



Appendix 1. Cathodoluminescence images of concordant zircon grains from samples 17112505 (a-d), OS2-30 (e-i), and 17112502 (j-m). Scale bars are 20 μm . Circles show the locations of analytical spots. Ages of detrital zircons ≤ 1200 Ma and > 1200 Ma are $^{238}\text{U}-^{206}\text{Pb}$ and $^{207}\text{Pb}/^{206}\text{Pb}$ ages, respectively, in Ma. Age uncertainties are given at the 1σ level.

Appendix 2-1

Analytical operating conditions for LA-ICPMS U-Pb isotopic dating.

For samples 17112505 & 17112502**LA part**

Model	NWR213 frequency quadrupled Nd-YAG laser (Electro Scientific Industries, USA)
Laser wave length	213 nm
Energy density	11.7 J/cm ²
Repetition rate	10 Hz
Pre-ablation time	8 s
Ablation time	10 s
Spot size	25 μm
Carrier gas	He
Carrier gas flow rate	1.0 L/min

ICP-MS part

Model	Agilent 7700x (Agilent Technologies, USA)
Forward power	1400 W
Detector mode	Pulse counting
Scanning mode	Peak jump
Monitor isotopes	²⁰² Hg, ²⁰⁴ Pb, ²⁰⁶ Pb, ²⁰⁷ Pb, ²⁰⁸ Pb, ²³² Th, ²³⁸ U
Carrier gas	Ar
Carrier gas flow rate	0.9-1.1 L/min

Standard materials

Standard glass	NIST SRM 610 (²⁰⁶ Pb/ ²³⁸ U = 0.2236; Horn & von Blanckenburg, 2007)
Standard zircon 1	91500 zircon (²³⁸ U- ²⁰⁶ Pb age = 1062.4 ± 0.4 Ma; Wiedenbeck et al., 1995)
Standard zircon 2	Plešovice zircon (²³⁸ U- ²⁰⁶ Pb age = 337.13 ± 0.37 Ma; Sláma et al., 2008)

Appendix 2-2**For sample OS2-30****LA part**

Model	CARBIDE (Light Conversion, Lithuania)
Laser type	Femtosecond laser
Laser wave length	257 nm
Energy density	1.6 J/cm ²
Repetition rate	3 Hz
Ablation time	15 s
Spot size	10 µm
Carrier gas	He
Carrier gas flow rate	0.60 L/min

ICP-MS part

Model	New Plasma II (Nu Instruments, UK)
ICP-MS type	Multi-collector, double focussing magnetic sector
Forward power	1300 W
Data acquisition protocol	Time-resolved analysis
Data acquisition	~24 s (~12 s gas blank, ~12 s ablation)
Monitor isotopes	²⁰² Hg, ²⁰⁴ (Hg+Pb), ²⁰⁶ Pb, ²⁰⁷ Pb, ²⁰⁸ Pb, ²³² Th, ²³⁸ U
Make-up gas	Ar
Make-up gas flow rate	0.90 L/min

Standard materials

Standard zircon 1	91500 zircon (²³⁸ U- ²⁰⁶ Pb age = 1062.4 ± 0.4 Ma; Wiedenbeck et al., 1995)
Standard zircon 2	Plešovice zircon (²³⁸ U- ²⁰⁶ Pb age = 337.13 ± 0.37 Ma; Sláma et al., 2008)
Standard zircon 3	OD-3 zircon (²³⁸ U- ²⁰⁶ Pb age = 33.0 ± 0.1 Ma; Iwano et al., 2013)

Appendix 3-1 LA-ICP-MS U-Pb isotopic data. Discordant data are shaded gray.

