



Table A1

LA	
Instrument	NWR-213 frequency quadrupled Nd-YAG laser
Laser wave length	213 nm
Laser energy	11.7 J / cm ²
Repetition rate	10 Hz
Spot size	25 μm
Ablation time	8 s (Pre-ablation) + 10 s
He gas flow rate	1.0 L / min
ICPMS	
Instrument	Agilent 7700x
Forward power	1400 W
Monitor elements	²⁰² Hg , ²⁰⁴ (Hg + Pb), ²⁰⁶ Pb, ²⁰⁷ Pb, ²⁰⁸ Pb , ²³² Th and ²³⁸ U
Ar gas flow rate	1.0 ± 0.1 L / min
Scan mode	Peak jump
Detector mode	Pulse counting
Standard samples	
Primary standard	NIST SRM 610 (Horn and von Blanckenburg, 2007)
Secondary standard	91500 (Wiedenbeck et al., 1995) OD-3 (Iwano et al., 2012, 2013)
References	
Horn and Blanckenburg, 2007, <i>Spectrochim. Acta, Part B</i> , 62 , 410–422.	
Iwano et al., 2012, <i>J. Geol. Soc. Japan</i> , 118 , 365–375.	
Iwano et al., 2013, <i>Isl. Arc</i> , 22 , 382–394.	
Kouchi et al., 2015, <i>Chikyukagaku (Geochemistry)</i> , 49 , 19–35.	
Wiedenbeck et al., 1995, <i>Geostand. Geoanal. Res.</i> , 19 , 1–23.	

