

Supplementary Materials:

Table S1. LA-ICP-MS U-Pb isotopic analyses of the studied zircon megacrysts.

Spot	Th	U	Th/U	Isotopic ratio			Age(Ma)		Weighted mean $^{206}\text{Pb}/^{238}\text{U}$ age	Concordance	Profile
	(ppm)	(ppm)		$^{207}\text{Pb}/^{235}\text{U}\pm 1\sigma$	$^{206}\text{Pb}/^{238}\text{U}\pm 1\sigma$	$^{207}\text{Pb}/^{206}\text{Pb}\pm 1\sigma$	$^{207}\text{Pb}/^{235}\text{U}\pm 1\sigma$	$^{206}\text{Pb}/^{238}\text{U}\pm 1\sigma$			
HD-1-1	1989	1706	1.17	0.01831±0.00279	0.00279±0.00002	0.04790±0.00130	18.4±0.5	18.0±0.2	18.2±0.4	98	rim
HD-1-2	2705	1967	1.38	0.01873±0.00279	0.00279±0.00002	0.04860±0.00120	18.8±0.5	17.9±0.1		95	
HD-1-3	1943	1596	1.22	0.01803±0.00288	0.00288±0.00005	0.04634±0.00312	18.1±1.2	18.5±0.3		97	
HD-1-4	1690	1487	1.14	0.01914±0.00292	0.00292±0.00005	0.04840±0.00326	19.3±1.2	18.8±0.3		97	core
HD-1-5	2380	1742	1.37	0.01862±0.00296	0.00296±0.00005	0.04624±0.00282	18.7±1.1	19.1±0.3		98	
HD-1-6	2223	1655	1.34	0.01978±0.00293	0.00293±0.00004	0.05012±0.00316	19.9±1.1	18.8±0.3		94	
HD-1-7	363	771	0.47	0.01790±0.00279	0.00279±0.00003	0.04720±0.00200	18.0±0.7	18.0±0.2		100	
HD-1-8	361	711	0.51	0.01983±0.00287	0.00287±0.00007	0.05291±0.00521	19.9±1.6	18.5±0.4		92	rim
HD-2-1	234	291	0.80	0.01560±0.00264	0.00264±0.00004	0.04350±0.00330	15.6±1.2	17.0±0.3	17.4±0.6	92	rim
HD-2-2	16	61	0.26	0.01820±0.00268	0.00268±0.00090	0.06000±0.09000	17.9±2.6	17.3±0.6		97	
HD-2-3	15	59	0.26	0.01671±0.00269	0.00269±0.00022	0.01944±0.00997	16.8±3.9	17.3±1.4		96	
HD-2-4	170	240	0.71	0.01920±0.00277	0.00277±0.00010	0.05280±0.00894	19.3±2.5	17.8±0.6		92	core
HD-2-5	304	325	0.93	0.01662±0.00275	0.00275±0.00008	0.05065±0.00924	16.7±2.1	17.7±0.5		94	
HD-2-6	37	97	0.38	0.02067±0.00308	0.00308±0.00017	0.06279±0.01902	20.8±3.9	19.8±1.1		95	
HD-2-7	23	75	0.31	0.01893±0.00271	0.00271±0.00018	0.05422±0.02303	19.0±10.9	17.4±1.1		91	rim
HD-3-1	23	51	0.46	0.01910±0.00272	0.00272±0.00010	0.06000±0.01100	18.6±3.2	17.5±0.6	17.6±0.8	94	rim
HD-3-2	34	64	0.52	0.01707±0.00266	0.00266±0.00018	0.00141±0.00016	17.2±2.7	17.1±1.1		99	
HD-3-3	20	44	0.46	0.01748±0.00261	0.00261±0.00022	0.00148±0.00013	17.6±2.2	16.8±1.4		95	core
HD-3-4	26	57	0.46	0.01711±0.00275	0.00275±0.00019	0.00119±0.00013	17.2±2.9	17.7±1.2		97	
HD-3-5	16	41	0.39	0.02033±0.00295	0.00295±0.00024	0.06460±0.03180	20.4±13.8	19.0±1.5		92	
HD-3-6	20	44	0.46	0.01642±0.00281	0.00281±0.00016	0.04885±0.02576	16.5±9.1	18.1±1.0		91	rim
HD-4-1	1290	957	1.35	0.01780±0.00270	0.00270±0.00003	0.04790±0.00300	17.9±1.1	17.4±0.2	17.5±0.3	97	rim