No.	Isotopic ratios			Age (Ma)			Th/U	CL image
	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{238}\text{U}-^{206}\text{Pb}$	$^{235}\text{U}-^{207}\text{Pb}$	$^{207}\text{Pb}/^{206}\text{Pb}$		
Sample 17112505								
17112505-001	0.26370 ± 0.00300	4.1124 ± 0.0713	0.1131 ± 0.0015	1508.7 ± 17.1	1656.7 ± 28.7	1850 ± 24	0.13	
17112505-002	0.03654 ± 0.00059	0.2608 ± 0.0148	0.0518 ± 0.0028	231.3 ± 3.7	235.3 ± 13.4		0.76	
17112505-003	0.03063 ± 0.00073	0.2296 ± 0.0221	0.0544 ± 0.0051	194.5 ± 4.6	209.9 ± 20.2		0.91	
17112505-004	0.24557 ± 0.00284	4.0697 ± 0.0743	0.1202 ± 0.0017	1415.6 ± 16.4	1648.2 ± 30.1	1960 ± 28	0.11	
17112505-005	0.03560 ± 0.00059	0.2596 ± 0.0154	0.0529 ± 0.0030	225.5 ± 3.8	234.3 ± 13.9		0.82	
17112505-006	0.01851 ± 0.00038	0.1192 ± 0.0101	0.0467 ± 0.0039	118.2 ± 2.4	114.4 ± 9.7		0.36	
17112505-007	0.31467 ± 0.00365	4.9501 ± 0.0914	0.1141 ± 0.0016	1763.6 ± 20.4	1810.8 ± 33.4	1866 ± 27	0.45	
17112505-008	0.28015 ± 0.00322	4.3513 ± 0.0689	0.1126 ± 0.0012	1592.1 ± 18.3	1703.1 ± 27.0	1843 ± 20	0.17	Appendix 1d
17112505-009	0.02895 ± 0.00052	0.1973 ± 0.0146	0.0494 ± 0.0035	184.0 ± 3.3	182.8 ± 13.5		0.74	Appendix 1c
17112505-010	0.01712 ± 0.00030	0.1212 ± 0.0085	0.0513 ± 0.0035	109.4 ± 1.9	116.2 ± 8.2		0.45	
17112505-011	0.02892 ± 0.00055	0.1970 ± 0.0159	0.0494 ± 0.0039	183.8 ± 3.5	182.6 ± 14.7		0.50	
17112505-012	0.21299 ± 0.00213	3.4796 ± 0.0630	0.1185 ± 0.0018	1244.7 ± 12.4	1522.5 ± 27.6	1934 ± 29	0.04	
17112505-013	0.25150 ± 0.00255	3.8724 ± 0.0732	0.1117 ± 0.0018	1446.2 ± 14.6	1607.9 ± 30.4	1827 ± 29	0.40	
17112505-014	0.37734 ± 0.00363	8.6586 ± 0.1369	0.1664 ± 0.0021	2063.8 ± 19.9	2302.6 ± 36.4	2522 ± 32	0.34	
17112505-015	0.02552 ± 0.00034	0.2086 ± 0.0090	0.0593 ± 0.0024	162.5 ± 2.1	192.4 ± 8.3		0.32	
17112505-016	0.04394 ± 0.00066	0.3141 ± 0.0151	0.0518 ± 0.0024	277.2 ± 4.1	277.4 ± 13.4		0.39	
17112505-017	0.02878 ± 0.00039	0.1885 ± 0.0076	0.0475 ± 0.0018	182.9 ± 2.5	175.3 ± 7.1		0.44	
17112505-018	0.02025 ± 0.00061	0.1439 ± 0.0200	0.0516 ± 0.0070	129.2 ± 3.9	136.5 ± 19.0		0.76	
17112505-019	0.02804 ± 0.00040	0.2069 ± 0.0090	0.0535 ± 0.0022	178.3 ± 2.6	191.0 ± 8.3		0.30	
17112505-020	0.03169 ± 0.00061	0.2553 ± 0.0183	0.0584 ± 0.0040	201.1 ± 3.9	230.8 ± 16.5		0.59	
17112505-021	0.03195 ± 0.00066	0.2152 ± 0.0185	0.0488 ± 0.0041	202.7 ± 4.2	197.9 ± 17.0		0.44	
17112505-022	0.26111 ± 0.00306	4.0294 ± 0.0705	0.1119 ± 0.0015	1495.5 ± 17.5	1640.1 ± 28.7	1831 ± 24	0.38	
17112505-023	0.01651 ± 0.00020	0.1147 ± 0.0061	0.0504 ± 0.0026	105.5 ± 1.3	110.2 ± 5.9		0.67	Appendix 1a