Table A2

Sample	Th/U	$^{206}\text{Pb}/\text{C}$ (%)	$^{207}\text{Pb}/^{235}\text{U}$	Error (2SD)	$^{206}\text{Pb}/^{238}\text{U}$	Error (2SD)	$^{207}\text{Pb}/^{235}\text{U}$ (Ma)	Error (2SD)	$^{206}\text{Pb}/^{238}\text{U}$ (Ma)	Error (2SD)	Note
91500-01	0.36	0.00	1.90679 ± 0.13734		0.18035 ± 0.00440		1083.4 ± 78.0		1068.9 ± 26.1		C
91500-02	0.35	0.14	1.85253 ± 0.12214		0.18126 ± 0.00413		1064.3 ± 70.2		1073.8 ± 24.4		C
91500-03	0.29	0.58	1.78407 ± 0.12573		0.17358 ± 0.00428		1039.6 ± 73.3		1031.8 ± 25.4		C
91500-04	0.29	0.00	1.83496 ± 0.12988		0.17474 ± 0.00334		1058.0 ± 74.9		1038.2 ± 19.8		C
91500-05	0.35	1.04	1.81668 ± 0.12448		0.18475 ± 0.00359		1051.5 ± 72.0		1092.8 ± 21.3		C
91500-06	0.35	0.00	1.97170 ± 0.14075		0.17864 ± 0.00429		1105.8 ± 78.9		1059.5 ± 25.4		C
91500-07	0.34	1.72	2.04304 ± 0.14312		0.18327 ± 0.00385		1129.9 ± 79.2		1084.8 ± 22.8		C
91500-08	0.34	0.57	1.88714 ± 0.14171		0.18199 ± 0.00451		1076.5 ± 80.8		1077.8 ± 26.7		C
91500-09	0.33	0.00	1.69298 ± 0.12170		0.17965 ± 0.00495		1005.9 ± 72.3		1065.0 ± 29.3		D
91500-10	0.35	0.00	1.78989 ± 0.12894		0.17866 ± 0.00354		1041.7 ± 75.0		1059.7 ± 21.0		C
91500-11	0.34	0.00	1.89105 ± 0.13842		0.17608 ± 0.00511		1077.9 ± 78.9		1045.5 ± 30.3		C
91500-12	0.34	0.06	1.77745 ± 0.13033		0.17831 ± 0.00511		1037.2 ± 76.1		1057.7 ± 30.3		C
91500-13	0.35	0.00	1.90052 ± 0.12942		0.17987 ± 0.00345		1081.2 ± 73.6		1066.3 ± 20.4		C
OD-3-01	1.40	0.00	0.03433 ± 0.00830		0.00519 ± 0.00018		34.3 ± 8.3		33.4 ± 1.2		C
OD-3-02	1.39	0.00	0.03157 ± 0.00551		0.00527 ± 0.00018		31.6 ± 5.5		33.9 ± 1.2		C
OD-3-03	1.38	2.59	0.03141 ± 0.00556		0.00511 ± 0.00019		31.4 ± 5.6		32.9 ± 1.2		C
OD-3-04	1.35	5.93	0.03557 ± 0.00738		0.00545 ± 0.00019		35.5 ± 7.4		35.0 ± 1.2		C
OD-3-05	1.40	0.63	0.03352 ± 0.00587		0.00526 ± 0.00018		33.5 ± 5.9		33.8 ± 1.1		C
OD-3-06	1.35	0.00	0.03502 ± 0.00794		0.00521 ± 0.00020		34.9 ± 7.9		33.5 ± 1.3		C
OD-3-07	1.36	2.55	0.03238 ± 0.00643		0.00502 ± 0.00018		32.4 ± 6.4		32.3 ± 1.2		C
OD-3-08	1.34	4.72	0.03816 ± 0.00700		0.00523 ± 0.00020		38.0 ± 7.0		33.6 ± 1.3		C
OD-3-09	1.32	1.90	0.03423 ± 0.00570		0.00530 ± 0.00021		34.2 ± 5.7		34.1 ± 1.4		C
OD-3-10	1.32	2.63	0.03707 ± 0.00767		0.00513 ± 0.00017		37.0 ± 7.6		33.0 ± 1.1		C
OD-3-11	1.39	0.00	0.03636 ± 0.00655		0.00531 ± 0.00020		36.3 ± 6.5		34.1 ± 1.3		C
OD-3-12	1.39	3.05	0.03536 ± 0.00544		0.00527 ± 0.00020		35.3 ± 5.4		33.9 ± 1.3		C
OD-3-13	0.91	3.27	0.02628 ± 0.01162		0.00489 ± 0.00029		26.3 ± 11.6		31.5 ± 1.9		C
PKP2-001	0.48	0.46	0.39357 ± 0.05545		0.04693 ± 0.00142		337.0 ± 47.5		295.7 ± 8.9		C
PKP2-002	0.58	1.55	0.10082 ± 0.02179		0.01532 ± 0.00051		97.5 ± 21.1		98.0 ± 3.3		C
PKP2-003	0.35	0.69	0.11649 ± 0.01212		0.01754 ± 0.00043		111.9 ± 11.6		112.1 ± 2.8		C
PKP2-004	0.79	0.00	0.16264 ± 0.04293		0.02076 ± 0.00083		153.0 ± 40.4		132.5 ± 5.3		C
PKP2-005	0.28	0.42	0.21496 ± 0.01566		0.02900 ± 0.00064		197.7 ± 14.4		184.3 ± 4.1		C
PKP2-006	0.45	2.42	0.12599 ± 0.02512		0.01561 ± 0.00054		120.5 ± 24.0		99.8 ± 3.5		C