HD-4-2	1148	882	1.30	0.01924±0.00278	0.00278±0.00007	0.05330±0.00518	19.4±1.4	17.9±0.5		92	
HD-4-3	491	801	0.61	0.01796±0.00281	0.00281±0.00006	0.04769±0.00477	18.1±1.5	18.1±0.4		99	core
HD-4-4	324	601	0.54	0.01690±0.00265	0.00265±0.00006	0.04350±0.00430	16.9±1.8	17.1±0.4		99	
HD-4-5	27	123	0.22	0.01800±0.00270	0.00270±0.00006	0.04940±0.00460	17.9±1.6	17.4±0.4		97	
HD-4-6	25	186	0.18	0.02094±0.00419	0.00274±0.00013	0.04672±0.01056	21.1±4.2	17.6±0.8		95	
HD-4-7	18	94	0.19	0.01937±0.00296	0.00296±0.00017	0.07730±0.02966	19.5±2.9	19.1±1.1		97	rim
HD-5-1	50	112	0.45	0.01870±0.00268	0.00268±0.00007	0.05500±0.00700	18.6±2.3	17.2±0.5	17.6±0.8	92	rim
HD-5-2	56	118	0.48	0.01550±0.00267	0.00267±0.00007	0.04600±0.00550	15.5±1.8	17.2±0.4		90	
HD-5-3	31	96	0.32	0.02041±0.00296	0.00296±0.00017	0.05471±0.01650	20.5±4.1	19.0±1.1		92	
HD-5-4	46	116	0.40	0.01841±0.00282	0.00282±0.00012	0.06922±0.02493	18.5±3.8	18.1±0.8		97	core
HD-5-5	40	103	0.39	0.01835±0.00302	0.00302±0.00020	0.07015±0.02524	18.5±5.7	19.4±1.3		94	
HD-5-6	84	165	0.51	0.01584±0.00273	0.00273±0.00013	0.06812±0.01889	16.0±2.7	17.6±0.8		90	
HD-5-7	39	101	0.38	0.01913±0.00306	0.00306±0.00017	0.05457±0.01708	19.2±4.0	19.7±1.1		97	rim
HD-6-1	43	69	0.61	0.01860±0.00277	0.00277±0.00009	0.05100±0.00800	18.3±2.6	17.8±1.1	18.2±0.8	97	rim
HD-6-2	69	104	0.67	0.01830±0.00282	0.00282±0.00007	0.04500±0.00500	18.2±2.0	18.2±0.9		100	
HD-6-3	21	51	0.41	0.01814±0.00266	0.00266±0.00018	0.06021±0.02799	18.3±10.0	17.2±1.2		93	
HD-6-4	43	70	0.62	0.02052±0.00297	0.00297±0.00020	0.04671±0.01808	20.6±2.3	19.1±1.3		92	core
HD-6-5	43	71	0.60	0.02025±0.00308	0.00308±0.00021	0.05574±0.01565	20.4±3.1	19.8±1.3		97	
HD-6-6	50	78	0.65	0.01748±0.00279	0.00279±0.00018	0.05581±0.02005	17.6±1.7	18.0±1.2		97	
HD-6-7	19	47	0.40	0.01684±0.00287	0.00287±0.00033	0.06901±0.05124	17.0±3.9	18.5±2.1		91	
HD-6-8	48	75	0.64	0.01687±0.00279	0.00279±0.00020	0.09420±0.03645	17.0±1.5	17.9±1.3		94	core

Table S1. (continued)

Spot	Th (ppm)	U (ppm)	Th/U	Isotopic ratio			Age(Ma)		Weighted mean $^{206}\text{Pb}/^{238}\text{U}$ age	Concordance	Profile
				$^{207}\text{Pb}/^{235}\text{U}\pm 1\sigma$	$^{206}\text{Pb}/^{238}\text{U}\pm 1\sigma$	$^{207}\text{Pb}/^{206}\text{Pb}\pm 1\sigma$	$^{207}\text{Pb}/^{235}\text{U}\pm 1\sigma$	$^{206}\text{Pb}/^{238}\text{U}\pm 1\sigma$			
HD-7-1	13	46	0.29	0.02030±0.00293	0.00293±0.00012	0.05900±0.01100	19.8±3.3	18.8±0.7	18.1±0.7	95	rim
HD-7-2	11	36	0.31	0.01680±0.00278	0.00278±0.00012	0.05200±0.01300	16.2±3.6	17.9±0.8		90	
HD-7-3	15	50	0.30	0.01630±0.00277	0.00277±0.00010	0.04500±0.00850	15.9±2.3	17.8±0.6		90	core