17112505-024	0.34194 ± 0.00248	5.3765 ± 0.1056	0.1140 ± 0.0021	1896.0 ± 13.7	1881.1 ± 36.9	1865 ± 34	0.34	
17112505-025	0.25744 ± 0.00189	3.8896 ± 0.0791	0.1096 ± 0.0021	1476.8 ± 10.8	1611.5 ± 32.8	1793 ± 34	0.29	
17112505-026	0.33575 ± 0.00191	5.2730 ± 0.0700	0.1139 ± 0.0014	1866.2 ± 10.6	1864.4 ± 24.8	1863 ± 22	0.31	
17112505-027	0.31747 ± 0.00181	5.0146 ± 0.0668	0.1146 ± 0.0014	1777.4 ± 10.1	1821.7 ± 24.3	1873 ± 23	0.18	
17112505-028	0.02909 ± 0.00064	0.2056 ± 0.0207	0.0513 ± 0.0050	184.9 ± 4.1	189.9 ± 19.1		0.83	
17112505-029	0.03455 ± 0.00054	0.2475 ± 0.0174	0.0520 ± 0.0036	219.0 ± 3.5	224.6 ± 15.7		0.74	
17112505-030	0.02943 ± 0.00032	0.2045 ± 0.0092	0.0504 ± 0.0022	187.0 ± 2.0	188.9 ± 8.5		0.69	
17112505-031	0.17947 ± 0.00160	2.6258 ± 0.0677	0.1061 ± 0.0026	1064.1 ± 9.5	1307.9 ± 33.7		0.31	
17112505-032	0.32230 ± 0.00197	5.4589 ± 0.0718	0.1228 ± 0.0014	1801.0 ± 11.0	1894.1 ± 24.9	1998 ± 23	0.08	
17112505-033	0.02984 ± 0.00038	0.2232 ± 0.0119	0.0543 ± 0.0028	189.5 ± 2.4	204.5 ± 10.9		0.38	
17112505-034	0.33740 ± 0.00212	5.2828 ± 0.0750	0.1136 ± 0.0014	1874.1 ± 11.8	1866.0 ± 26.5	1858 ± 24	0.23	
17112505-035	0.03597 ± 0.00049	0.2377 ± 0.0144	0.0479 ± 0.0028	227.8 ± 3.1	216.6 ± 13.1		0.38	
17112505-036	0.03425 ± 0.00047	0.3011 ± 0.0164	0.0638 ± 0.0034	217.1 ± 3.0	267.3 ± 14.6		0.76	
17112505-037	0.04053 ± 0.00063	0.2723 ± 0.0191	0.0487 ± 0.0033	256.1 ± 4.0	244.5 ± 17.1		0.44	
17112505-038	0.03089 ± 0.00053	0.2236 ± 0.0125	0.0525 ± 0.0028	196.1 ± 3.3	204.9 ± 11.4		0.55	
17112505-039	0.25734 ± 0.00332	3.9821 ± 0.0725	0.1122 ± 0.0014	1476.2 ± 19.0	1630.5 ± 29.7	1836 ± 24	0.23	
17112505-040	0.04112 ± 0.00064	0.2980 ± 0.0136	0.0526 ± 0.0022	259.8 ± 4.1	264.9 ± 12.1		0.29	
17112505-041	0.03342 ± 0.00103	0.2449 ± 0.0321	0.0532 ± 0.0068	211.9 ± 6.5	222.4 ± 29.1		0.43	
17112505-042	0.03300 ± 0.00057	0.2189 ± 0.0131	0.0481 ± 0.0028	209.3 ± 3.6	201.0 ± 12.0		0.61	
17112505-043	0.01979 ± 0.00036	0.1266 ± 0.0085	0.0464 ± 0.0030	126.3 ± 2.3	121.1 ± 8.1		0.87	
17112505-044	0.02008 ± 0.00039	0.1579 ± 0.0107	0.0570 ± 0.0037	128.2 ± 2.5	148.8 ± 10.1		1.40	
17112505-045	0.02901 ± 0.00055	0.2149 ± 0.0145	0.0537 ± 0.0035	184.4 ± 3.5	197.7 ± 13.3		0.56	
17112505-046	0.26720 ± 0.00199	4.1410 ± 0.0684	0.1124 ± 0.0017	1526.6 ± 11.4	1662.4 ± 27.4	1839 ± 27	0.24	
17112505-047	0.03431 ± 0.00043	0.2440 ± 0.0127	0.0516 ± 0.0026	217.4 ± 2.8	221.7 ± 11.6		0.01	
17112505-048	0.04071 ± 0.00037	0.2819 ± 0.0089	0.0502 ± 0.0015	257.3 ± 2.3	252.1 ± 8.0		0.77	
17112505-049	0.32631 ± 0.00243	5.2581 ± 0.0853	0.1169 ± 0.0017	1820.5 ± 13.6	1862.0 ± 30.2	1909 ± 28	0.52	