continue to the next page

Table A2 Continued

Sample	Th/U	$^{206}\text{Pb}/\text{C}$ (%)	$^{207}\text{Pb}/^{235}\text{U}$	Error (2SD)	$^{206}\text{Pb}/^{238}\text{U}$	Error (2SD)	$^{207}\text{Pb}/^{235}\text{U}$ (Ma)	Error (2SD)	$^{206}\text{Pb}/^{238}\text{U}$ (Ma)	Error (2SD)	Note
PKP2-007	0.71	0.00	0.14412 ± 0.02592		0.01723 ± 0.00058		136.7 ± 24.6		110.1 ± 3.7		C
PKP2-008	0.71	5.96	0.10897 ± 0.02756		0.01340 ± 0.00053		105.0 ± 26.6		85.8 ± 3.4		C
PKP2-009	0.81	0.45	0.13543 ± 0.01581		0.01725 ± 0.00051		129.0 ± 15.1		110.3 ± 3.2		D
PKP2-010	0.70	1.48	0.10196 ± 0.01762		0.01453 ± 0.00054		98.6 ± 17.0		93.0 ± 3.4		C
PKP2-011	0.64	0.98	0.31406 ± 0.02146		0.01470 ± 0.00040		277.3 ± 19.0		94.0 ± 2.5		D
PKP2-012	0.51	0.82	0.12600 ± 0.02144		0.01751 ± 0.00065		120.5 ± 20.5		111.9 ± 4.1		C
PKP2-013	0.15	0.00	4.91474 ± 0.14805		0.30089 ± 0.00505		1804.7 ± 54.4		1695.7 ± 28.5		D
PKP2-014	0.33	0.00	0.31850 ± 0.01992		0.04269 ± 0.00086		280.7 ± 17.6		269.5 ± 5.4		C
PKP2-015	0.25	0.54	0.18935 ± 0.00966		0.02632 ± 0.00048		176.1 ± 9.0		167.5 ± 3.1		C
PKP2-016	0.48	7.59	0.25707 ± 0.01247		0.01832 ± 0.00036		232.3 ± 11.3		117.0 ± 2.3		D
PKP2-017	0.50	0.00	0.10607 ± 0.00847		0.01325 ± 0.00033		102.4 ± 8.2		84.8 ± 2.1		D
PKP2-018	0.48	0.00	0.11504 ± 0.00883		0.01527 ± 0.00037		110.6 ± 8.5		97.7 ± 2.3		D
PKP2-019	0.21	0.00	7.71305 ± 0.25121		0.40256 ± 0.00785		2198.0 ± 71.6		2180.8 ± 42.5		C
PKP2-020	0.77	0.96	0.09944 ± 0.01215		0.01332 ± 0.00041		96.3 ± 11.8		85.3 ± 2.6		C
PKP2-021	0.64	0.75	0.81396 ± 0.05654		0.01884 ± 0.00064		604.7 ± 42.0		120.3 ± 4.1		D