HD-7-4	11	37	0.30	0.01813±0.00268	0.00268±0.00022	0.01126±0.00671	18.2±3.4	17.3±1.4		94	
HD-7-5	10	32	0.32	0.01819±0.00279	0.00279±0.00023	0.02270±0.01464	18.3±5.1	18.0±1.5		98	
HD-7-6	14	46	0.30	0.01658±0.00275	0.00275±0.00025	0.03878±0.02387	16.7±3.0	17.7±1.6		94	rim
HD-8-1	30	73	0.40	0.01620±0.00273	0.00273±0.00008	0.04300±0.00650	16.1±2.3	17.6±0.5	17.6±0.7	91	rim
HD-8-2	41	93	0.44	0.01700±0.00266	0.00266±0.00009	0.04700±0.00750	16.8±2.0	17.1±0.6		98	
HD-8-3	28	70	0.40	0.01921±0.00275	0.00275±0.00023	0.05729±0.02812	19.3±9.6	17.7±1.5		91	
HD-8-4	33	80	0.42	0.01789±0.00273	0.00273±0.00019	0.09987±0.03813	18.0±6.4	17.6±1.2		97	core
HD-8-5	9	27	0.35	0.02071±0.00297	0.00297±0.00031	0.04662±0.02553	20.8±3.6	19.1±2.0		91	
HD-8-6	36	81	0.45	0.02092±0.00301	0.00301±0.00020	0.04726±0.01806	21.0±1.6	19.4±1.3		94	rim
HD-9-1	9	31	0.28	0.01770±0.00283	0.00283±0.00013	0.06000±0.01450	18.2±3.4	18.2±0.8	17.7±1.0	100	rim
HD-9-2	12	38	0.31	0.01883±0.00271	0.00271±0.00023	0.04186±0.02016	18.9±3.4	17.4±1.5		91	
HD-9-3	11	38	0.30	0.01785±0.00294	0.00294±0.00029	0.05262±0.03888	18.0±4.7	18.9±1.9		94	
HD-9-4	13	41	0.32	0.01516±0.00366	0.00253±0.00015	0.04722±0.02165	15.3±3.7	16.3±1.0		93	core
HD-9-5	12	38	0.31	0.03214±0.00372	0.00284±0.00020	0.06295±0.02173	32.1±3.7	18.3±1.3		45	
HD-9-6	10	34	0.29	0.04562±0.00471	0.00277±0.00023	0.11886±0.03357	45.3±4.6	17.8±1.5		12	rim
HD-10-1	26	57	0.45	0.01660±0.00279	0.00279±0.00009	0.05000±0.00800	16.3±2.5	17.9±0.6	17.4±0.5	91	rim
HD-10-2	73	112	0.65	0.01880±0.00272	0.00272±0.00007	0.05500±0.00600	18.7±1.9	17.5±0.5		93	
HD-10-3	72	112	0.64	0.01887±0.00269	0.00269±0.00014	0.38755±0.06588	19.0±2.5	17.3±0.9		91	core
HD-10-4	67	111	0.60	0.01771±0.00259	0.00259±0.00012	0.06451±0.01514	17.8±1.6	16.6±0.8		93	
HD-10-5	91	129	0.71	0.01550±0.00272	0.00272±0.00006	0.04330±0.00465	15.5±1.5	17.5±0.4		90	
HD-10-6	47	86	0.55	0.01628±0.00255	0.00255±0.00013	0.06177±0.01986	16.7±1.1	16.4±0.9		99	rim
HD-11-1	23	48	0.47	0.02048±0.00625	0.00302±0.00020	0.06642±0.02339	20.6±6.2	19.4±1.3	18.2±1.3	94	rim
HD-11-2	10	19	0.53	0.01992±0.00986	0.00287±0.00030	0.03312±0.01892	20.0±9.8	18.5±1.9		92	
HD-11-3	11	20	0.58	0.02723±0.01461	0.00262±0.00023	0.03545±0.02313	27.3±14.4	16.9±1.5		52	core
HD-11-4	10	18	0.57	0.03482±0.00552	0.00301±0.00028	0.04033±0.01939	34.8±5.4	19.4±1.8		43	
HD-11-5	7	16	0.45	0.03483±0.01018	0.00265±0.00022	0.02160±0.01372	34.8±10.0	17.1±1.4		31	rim
HD-12-1	16	42	0.39	0.01768±0.00872	0.00263±0.00019	0.04877±0.02426	17.8±8.7	16.9±1.2	17.3±1.1	95	rim