17112505-050	0.30921 ± 0.00207	4.8277 ± 0.0606	0.1132 ± 0.0012	1736.8 ± 11.6	1789.7 ± 22.5	1852 ± 20	0.02	
17112505-051	0.34774 ± 0.00243	7.1586 ± 0.0960	0.1493 ± 0.0017	1923.8 ± 13.4	2131.3 ± 28.6	2338 ± 27	0.16	
17112505-052	0.03522 ± 0.00041	0.2571 ± 0.0117	0.0529 ± 0.0023	223.1 ± 2.6	232.3 ± 10.6		1.04	
17112505-053	0.02730 ± 0.00062	0.1928 ± 0.0199	0.0512 ± 0.0052	173.6 ± 4.0	179.0 ± 18.5		0.61	
17112505-054	0.02532 ± 0.00040	0.1985 ± 0.0125	0.0569 ± 0.0035	161.2 ± 2.5	183.9 ± 11.6		0.33	
17112505-055	0.35983 ± 0.00279	7.2307 ± 0.1046	0.1457 ± 0.0018	1981.4 ± 15.4	2140.2 ± 31.0	2297 ± 28	0.51	
17112505-056	0.01677 ± 0.00020	0.1277 ± 0.0059	0.0552 ± 0.0024	107.2 ± 1.3	122.0 ± 5.6		0.57	
17112505-057	0.01806 ± 0.00019	0.1263 ± 0.0050	0.0507 ± 0.0019	115.4 ± 1.2	120.8 ± 4.7		1.57	
17112505-058	0.02713 ± 0.00026	0.2010 ± 0.0065	0.0537 ± 0.0017	172.5 ± 1.7	185.9 ± 6.0		0.29	
17112505-059	0.02693 ± 0.00031	0.1834 ± 0.0081	0.0494 ± 0.0021	171.3 ± 2.0	171.0 ± 7.5		0.31	
17112505-060	0.02949 ± 0.00038	0.2003 ± 0.0105	0.0493 ± 0.0025	187.3 ± 2.4	185.4 ± 9.7		0.51	
17112505-061	0.03427 ± 0.00040	0.2095 ± 0.0100	0.0443 ± 0.0021	217.2 ± 2.5	193.1 ± 9.2		0.88	
17112505-062	0.01677 ± 0.00039	0.1339 ± 0.0128	0.0579 ± 0.0054	107.2 ± 2.5	127.6 ± 12.2		1.16	
17112505-063	0.03498 ± 0.00043	0.2563 ± 0.0097	0.0531 ± 0.0019	221.6 ± 2.8	231.6 ± 8.8		0.35	
17112505-064	0.03955 ± 0.00067	0.3172 ± 0.0198	0.0582 ± 0.0035	250.0 ± 4.2	279.8 ± 17.5		0.39	
17112505-065	0.31728 ± 0.00325	5.0252 ± 0.0838	0.1149 ± 0.0015	1776.4 ± 18.2	1823.5 ± 30.4	1878 ± 25	0.15	
17112505-066	0.02903 ± 0.00049	0.1983 ± 0.0131	0.0495 ± 0.0032	184.5 ± 3.1	183.7 ± 12.2		0.33	
17112505-067	0.02848 ± 0.00044	0.2360 ± 0.0128	0.0601 ± 0.0031	181.0 ± 2.8	215.1 ± 11.7		0.62	
17112505-068	0.04029 ± 0.00062	0.2700 ± 0.0158	0.0466 ± 0.0027	254.6 ± 3.9	242.7 ± 14.2		0.18	
17112505-069	0.03380 ± 0.00077	0.2417 ± 0.0201	0.0519 ± 0.0042	214.3 ± 4.9	219.8 ± 18.3		0.86	
17112505-070	0.02944 ± 0.00050	0.2000 ± 0.0094	0.0493 ± 0.0022	187.1 ± 3.2	185.1 ± 8.7		0.71	
17112505-071	0.09656 ± 0.00152	1.3765 ± 0.0401	0.1034 ± 0.0025	594.2 ± 9.4	878.9 ± 25.6		0.32	
17112505-072	0.02628 ± 0.00044	0.1882 ± 0.0083	0.0519 ± 0.0021	167.2 ± 2.8	175.1 ± 7.7		1.39	
17112505-073	0.33311 ± 0.00509	5.3617 ± 0.1367	0.1167 ± 0.0024	1853.5 ± 28.3	1878.7 ± 47.9	1907 ± 39	0.33	
17112505-074	0.02774 ± 0.00077	0.1974 ± 0.0222	0.0516 ± 0.0056	176.4 ± 4.9	182.9 ± 20.6		0.43	
17112505-075	0.02675 ± 0.00068	0.1893 ± 0.0188	0.0513 ± 0.0049	170.2 ± 4.3	176.0 ± 17.4		0.55	
17112505-076	0.01801 ± 0.00040	0.1253 ± 0.0103	0.0504 ± 0.0040	115.1 ± 2.6	119.8 ± 9.9		0.29	Appendix 1b