PKP2-022	1.71	0.31	5.08774 ± 0.20378		0.33927 ± 0.00695		1834.0 ± 73.5		1883.2 ± 38.6		D
PKP2-023	0.59	0.00	0.12677 ± 0.01621		0.01768 ± 0.00056		121.2 ± 15.5		113.0 ± 3.6		C
PKP2-024	0.43	0.00	0.48733 ± 0.03522		0.01791 ± 0.00056		403.1 ± 29.1		114.4 ± 3.6		D
PKP2-025	1.72	65.21	0.17725 ± 0.04505		0.01978 ± 0.00093		165.7 ± 42.1		126.3 ± 5.9		R
PKP2-026	0.77	4.12	0.09587 ± 0.01762		0.01286 ± 0.00044		93.0 ± 17.1		82.4 ± 2.8		C
PKP2-027	0.43	1.95	0.09985 ± 0.01387		0.01306 ± 0.00036		96.6 ± 13.4		83.6 ± 2.3		C
PKP2-028	0.47	1.31	0.11965 ± 0.01775		0.01311 ± 0.00042		114.8 ± 17.0		84.0 ± 2.7		D
PKP2-029	0.62	2.58	0.15421 ± 0.03994		0.01908 ± 0.00086		145.6 ± 37.7		121.8 ± 5.5		C
PKP2-030	0.48	12.82	0.17838 ± 0.02728		0.01411 ± 0.00053		166.7 ± 25.5		90.3 ± 3.4		D
PKP2-031	0.55	0.65	0.11572 ± 0.02031		0.01571 ± 0.00051		111.2 ± 19.5		100.5 ± 3.3		C
PKP2-032	0.46	0.00	0.09602 ± 0.01024		0.01274 ± 0.00029		93.1 ± 9.9		81.6 ± 1.9		C
PKP2-033	0.71	1.17	0.11907 ± 0.00969		0.01771 ± 0.00034		114.2 ± 9.3		113.2 ± 2.2		C
PKP2-034	0.58	0.75	0.13803 ± 0.01043		0.01856 ± 0.00035		131.3 ± 9.9		118.6 ± 2.2		C
PKP2-035	0.42	13.72	0.12956 ± 0.02127		0.01601 ± 0.00057		123.7 ± 20.3		102.4 ± 3.7		R
PKP2-036	0.73	0.33	5.42175 ± 0.16719		0.34757 ± 0.00456		1888.2 ± 58.2		1923.0 ± 25.2		C
PKP2-037	0.93	0.00	0.21745 ± 0.02527		0.02196 ± 0.00065		199.8 ± 23.2		140.0 ± 4.1		D
PKP2-038	0.39	0.00	0.08947 ± 0.00874		0.01278 ± 0.00029		87.0 ± 8.5		81.8 ± 1.8		C
PKP2-039	1.12	0.21	0.15629 ± 0.01642		0.01712 ± 0.00045		147.4 ± 15.5		109.4 ± 2.9		D
PKP2-040	0.40	0.00	0.13605 ± 0.01957		0.01882 ± 0.00058		129.5 ± 18.6		120.2 ± 3.7		C