HD-12-2	9	23	0.37	0.01586±0.00516	0.00262±0.00027	0.01142±0.01142	16.0±5.2	16.8±1.7		94	
HD-12-3	9	27	0.35	0.02069±0.00955	0.00295±0.00023	0.05113±0.02078	20.8±9.5	19.0±1.4		90	core
HD-12-4	7	24	0.31	0.02047±0.00637	0.00269±0.00021	0.03125±0.01629	20.6±6.3	17.3±1.3		82	
HD-12-5	9	24	0.39	0.05413±0.01524	0.00256±0.00027	0.07705±0.02705	53.5±14.7	16.5±1.7		-6	
HD-12-6	8	23	0.35	0.03039±0.01866	0.00263±0.00023	0.02837±0.01758	30.4±18.4	17.0±1.5		43	rim
HD-13-1	27	56	0.48	0.01500±0.00186	0.00259±0.00015	0.05978±0.01951	15.1±1.9	16.6±0.9	17.2±0.7	90	rim
HD-13-2	31	57	0.54	0.01685±0.00783	0.00259±0.00020	0.07416±0.03444	17.0±7.8	16.7±1.3		98	
HD-13-3	47	81	0.58	0.01802±0.00300	0.00262±0.00016	0.05124±0.01646	18.1±3.0	16.8±1.0		92	
HD-13-4	51	86	0.60	0.01921±0.00356	0.00287±0.00018	0.06135±0.01946	19.3±3.5	18.5±1.2		95	core
HD-13-5	221	204	1.08	0.01542±0.00192	0.00264±0.00010	0.05113±0.01031	15.5±1.9	17.0±0.7		91	
HD-13-6	62	98	0.63	0.01739±0.00286	0.00257±0.00012	0.06528±0.01549	17.5±2.9	16.6±0.8		94	
HD-13-7	77	108	0.72	0.01738±0.00681	0.00286±0.00013	0.06657±0.02197	17.5±6.8	18.4±0.8		94	rim

Spot	Th (ppm)	U (ppm)	Th/U	Isotopic ratio			Age(Ma)		Weighted mean ²⁰⁶ Pb/ ²³⁸ U age	Concordance	Profile
				²⁰⁷ Pb/ ²³⁵ U±1σ	²⁰⁶ Pb/ ²³⁸ U±1σ	²⁰⁷ Pb/ ²⁰⁶ Pb±1σ	²⁰⁷ Pb/ ²³⁵ U±1σ	²⁰⁶ Pb/ ²³⁸ U±1σ			
HD-14-1	20	58	0.35	0.01693±0.00227	0.00290±0.00020	0.06384±0.02140	17.0±2.3	18.7±1.3	18.2±1.0	90	rim
HD-14-2	24	65	0.37	0.01855±0.00214	0.00290±0.00019	0.05887±0.01781	18.7±2.1	18.7±1.2		99	
HD-14-3	19	61	0.30	0.01699±0.01029	0.00291±0.00018	0.05218±0.02453	17.1±10.3	18.8±1.1		90	core
HD-14-4	22	66	0.33	0.01875±0.00575	0.00266±0.00017	0.04879±0.01573	18.9±5.7	17.1±1.1		90	
HD-14-5	16	51	0.32	0.01636±0.00211	0.00274±0.00018	0.04920±0.01865	16.5±2.1	17.6±1.1		93	
HD-14-6	11	36	0.32	0.02285±0.11089	0.00302±0.00030	0.03945±0.01712	22.9±11.0	19.5±2.0		83	rim
HD-15-1	18	42	0.42	0.02060±0.00830	0.00293±0.00020	0.04616±0.01759	20.7±8.3	18.8±1.3	18.6±1.1	90	rim
HD-15-2	26	66	0.40	0.01983±0.00210	0.00301±0.00018	0.08327±0.02602	19.9±2.1	19.4±1.2		97	
HD-15-3	12	38	0.32	0.01948±0.00279	0.00283±0.00022	0.05345±0.01937	19.6±2.8	18.2±1.4		92	
HD-15-4	25	69	0.36	0.01636±0.00358	0.00282±0.00019	0.06187±0.02079	16.5±3.6	18.2±1.2		90	core
HD-15-5	22	53	0.41	0.01912±0.00203	0.00275±0.00020	0.05563±0.02314	19.2±2.0	17.7±1.3		91	
HD-15-6	15	33	0.44	0.03432±0.00545	0.00297±0.00025	0.05271±0.02089	34.3±5.4	19.2±1.6		43	rim
HD-16-1	26	45	0.59	0.01672±0.00381	0.00257±0.00022	0.05318±0.02306	16.8±3.8	16.5±1.4	17.1±1.0	98	rim