Appendix 3-2

No.	Isotopic ratios			Age (Ma)			Th/U	CL image
	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{238}\text{U}-^{206}\text{Pb}$	$^{235}\text{U}-^{207}\text{Pb}$	$^{207}\text{Pb}/^{206}\text{Pb}$		
Sample OS2-30								
OS2-30-001	0.01800 ± 0.00008	0.1233 ± 0.0024	0.0497 ± 0.0009	115.1 ± 0.5	117.9 ± 2.2		0.52	
OS2-30-002	0.01829 ± 0.00011	0.1228 ± 0.0032	0.0487 ± 0.0012	116.9 ± 0.7	117.5 ± 2.9		0.50	
OS2-30-003	0.03531 ± 0.00027	0.2474 ± 0.0038	0.0508 ± 0.0008	223.8 ± 1.7	224.4 ± 3.1		0.68	
OS2-30-004	0.03513 ± 0.00005	0.2495 ± 0.0018	0.0515 ± 0.0003	222.7 ± 0.4	226.1 ± 1.5		1.41	Appendix 1h
OS2-30-005	0.02815 ± 0.00023	0.1959 ± 0.0039	0.0504 ± 0.0010	179.1 ± 1.4	181.5 ± 3.3		0.76	
OS2-30-006	0.02836 ± 0.00022	0.1967 ± 0.0034	0.0503 ± 0.0009	180.4 ± 1.4	182.2 ± 2.9		0.23	
OS2-30-007	0.03777 ± 0.00029	0.2689 ± 0.0041	0.0516 ± 0.0008	239.1 ± 1.8	241.7 ± 3.3		0.29	
OS2-30-008	0.033027 ± 0.000251	5.2246 ± 0.0857	0.1147 ± 0.0017	1839.8 ± 12.3	1856.5 ± 14.5	1876 ± 28	0.26	
OS2-30-009	0.01812 ± 0.00024	0.1220 ± 0.0062	0.0488 ± 0.0024	115.9 ± 1.5	116.7 ± 5.7		0.81	
OS2-30-010	0.03360 ± 0.00026	0.2327 ± 0.0039	0.0502 ± 0.0009	213.1 ± 1.6	212.3 ± 3.2		0.10	
OS2-30-011	0.02592 ± 0.00025	0.1831 ± 0.0056	0.0512 ± 0.0015	165.1 ± 1.6	170.6 ± 4.8		0.91	
OS2-30-012	0.03892 ± 0.00032	0.2803 ± 0.0056	0.0522 ± 0.0010	246.2 ± 2.0	250.8 ± 4.5		0.44	
OS2-30-013	0.02787 ± 0.00025	0.1825 ± 0.0050	0.0475 ± 0.0013	177.3 ± 1.6	170.1 ± 4.3		0.33	
OS2-30-014	0.02670 ± 0.00021	0.1823 ± 0.0033	0.0495 ± 0.0009	169.9 ± 1.3	169.9 ± 2.9		0.21	
OS2-30-015	0.01716 ± 0.00015	0.1159 ± 0.0027	0.0490 ± 0.0011	109.7 ± 0.9	111.2 ± 2.5		1.20	Appendix 1f
OS2-30-016	0.01714 ± 0.00018	0.1273 ± 0.0044	0.0538 ± 0.0018	109.6 ± 1.2	121.5 ± 4.0		0.58	Appendix 1e
OS2-30-017	0.02867 ± 0.00025	0.1934 ± 0.0046	0.0489 ± 0.0011	182.3 ± 1.6	179.4 ± 3.9		0.55	
OS2-30-018	0.01852 ± 0.00019	0.1223 ± 0.0040	0.0479 ± 0.0015	118.4 ± 1.2	117.1 ± 3.7		0.88	
OS2-30-019	0.04086 ± 0.00036	0.2889 ± 0.0072	0.0513 ± 0.0012	258.2 ± 2.2	257.6 ± 5.7		0.48	
OS2-30-020	0.02890 ± 0.00027	0.2032 ± 0.0057	0.0510 ± 0.0014	183.8 ± 1.7	187.7 ± 4.9		0.50	
OS2-30-021	0.01899 ± 0.00028	0.1277 ± 0.0049	0.0487 ± 0.0019	121.3 ± 1.7	121.9 ± 4.5		0.49	
OS2-30-022	0.02798 ± 0.00035	0.1862 ± 0.0037	0.0483 ± 0.0011	178.0 ± 2.2	173.3 ± 3.2		0.38	
OS2-30-023	0.02516 ± 0.00030	0.1723 ± 0.0028	0.0496 ± 0.0010	160.3 ± 1.9	161.3 ± 2.4		0.36	
OS2-30-024	0.04002 ± 0.00055	0.2921 ± 0.0097	0.0529 ± 0.0017	253.0 ± 3.4	260.1 ± 7.7		0.29	
OS2-30-025	0.02835 ± 0.00040	0.1979 ± 0.0070	0.0506 ± 0.0018	180.3 ± 2.5	183.2 ± 6.0		0.68	
OS2-30-026	0.02872 ± 0.00038	0.2074 ± 0.0061	0.0524 ± 0.0016	182.6 ± 2.4	191.3 ± 5.2		0.34	
OS2-30-027	0.02586 ± 0.00031	0.1760 ± 0.0028	0.0493 ± 0.0009	164.7 ± 2.0	164.5 ± 2.5		0.56	
OS2-30-028	0.01802 ± 0.00037	0.1158 ± 0.0088	0.0466 ± 0.0035	115.2 ± 2.3	111.2 ± 8.1		1.05	Appendix 1g
OS2-30-029	0.01874 ± 0.00027	0.1428 ± 0.0050	0.0552 ± 0.0020	119.7 ± 1.7	135.4 ± 4.5		0.80	
OS2-30-030	0.01774 ± 0.00027	0.1247 ± 0.0053	0.0510 ± 0.0022	113.5 ± 1.7	119.2 ± 4.9		0.83	
OS2-30-031	0.04021 ± 0.00048	0.2876 ± 0.0045	0.0519 ± 0.0010	254.2 ± 3.0	256.5 ± 3.6		0.61	
OS2-30-032	0.01908 ± 0.00025	0.1303 ± 0.0038	0.0495 ± 0.0015	121.9 ± 1.6	124.3 ± 3.4		0.66	
OS2-30-033	0.01806 ± 0.00024	0.1260 ± 0.0038	0.0506 ± 0.0016	115.4 ± 1.5	120.3 ± 3.5		0.76	
OS2-30-034	0.32098 ± 0.00380	5.0430 ± 0.0727	0.1139 ± 0.0017	1794.6 ± 18.7	1826.4 ± 12.7	1863 ± 28	1.20	Appendix 1i
OS2-30-035	0.02884 ± 0.00035	0.1934 ± 0.0028	0.0486 ± 0.0009	183.4 ± 2.2	179.4 ± 2.4		0.44	
OS2-30-036	0.02898 ± 0.00037	0.1882 ± 0.0047	0.0471 ± 0.0012	184.2 ± 2.3	175.0 ± 4.0		0.26	
OS2-30-037	0.02814 ± 0.00034	0.1950 ± 0.0026	0.0503 ± 0.0009	179.0 ± 2.1	180.8 ± 2.2		0.43	
OS2-30-038	0.03938 ± 0.00058	0.2968 ± 0.0120	0.0547 ± 0.0021	249.1 ± 3.6	263.8 ± 9.5		0.49	
OS2-30-039	0.02034 ± 0.00027	0.1396 ± 0.0041	0.0498 ± 0.0015	129.9 ± 1.7	132.6 ± 3.7		1.05	
OS2-30-040	0.02699 ± 0.00033	0.1844 ± 0.0029	0.0495 ± 0.0009	171.8 ± 2.1	171.7 ± 2.5		0.52	