continue to the next page

Table A2 Continued

Sample	Th/U	$^{206}\text{Pb}/\text{C}$ (%)	$^{207}\text{Pb}/^{235}\text{U}$	Error (2SD)	$^{206}\text{Pb}/^{238}\text{U}$	Error (2SD)	$^{207}\text{Pb}/^{235}\text{U}$ (Ma)	Error (2SD)	$^{206}\text{Pb}/^{238}\text{U}$ (Ma)	Error (2SD)	Note
PKP2-041	0.76	0.00	0.30852 ± 0.02569		0.04174 ± 0.00098		273.0 ± 22.7		263.6 ± 6.2		C
PKP2-042	0.59	0.00	0.13864 ± 0.04142		0.01979 ± 0.00088		131.8 ± 39.4		126.4 ± 5.6		C
PKP2-043	0.52	0.00	0.14203 ± 0.02773		0.01763 ± 0.00066		134.8 ± 26.3		112.7 ± 4.2		C
PKP2-044	0.50	0.89	0.12596 ± 0.01524		0.01684 ± 0.00047		120.5 ± 14.6		107.7 ± 3.0		C
PKP2-045	0.66	0.00	0.12963 ± 0.00986		0.01824 ± 0.00041		123.8 ± 9.4		116.5 ± 2.6		C
PKP2-046	0.56	0.00	0.09029 ± 0.01520		0.01322 ± 0.00043		87.8 ± 14.8		84.7 ± 2.8		C
PKP2-047	0.59	0.00	0.12747 ± 0.01467		0.01323 ± 0.00039		121.8 ± 14.0		84.7 ± 2.5		D
PKP2-048	0.35	0.00	0.12335 ± 0.02554		0.01559 ± 0.00060		118.1 ± 24.5		99.7 ± 3.8		C
PKP2-049	0.53	0.80	0.41605 ± 0.03408		0.04139 ± 0.00093		353.2 ± 28.9		261.4 ± 5.9		D
PKP2-050	0.67	3.01	0.10103 ± 0.01382		0.01476 ± 0.00042		97.7 ± 13.4		94.5 ± 2.7		C
PKP2-051	0.14	0.00	5.46783 ± 0.12291		0.35622 ± 0.00432		1895.5 ± 42.6		1964.2 ± 23.8		D
PKP2-052	0.57	3.96	0.12283 ± 0.01971		0.01591 ± 0.00054		117.6 ± 18.9		101.7 ± 3.4		C
PKP2-053	0.53	1.33	0.10868 ± 0.01296		0.01324 ± 0.00037		104.8 ± 12.5		84.8 ± 2.3		D
PKP2-054	0.59	0.09	5.55878 ± 0.18469		0.36225 ± 0.00518		1909.7 ± 63.4		1992.8 ± 28.5		D
PKP2-055	0.60	0.00	0.12895 ± 0.01900		0.01704 ± 0.00053		123.2 ± 18.1		108.9 ± 3.4		C
PKP2-056	0.49	13.73	0.13729 ± 0.04792		0.01572 ± 0.00098		130.6 ± 45.6		100.5 ± 6.3		R
PKP2-057	0.71	0.83	0.10348 ± 0.01201		0.01498 ± 0.00043		100.0 ± 11.6		95.9 ± 2.7		C
PKP2-058	0.62	1.17	0.11055 ± 0.01717		0.01443 ± 0.00051		106.5 ± 16.5		92.4 ± 3.3		C
PKP2-059	0.65	0.00	0.15518 ± 0.02487		0.01655 ± 0.00064		146.5 ± 23.5		105.8 ± 4.1		D
PKP2-060	0.50	40.44	0.11545 ± 0.01926		0.01312 ± 0.00051		110.9 ± 18.5		84.0 ± 3.3		R
PKP2-061	0.35	0.15	0.22833 ± 0.02088		0.03121 ± 0.00079		208.8 ± 19.1		198.1 ± 5.0		C
PKP2-062	0.99	3.13	0.14063 ± 0.01722		0.01924 ± 0.00057		133.6 ± 16.4		122.9 ± 3.7		C
PKP2-063	0.29	0.00	0.12728 ± 0.02126		0.01855 ± 0.00066		121.6 ± 20.3		118.5 ± 4.2		C
PKP2-064	0.57	2.76	0.10634 ± 0.01039		0.01729 ± 0.00043		102.6 ± 10.0		110.5 ± 2.8		C
PKP2-065	0.41	7.36	0.15783 ± 0.00868		0.01899 ± 0.00047		148.8 ± 8.2		121.3 ± 3.0		D
PKP2-066	0.40	1.13	0.20743 ± 0.02289		0.03091 ± 0.00097		191.4 ± 21.1		196.2 ± 6.2		C
PKP2-067	0.47	0.54	0.08192 ± 0.00651		0.01241 ± 0.00033		79.9 ± 6.4		79.5 ± 2.1		C
PKP2-068	0.48	0.00	0.13060 ± 0.01742		0.01458 ± 0.00055		124.6 ± 16.6		93.3 ± 3.5		D
PKP2-069	0.58	0.00	0.10548 ± 0.01852		0.01488 ± 0.00063		101.8 ± 17.9		95.2 ± 4.0		C
PKP2-070	0.46	0.00	0.32789 ± 0.06560		0.03384 ± 0.00178		287.9 ± 57.6		214.5 ± 11.3		D
PKP2-071	0.47	0.00	0.11386 ± 0.01865		0.01718 ± 0.00068		109.5 ± 17.9		109.8 ± 4.4		C
PKP2-072	0.33	0.07	7.87218 ± 0.30762		0.41740 ± 0.00997		2216.4 ± 86.6		2248.7 ± 53.7		C
PKP2-073	1.11	0.00	0.08306 ± 0.00970		0.01270 ± 0.00029		81.0 ± 9.5		81.3 ± 1.9		C
PKP2-074	0.39	6.81	0.20658 ± 0.01690		0.01548 ± 0.00036		190.7 ± 15.6		99.0 ± 2.3		D