HD-16-2	19	35	0.54	0.01742±0.00335	0.00263±0.00023	0.03897±0.01825	17.5±3.3	16.9±1.5		96	
HD-16-3	56	62	0.90	0.01675±0.00169	0.00280±0.00020	0.05180±0.01903	16.9±1.7	18.0±1.3		93	
HD-16-4	51	60	0.85	0.01962±0.00455	0.00283±0.00017	0.07709±0.02302	19.7±4.5	18.2±1.1		91	core
HD-16-5	27	35	0.78	0.02006±0.01007	0.00252±0.00021	0.02511±0.01352	20.2±10.0	16.2±1.3		78	
HD-16-6	60	66	0.90	0.02490±0.00317	0.00252±0.00017	0.06533±0.02193	25.0±3.1	16.2±1.1		57	rim

Table S2. Lu-Hf isotope composition of the studied zircon megacrysts

Spot	$^{176}\text{Hf}/^{177}\text{Hf}$	1 SE	$^{176}\text{Lu}/^{177}\text{Hf}$	$^{176}\text{Yb}/^{177}\text{Hf}$	$\epsilon_{\text{Hf}}(\text{t})$	1 SE	T_{DM}	T_{crustal}	Profile
HD-1-1	0.282975	0.000022	0.005247	0.019680	7.5	0.8	442	618	rim
HD-1-2	0.282898	0.000023	0.003315	0.092450	4.8	0.8	535	791	
HD-1-3	0.282983	0.000024	0.006500	0.159220	7.8	0.8	446	601	core
HD-1-4	0.282921	0.000013	0.000548	0.018271	5.7	0.5	464	737	
HD-1-5	0.282936	0.000020	0.008561	0.322653	6.1	0.7	560	708	rim
HD-2-1	0.282898	0.000019	0.000752	0.019009	4.8	0.7	498	789	rim
HD-2-2	0.282941	0.000018	0.000391	0.009100	6.4	0.6	434	692	
HD-2-3	0.282913	0.000021	0.000416	0.008772	5.4	0.7	473	755	core
HD-2-4	0.282935	0.000014	0.000714	0.027132	6.1	0.5	446	706	
HD-2-5	0.282928	0.000012	0.000447	0.016765	5.9	0.4	452	721	rim
HD-3-1	0.282945	0.000023	0.000588	0.013813	6.5	0.8	430	683	rim
HD-3-2	0.282910	0.000020	0.000743	0.017168	5.3	0.7	481	762	
HD-3-3	0.282951	0.000016	0.000465	0.011144	6.7	0.6	421	669	core
HD-3-4	0.282908	0.000012	0.000621	0.023646	5.2	0.4	483	767	
HD-3-5	0.282923	0.000013	0.000580	0.021233	5.7	0.5	461	733	rim
HD-4-1	0.282952	0.000011	0.000327	0.007783	6.8	0.4	418	667	rim
HD-4-2	0.282955	0.000013	0.001025	0.026926	6.9	0.5	421	660	
HD-4-3	0.282937	0.000014	0.000939	0.025763	6.2	0.5	446	701	core
HD-4-4	0.282953	0.000015	0.001521	0.071839	6.8	0.5	429	665	
HD-4-5	0.282941	0.000012	0.001085	0.046855	6.3	0.4	442	693	rim
HD-5-1	0.282932	0.000020	0.000549	0.013833	6.0	0.7	448	712	rim
HD-5-2	0.282967	0.000019	0.000393	0.009621	7.3	0.7	397	633	
HD-5-3	0.282986	0.000022	0.000532	0.013226	8.0	0.8	372	590	core
HD-5-4	0.282934	0.000016	0.000674	0.027203	6.1	0.6	446	707	
HD-5-5	0.282963	0.000015	0.000715	0.028491	7.1	0.5	407	642	rim
HD-6-1	0.282898	0.000020	0.000739	0.017658	4.8	0.7	498	789	rim
HD-6-2	0.282933	0.000020	0.000993	0.024805	6.1	0.7	452	710	
HD-6-3	0.282987	0.000020	0.000808	0.019270	8.0	0.7	373	588	core
HD-6-4	0.282923	0.000015	0.001114	0.046387	5.7	0.5	468	734	