Appendix 3-3

No.	Isotopic ratios			Age (Ma)			Th/U	CL image
	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{238}\text{U}-^{206}\text{Pb}$	$^{235}\text{U}-^{207}\text{Pb}$	$^{207}\text{Pb}/^{206}\text{Pb}$		
Sample 17112502								
17112502-001	0.03814 ± 0.00041	0.2778 ± 0.0092	0.0528 ± 0.0017	241.3 ± 2.6	248.9 ± 8.3		0.06	
17112502-002	0.01822 ± 0.00029	0.1158 ± 0.0077	0.0461 ± 0.0030	116.4 ± 1.8	111.3 ± 7.4		1.67	
17112502-003	0.01796 ± 0.00027	0.1230 ± 0.0074	0.0497 ± 0.0029	114.7 ± 1.7	117.8 ± 7.0		0.66	
17112502-004	0.01825 ± 0.00021	0.1188 ± 0.0050	0.0472 ± 0.0019	116.6 ± 1.4	114.0 ± 4.8		0.15	
17112502-005	0.02226 ± 0.00040	0.1514 ± 0.0118	0.0493 ± 0.0037	141.9 ± 2.6	143.2 ± 11.1		0.95	
17112502-006	0.35054 ± 0.00314	5.3959 ± 0.0877	0.1116 ± 0.0015	1937.2 ± 17.4	1884.1 ± 30.6	1827 ± 25	0.53	
17112502-007	0.02935 ± 0.00047	0.2174 ± 0.0138	0.0537 ± 0.0033	186.4 ± 3.0	199.8 ± 12.7		0.94	
17112502-008	0.32282 ± 0.00303	5.0317 ± 0.0813	0.1130 ± 0.0015	1803.5 ± 16.9	1824.6 ± 29.5	1849 ± 24	0.50	Appendix 1m
17112502-009	0.03657 ± 0.00074	0.2583 ± 0.0189	0.0512 ± 0.0036	231.5 ± 4.7	233.3 ± 17.0		0.73	Appendix 1l
17112502-010	0.33369 ± 0.00432	5.2590 ± 0.0896	0.1143 ± 0.0013	1856.2 ± 24.0	1862.2 ± 31.7	1869 ± 21	0.67	
17112502-011	0.24605 ± 0.00324	3.6520 ± 0.0685	0.1076 ± 0.0014	1418.1 ± 18.7	1560.9 ± 29.3	1760 ± 23	0.26	
17112502-012	0.01887 ± 0.00049	0.1133 ± 0.0128	0.0435 ± 0.0048	120.5 ± 3.1	108.9 ± 12.3		1.06	
17112502-013	0.37724 ± 0.00502	6.3017 ± 0.1198	0.1212 ± 0.0016	2063.4 ± 27.5	2018.6 ± 38.4	1974 ± 27	0.10	
17112502-014	0.33780 ± 0.00461	5.9720 ± 0.1231	0.1282 ± 0.0020	1876.1 ± 25.6	1971.7 ± 40.6	2074 ± 32	0.36	
17112502-015	0.02949 ± 0.00045	0.1935 ± 0.0081	0.0476 ± 0.0019	187.3 ± 2.8	179.6 ± 7.5		0.23	
17112502-016	0.04336 ± 0.00053	0.2916 ± 0.0094	0.0488 ± 0.0015	273.6 ± 3.3	259.8 ± 8.4		0.54	
17112502-017	0.02059 ± 0.00051	0.1547 ± 0.0157	0.0545 ± 0.0054	131.4 ± 3.3	146.0 ± 14.8		0.97	
17112502-018	0.03759 ± 0.00067	0.2901 ± 0.0191	0.0560 ± 0.0036	237.9 ± 4.3	258.7 ± 17.1		0.91	
17112502-019	0.26095 ± 0.00282	3.9452 ± 0.0609	0.1096 ± 0.0012	1494.7 ± 16.1	1622.9 ± 25.1	1794 ± 20	0.08	
17112502-020	0.02936 ± 0.00059	0.2225 ± 0.0172	0.0550 ± 0.0041	186.5 ± 3.7	204.0 ± 15.7		0.66	Appendix 1k
17112502-021	0.03448 ± 0.00047	0.2321 ± 0.0101	0.0488 ± 0.0020	218.5 ± 3.0	211.9 ± 9.2		0.45	
17112502-022	0.03523 ± 0.00117	0.2496 ± 0.0364	0.0514 ± 0.0073	223.2 ± 7.4	226.3 ± 33.0		1.24	
17112502-023	0.03920 ± 0.00052	0.2866 ± 0.0115	0.0530 ± 0.0020	247.8 ± 3.3	255.9 ± 10.2		0.07	
17112502-024	0.01916 ± 0.00050	0.1391 ± 0.0158	0.0527 ± 0.0058	122.3 ± 3.2	132.3 ± 15.0		0.48	
