	1401	295	25	0.8
Zircon_19_029	202	199	0.93	0.08625	0.00664	0.04557	0.00361	0.00384	0.00007	0.24	24.7	0.4	45	4	1344	139	25	0.4
Zircon_24_035	136	91	0.64	0.10178	0.01796	0.05377	0.01002	0.00383	0.00011	0.20	24.7	0.7	53	10	1657	318	25	0.7
Zircon_17_027	306	122	0.38	0.06214	0.00405	0.03309	0.00238	0.00386	0.00006	0.27	24.8	0.4	33	2	679	130	25	0.4
Zircon_25_036	190	128	0.64	0.06559	0.01335	0.03482	0.00760	0.00385	0.00010	0.33	24.8	0.6	35	7	793	391	25	0.6
Zircon_06_014	1765	1303	0.70	0.04632	0.00126	0.02488	0.00076	0.00389	0.00003	0.21	25.1	0.2	24.9	0.8	14	51	25	0.2
Zircon_16_026	616	330	0.51	0.05258	0.00634	0.02836	0.00370	0.00391	0.00008	0.31	25.2	0.5	28	4	311	260	25	0.5
Zircon_30_042	1466	1060	0.68	0.04963	0.00144	0.02687	0.00080	0.00395	0.00003	0.23	25.4	0.2	26.9	0.8	178	63	25	0.2
Zircon_14_023	154	78	0.48	0.09316	0.00680	0.04968	0.00382	0.00397	0.00010	0.31	25.5	0.6	49	4	1491	138	26	0.6
Zircon_34_047	93	48	0.49	0.07886	0.01039	0.04458	0.00665	0.00410	0.00014	0.35	26.4	0.9	44	6	1169	248	26	0.9
Zircon_10_018	154	98	0.60	0.08721	0.00524	0.06361	0.00431	0.00529	0.00010	0.32	34.0	0.7	63	4	1365	114	34	0.7