HD-6-5	0.282932	0.000014	0.000956	0.037870	6.1	0.5	452	711	rim
HD-7-1	0.282944	0.000021	0.000776	0.017508	6.5	0.7	434	685	rim
HD-7-2	0.282972	0.000019	0.000637	0.140290	7.5	0.7	393	622	
HD-7-3	0.282965	0.000019	0.000798	0.018120	7.2	0.7	404	638	core
HD-7-4	0.282954	0.000015	0.000963	0.039635	6.8	0.5	422	663	
HD-7-5	0.282967	0.000014	0.000426	0.017014	7.3	0.5	397	632	rim
HD-8-1	0.282927	0.000020	0.000412	0.009297	5.9	0.7	453	723	rim
HD-8-2	0.282937	0.000021	0.000972	0.023076	6.2	0.7	446	701	
HD-8-3	0.282985	0.000019	0.001207	0.029427	7.9	0.7	380	593	core
HD-8-4	0.282939	0.000015	0.001224	0.051397	6.3	0.5	447	697	
HD-8-5	0.282915	0.000015	0.001237	0.050775	5.4	0.5	480	750	rim
HD-9-1	0.282970	0.000019	0.000368	0.008370	7.4	0.7	393	626	rim
HD-9-2	0.282960	0.000021	0.000302	0.006945	7.0	0.7	406	649	
HD-9-3	0.282983	0.000021	0.000370	0.008588	7.9	0.7	375	597	core
HD-9-4	0.282937	0.000015	0.000455	0.016242	6.2	0.5	440	701	
HD-9-5	0.282976	0.000015	0.000454	0.016574	7.6	0.5	386	613	rim
HD-10-1	0.283020	0.000022	0.000444	0.010792	9.2	0.8	324	513	rim
HD-10-2	0.282920	0.000022	0.000711	0.017884	5.6	0.8	467	739	

Table S2. (continued)

Spot	$^{176}\text{Hf}/^{177}\text{Hf}$	1 SE	$^{176}\text{Lu}/^{177}\text{Hf}$	$^{176}\text{Yb}/^{177}\text{Hf}$	$\epsilon_{\text{Hf}}(t)$	1 SE	T _{DM}	T _{crustal}	Profile
HD-10-3	0.282981	0.000022	0.000703	0.017616	7.8	0.8	381	601	core
HD-10-4	0.282960	0.000015	0.000772	0.032342	7.0	0.5	411	649	
HD-10-5	0.282920	0.000015	0.000746	0.031495	5.6	0.5	468	740	rim
HD-11-1	0.282933	0.000016	0.000206	0.010590	6.1	0.6	442	709	rim
HD-11-2	0.282963	0.000016	0.000203	0.010139	7.2	0.6	400	641	
HD-11-3	0.282952	0.000017	0.000268	0.012684	6.7	0.6	417	667	core
HD-11-4	0.282969	0.000017	0.000280	0.013089	7.4	0.6	393	628	
HD-11-5	0.282972	0.000016	0.000219	0.010754	7.5	0.6	388	621	rim
HD-12-1	0.282951	0.000014	0.000366	0.015992	6.7	0.5	419	668	rim
HD-12-2	0.282937	0.000014	0.000373	0.016111	6.2	0.5	439	700	
HD-12-3	0.282938	0.000015	0.000361	0.015495	6.3	0.5	438	699	core
HD-12-4	0.282948	0.000015	0.000351	0.014991	6.6	0.5	423	675	
HD-12-5	0.282950	0.000015	0.000381	0.016201	6.7	0.5	420	670	rim
HD-13-1	0.282944	0.000014	0.001372	0.055832	6.5	0.5	440	685	rim
HD-13-2	0.282948	0.000015	0.001117	0.044818	6.6	0.5	431	675	
HD-13-3	0.282959	0.000014	0.001260	0.054597	7.0	0.5	418	652	core
HD-13-4	0.282964	0.000014	0.001244	0.054181	7.2	0.5	410	640	
HD-13-5	0.282958	0.000015	0.001410	0.062265	7.0	0.5	421	653	rim
HD-14-1	0.282929	0.000015	0.000821	0.035586	5.9	0.5	456	720	rim
HD-14-2	0.282923	0.000014	0.000882	0.038277	5.7	0.5	465	733	