17112502-025	0.26628 ± 0.00230	4.1166 ± 0.0606	0.1121 ± 0.0013	1521.9 ± 13.2	1657.6 ± 24.4	1835 ± 22	0.32	
17112502-026	0.02603 ± 0.00027	0.1939 ± 0.0063	0.0540 ± 0.0017	165.6 ± 1.7	179.9 ± 5.9		0.43	
17112502-027	0.34688 ± 0.00296	5.4298 ± 0.0758	0.1135 ± 0.0013	1919.7 ± 16.4	1889.5 ± 26.4	1857 ± 21	0.23	
17112502-028	0.03034 ± 0.00037	0.2225 ± 0.0096	0.0532 ± 0.0022	192.7 ± 2.4	204.0 ± 8.8		0.46	
17112502-029	0.01900 ± 0.00038	0.1498 ± 0.0120	0.0572 ± 0.0045	121.3 ± 2.4	141.7 ± 11.4		0.50	
17112502-030	0.33590 ± 0.00308	5.2087 ± 0.0919	0.1125 ± 0.0017	1866.9 ± 17.1	1854.0 ± 32.7	1840 ± 28	0.42	
17112502-031	0.01738 ± 0.00029	0.1076 ± 0.0068	0.0449 ± 0.0027	111.1 ± 1.9	103.8 ± 6.5		0.63	Appendix 1j
17112502-032	0.02024 ± 0.00041	0.1611 ± 0.0122	0.0577 ± 0.0042	129.1 ± 2.6	151.7 ± 11.5		0.69	
17112502-033	0.03204 ± 0.00050	0.2408 ± 0.0118	0.0545 ± 0.0025	203.3 ± 3.2	219.1 ± 10.8		0.69	
17112502-034	0.05167 ± 0.00067	0.3694 ± 0.0112	0.0519 ± 0.0014	324.7 ± 4.2	319.2 ± 9.7		0.26	
17112502-035	0.02637 ± 0.00039	0.1775 ± 0.0080	0.0488 ± 0.0021	167.8 ± 2.5	165.9 ± 7.5		0.35	
17112502-036	0.02767 ± 0.00045	0.1770 ± 0.0104	0.0464 ± 0.0026	175.9 ± 2.9	165.5 ± 9.7		2.34	
17112502-037	0.02164 ± 0.00039	0.1532 ± 0.0103	0.0513 ± 0.0033	138.0 ± 2.5	144.7 ± 9.7		0.40	
17112502-038	0.03641 ± 0.00055	0.2647 ± 0.0123	0.0527 ± 0.0023	230.6 ± 3.5	238.4 ± 11.1		0.18	
17112502-039	0.02908 ± 0.00037	0.1992 ± 0.0079	0.0497 ± 0.0019	184.8 ± 2.4	184.4 ± 7.3		0.29	
17112502-040	0.35171 ± 0.00369	5.5296 ± 0.0929	0.1140 ± 0.0015	1942.7 ± 20.4	1905.1 ± 32.0	1865 ± 24	0.23	
17112502-041	0.17650 ± 0.00214	1.7582 ± 0.0530	0.0722 ± 0.0020	1047.8 ± 12.7	1030.1 ± 31.1		0.16	
17112502-042	0.26752 ± 0.00283	4.3890 ± 0.0759	0.1190 ± 0.0016	1528.2 ± 16.2	1710.2 ± 29.6	1942 ± 27	0.30	
17112502-043	0.02022 ± 0.00042	0.1367 ± 0.0121	0.0491 ± 0.0042	129.0 ± 2.7	130.1 ± 11.5		1.13	
17112502-044	0.02657 ± 0.00032	0.1941 ± 0.0067	0.0530 ± 0.0017	169.0 ± 2.1	180.1 ± 6.2		0.63	
17112502-045	0.03041 ± 0.00042	0.2137 ± 0.0099	0.0510 ± 0.0023	193.1 ± 2.7	196.6 ± 9.1		0.41	
17112502-046	0.03385 ± 0.00041	0.2295 ± 0.0079	0.0492 ± 0.0016	214.6 ± 2.6	209.8 ± 7.2		0.03	
17112502-047	0.01703 ± 0.00035	0.0997 ± 0.0092	0.0425 ± 0.0038	108.9 ± 2.2	96.5 ± 8.9		0.50	
17112502-048	0.04288 ± 0.00076	0.2895 ± 0.0207	0.0490 ± 0.0034	270.6 ± 4.8	258.2 ± 18.5		0.66	
17112502-049	0.01858 ± 0.00031	0.1271 ± 0.0083	0.0496 ± 0.0031	118.7 ± 2.0	121.5 ± 7.9		0.50	
17112502-050	0.32498 ± 0.00333	6.2518 ± 0.0999	0.1395 ± 0.0017	1814.0 ± 18.6	2011.7 ± 32.1	2222 ± 27	0.16	
17112502-051	0.16520 ± 0.00183	2.4917 ± 0.0539	0.1094 ± 0.0020	985.6 ± 10.9	1269.6 ± 27.5		0.10	