continue to the next page

Table A2 Continued

Sample	Th/U	$^{206}\text{Pb}/\text{C}$ (%)	$^{207}\text{Pb}/^{235}\text{U}$	Error (2SD)	$^{206}\text{Pb}/^{238}\text{U}$	Error (2SD)	$^{207}\text{Pb}/^{235}\text{U}$ (Ma)	Error (2SD)	$^{206}\text{Pb}/^{238}\text{U}$ (Ma)	Error (2SD)	Note
PKP2-075	0.59	3.27	0.17276 ± 0.03255		0.02056 ± 0.00071		161.8 ± 30.5		131.2 ± 4.5		C
PKP2-076	0.37	0.00	0.13527 ± 0.02012		0.01681 ± 0.00049		128.8 ± 19.2		107.5 ± 3.1		C
PKP2-077	0.79	0.79	0.09477 ± 0.01106		0.01469 ± 0.00034		91.9 ± 10.7		94.0 ± 2.2		C
PKP2-078	0.34	3.24	0.21861 ± 0.02024		0.02834 ± 0.00060		200.7 ± 18.6		180.1 ± 3.8		C
PKP2-079	0.50	2.00	0.08889 ± 0.00850		0.01303 ± 0.00027		86.5 ± 8.3		83.4 ± 1.7		C
PKP2-080	0.50	0.46	0.12336 ± 0.01320		0.01669 ± 0.00038		118.1 ± 12.6		106.7 ± 2.4		C
PKP2-081	0.49	0.00	0.08580 ± 0.00760		0.01253 ± 0.00035		83.6 ± 7.4		80.3 ± 2.3		C
PKP2-082	0.46	0.51	0.09415 ± 0.01259		0.01499 ± 0.00049		91.4 ± 12.2		95.9 ± 3.1		C
PKP2-083	0.44	0.40	0.09507 ± 0.01007		0.01273 ± 0.00039		92.2 ± 9.8		81.6 ± 2.5		C
PKP2-084	0.11	0.00	0.14927 ± 0.02657		0.01914 ± 0.00077		141.3 ± 25.1		122.2 ± 4.9		C
PKP2-085	0.84	0.48	0.17427 ± 0.00976		0.02491 ± 0.00062		163.1 ± 9.1		158.6 ± 3.9		C
PKP2-086	0.61	0.00	0.23095 ± 0.02183		0.03103 ± 0.00091		211.0 ± 19.9		197.0 ± 5.8		C
PKP2-087	0.11	4.12	7.47821 ± 0.20376		0.25420 ± 0.00593		2170.3 ± 59.1		1460.1 ± 34.0		D
PKP2-088	0.28	0.84	0.20001 ± 0.01182		0.02636 ± 0.00067		185.1 ± 10.9		167.7 ± 4.3		D
PKP2-089	0.45	0.62	0.11878 ± 0.01148		0.01595 ± 0.00048		114.0 ± 11.0		102.0 ± 3.1		C
PKP2-090	0.49	5.41	0.28074 ± 0.02433		0.02340 ± 0.00073		251.2 ± 21.8		149.1 ± 4.7		D
PKP2-091	0.90	8.15	0.48395 ± 0.02456		0.02186 ± 0.00058		400.8 ± 20.3		139.4 ± 3.7		D
PKP2-092	0.63	0.00	0.09091 ± 0.01360		0.01463 ± 0.00053		88.3 ± 13.2		93.6 ± 3.4		C
PKP2-093	0.33	0.00	4.62815 ± 0.18398		0.29891 ± 0.00712		1754.3 ± 69.7		1685.9 ± 40.2		D
PKP2-094	0.37	4.73	0.10187 ± 0.01269		0.01626 ± 0.00054		98.5 ± 12.3		104.0 ± 3.4		C
PKP2-095	0.56	0.00	0.11403 ± 0.01237		0.01662 ± 0.00052		109.6 ± 11.9		106.2 ± 3.3		C
PKP2-096	0.44	0.00	0.19615 ± 0.01499		0.02715 ± 0.00073		181.9 ± 13.9		172.7 ± 4.7		C
PKP2-097	0.41	0.00	0.13459 ± 0.01087		0.01995 ± 0.00037		128.2 ± 10.4		127.4 ± 2.3		C
PKP2-098	0.45	0.27	0.24536 ± 0.02158		0.03065 ± 0.00064		222.8 ± 19.6		194.6 ± 4.1		D
PKP2-099	0.71	4.59	0.11349 ± 0.03168		0.02029 ± 0.00089		109.1 ± 30.5		129.5 ± 5.7		C
PKP2-100	0.41	0.20	0.12120 ± 0.01715		0.01797 ± 0.00052		116.2 ± 16.4		114.8 ± 3.3		C
PKP2-101	0.88	3.73	0.08658 ± 0.00774		0.01312 ± 0.00026		84.3 ± 7.5		84.0 ± 1.7		C
PKP2-102	0.54	0.00	9.73944 ± 0.20718		0.46339 ± 0.00481		2410.4 ± 51.3		2454.5 ± 25.5		D
PKP2-103	0.63	0.14	9.68878 ± 0.20766		0.45463 ± 0.00474		2405.6 ± 51.6		2415.8 ± 25.2		C
PKP2-104	0.41	0.00	0.22065 ± 0.01923		0.02955 ± 0.00060		202.4 ± 17.6		187.7 ± 3.8		C