HD-14-3	0.282932	0.000015	0.000936	0.039639	6.0	0.5	453	712	core
HD-14-4	0.282967	0.000015	0.000826	0.034530	7.3	0.5	401	632	
HD-14-5	0.282943	0.000013	0.000984	0.042468	6.4	0.5	438	688	rim
HD-15-1	0.282946	0.000014	0.000343	0.014987	6.5	0.5	426	680	rim
HD-15-2	0.282909	0.000013	0.000449	0.019758	5.2	0.5	479	763	
HD-15-3	0.282933	0.000013	0.000416	0.018574	6.1	0.5	445	710	core
HD-15-4	0.282932	0.000012	0.000289	0.012857	6.0	0.4	446	713	
HD-15-5	0.282931	0.000012	0.000369	0.015732	6.0	0.4	448	715	rim
HD-16-1	0.282940	0.000015	0.000795	0.036402	6.3	0.5	440	695	rim
HD-16-2	0.282950	0.000015	0.000920	0.041820	6.7	0.5	427	672	
HD-16-3	0.282949	0.000017	0.000936	0.042228	6.6	0.6	429	674	core
HD-16-4	0.282951	0.000016	0.000790	0.033766	6.7	0.6	425	670	
HD-16-5	0.282931	0.000017	0.000797	0.035361	6.0	0.6	453	715	rim

Table S3. Trace element (ppm) composition of studied zircon megacrysts

Locality Spot	HD-1 (Dark park)							HD-1 (Bright park)		
	HD-1-1	HD-1-2	HD-1-3	HD-1-4	HD-1-5	HD-1-6	Average	HD-1-7	HD-1-8	Average
La	0.427	1.263	0.415	0.415	1.109	1.701	0.888	0.000	0.081	0.040
Ce	34.960	52.500	33.098	30.000	47.196	27.759	37.586	8.220	7.822	8.021
Pr	2.486	4.860	2.354	2.008	4.085	3.656	3.242	0.213	0.224	0.218
Nd	27.670	44.900	27.827	25.057	39.042	35.402	33.316	3.290	3.379	3.334
Sm	39.040	41.890	37.072	34.534	36.884	32.353	36.962	8.080	6.549	7.315
Eu	14.160	13.060	13.886	12.988	11.969	10.609	12.779	3.520	3.348	3.434
Gd	153.900	129.800	141.184	131.991	114.770	104.739	129.397	50.760	44.617	47.688
Tb	50.710	38.690	48.529	45.631	34.718	33.593	41.978	21.190	19.302	20.246
Dy	575.000	412.100	517.060	481.939	354.351	353.701	449.025	303.700	259.418	281.559
Ho	181.000	125.400	164.808	154.537	111.118	116.759	142.270	123.300	109.655	116.478
Er	779.600	524.300	660.770	618.733	436.682	477.378	582.911	650.400	538.230	594.315
Tm	156.400	103.500	135.641	127.891	87.523	99.915	118.478	148.100	126.406	137.253
Yb	1322.000	863.900	1192.137	1114.949	758.578	890.079	1023.607	1379.000	1225.451	1302.226
Lu	224.400	146.800	205.358	194.442	132.020	161.389	177.401	268.700	252.088	260.394
Y	4738.000	3373.000	4061.484	3833.196	2842.710	3019.309	3644.616	3506.000	2933.601	3219.800
Nb	25.710	45.310	22.156	20.442	34.480	38.382	31.080	7.430	5.977	6.704
Ta	3.325	16.420	2.823	2.678	13.875	13.762	8.814	3.515	2.734	3.124
Ti	0.500	1.070	0.236	0.000	0.857	1.707	0.728	0.350	0.284	0.317
Hf	6119.000	6595.000	5356.673	5361.315	5850.736	5639.687	5820.402	6047.000	4916.493	5481.747