17112502-052	0.02935 ± 0.00063	0.1944 ± 0.0182	0.0481 ± 0.0044	186.5 ± 4.0	180.4 ± 16.9		0.71	
17112502-053	0.01951 ± 0.00049	0.1680 ± 0.0170	0.0625 ± 0.0061	124.6 ± 3.2	157.7 ± 15.9		1.50	
17112502-054	0.01800 ± 0.00043	0.1508 ± 0.0145	0.0608 ± 0.0056	115.0 ± 2.8	142.6 ± 13.7		0.46	
17112502-055	0.02770 ± 0.00034	0.1851 ± 0.0080	0.0485 ± 0.0020	176.1 ± 2.2	172.5 ± 7.5		0.78	
17112502-056	0.01929 ± 0.00054	0.1174 ± 0.0155	0.0441 ± 0.0057	123.2 ± 3.4	112.7 ± 14.9		2.71	
17112502-057	0.33646 ± 0.00328	5.3009 ± 0.0937	0.1143 ± 0.0017	1869.6 ± 18.2	1868.9 ± 33.0	1869 ± 28	1.25	
17112502-058	0.01993 ± 0.00044	0.1220 ± 0.0123	0.0444 ± 0.0044	127.2 ± 2.8	116.9 ± 11.8		0.51	
17112502-059	0.43622 ± 0.00432	9.3213 ± 0.1591	0.1550 ± 0.0022	2333.7 ± 23.1	2370.0 ± 40.4	2402 ± 33	0.74	
17112502-060	0.03564 ± 0.00091	0.2692 ± 0.0291	0.0548 ± 0.0058	225.7 ± 5.8	242.0 ± 26.2		0.19	
17112502-061	0.02891 ± 0.00035	0.1828 ± 0.0078	0.0459 ± 0.0019	183.7 ± 2.2	170.5 ± 7.3		0.12	
17112502-062	0.29636 ± 0.00267	4.8199 ± 0.0631	0.1180 ± 0.0011	1673.2 ± 15.1	1788.3 ± 23.4	1926 ± 18	0.09	
17112502-063	0.35562 ± 0.00369	6.5484 ± 0.1076	0.1336 ± 0.0017	1961.4 ± 20.4	2052.4 ± 33.7	2146 ± 27	0.73	
17112502-064	0.10802 ± 0.00116	1.8623 ± 0.0346	0.1250 ± 0.0019	661.2 ± 7.1	1067.8 ± 19.8		0.14	
17112502-065	0.03032 ± 0.00057	0.2144 ± 0.0165	0.0513 ± 0.0038	192.5 ± 3.6	197.2 ± 15.2		0.78	
17112502-066	0.47969 ± 0.00491	10.8650 ± 0.1637	0.1643 ± 0.0018	2525.9 ± 25.8	2511.6 ± 37.8	2501 ± 28	0.41	
17112502-067	0.25659 ± 0.00260	3.9074 ± 0.0604	0.1104 ± 0.0013	1472.4 ± 14.9	1615.1 ± 25.0	1807 ± 21	0.08	
17112502-068	0.02856 ± 0.00041	0.1968 ± 0.0099	0.0500 ± 0.0024	181.5 ± 2.6	182.4 ± 9.2		0.68	
17112502-069	0.12014 ± 0.00122	1.0505 ± 0.0183	0.0634 ± 0.0009	731.4 ± 7.4	729.1 ± 12.7		0.81	
17112502-070	0.27893 ± 0.00248	4.2027 ± 0.0766	0.1093 ± 0.0017	1586.0 ± 14.1	1674.5 ± 30.5	1788 ± 28	0.47	
17112502-071	0.02894 ± 0.00032	0.2094 ± 0.0080	0.0525 ± 0.0019	183.9 ± 2.0	193.0 ± 7.4		0.35	
17112502-072	0.01864 ± 0.00046	0.1311 ± 0.0148	0.0510 ± 0.0056	119.1 ± 3.0	125.1 ± 14.1		1.14	
17112502-073	0.01777 ± 0.00030	0.1031 ± 0.0082	0.0421 ± 0.0032	113.5 ± 1.9	99.6 ± 7.9		1.07	
17112502-074	0.02043 ± 0.00050	0.1517 ± 0.0162	0.0539 ± 0.0056	130.4 ± 3.2	143.4 ± 15.3		0.95	
17112502-075	0.32898 ± 0.00277	5.4092 ± 0.0839	0.1193 ± 0.0016	1833.5 ± 15.5	1886.2 ± 29.3	1946 ± 25	0.09	
17112502-076	0.33872 ± 0.00292	5.3521 ± 0.0892	0.1146 ± 0.0016	1880.5 ± 16.2	1877.2 ± 31.3	1874 ± 27	0.16	
17112502-077	0.34383 ± 0.00284	5.3990 ± 0.0788	0.1139 ± 0.0014	1905.1 ± 15.7	1884.6 ± 27.5	1863 ± 22	0.28	