Th	1989.000	2705.000	1942.866	1690.174	2380.191	2222.762	2154.999	362.800	361.363	362.081
U	1706.000	1967.000	1596.463	1486.862	1742.345	1654.703	1692.229	770.900	710.998	740.949
ΣREE	3561.753	2502.963	3180.140	2975.112	2170.047	2349.034	2789.841	2968.473	2596.569	2782.521
Th/U	1.17	1.38	1.22	1.14	1.37	1.34	1.27	0.47	0.51	0.49
Th/Y	0.42	0.80	0.48	0.44	0.84	0.74	0.59	0.10	0.12	0.11
Eu/Eu*	0.56	0.54	0.59	0.59	0.56	0.56	0.56	0.53	0.60	0.56

Table S3. (continued)

Locality Spot	HD-2								HD-3						
	HD-2-1	HD-2-2	HD-2-3	HD-2-4	HD-2-5	HD-2-6	HD-2-7	Average	HD-3-1	HD-3-2	HD-3-3	HD-3-4	HD-3-5	HD-3-6	Average
La	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.001	0.000	0.005	0.006	0.000	0.000	0.003	0.002
Ce	1.157	0.345	0.332	0.927	1.446	0.392	0.389	0.713	0.539	0.870	0.708	0.589	0.685	0.595	0.664
Pr	0.024	0.014	0.009	0.032	0.049	0.004	0.000	0.019	0.009	0.013	0.013	0.012	0.010	0.027	0.014
Nd	0.443	0.276	0.282	0.454	0.721	0.147	0.202	0.361	0.159	0.156	0.180	0.101	0.145	0.188	0.155
Sm	1.220	0.553	0.420	0.860	1.427	0.392	0.519	0.770	0.422	0.887	0.539	0.352	0.616	0.496	0.552
Eu	0.900	0.395	0.471	0.828	1.359	0.322	0.440	0.674	0.340	0.610	0.414	0.327	0.607	0.442	0.457
Gd	8.670	2.560	2.845	6.608	11.065	2.795	2.848	5.342	3.080	5.420	3.584	3.231	3.763	3.128	3.701
Tb	3.088	1.021	1.012	2.597	4.001	1.036	1.191	1.992	1.551	2.587	1.598	1.475	1.894	1.562	1.778
Dy	41.620	13.200	11.702	34.633	48.180	15.993	16.054	25.912	23.410	34.172	21.301	22.828	27.254	20.890	24.976
Ho	15.190	5.099	4.841	12.958	17.508	6.195	6.363	9.736	9.460	13.715	9.072	9.166	10.985	8.149	10.091
Er	72.500	30.570	25.059	58.092	74.625	29.722	29.612	45.740	51.080	65.217	45.651	46.604	54.020	40.797	50.562
Tm	15.610	8.130	6.991	13.115	16.553	7.037	7.221	10.665	12.630	15.341	11.637	11.677	12.961	10.280	12.421
Yb	147.200	88.200	77.039	126.412	154.713	68.846	75.829	105.463	129.600	145.498	113.278	124.677	135.766	106.000	125.803
Lu	27.910	19.630	17.940	25.566	30.454	14.875	14.824	21.600	26.280	29.375	24.030	25.418	24.824	20.434	25.060
Y	420.300	154.000	132.651	349.866	462.427	167.508	172.929	265.669	270.400	366.383	251.902	256.255	298.282	230.313	278.923
Nb	3.950	1.374	1.123	2.861	4.902	1.267	1.073	2.364	0.862	0.851	0.573	0.703	0.939	0.621	0.758
Ta	2.686	1.453	1.432	2.197	3.165	0.967	1.141	1.863	0.613	0.563	0.496	0.640	0.457	0.384	0.525
Ti	10.600	7.070	5.405	7.304	11.504	6.187	7.288	7.908	0.000	0.097	0.403	0.395	0.168	0.119	0.197
Hf	6577.000	6826.000	6318.153	6256.641	6138.312	6177.637	5391.245	6240.713	8211.000	5964.309	6467.441	7568.776	5384.561	5620.660	6536.124
Th	234.000	15.890	15.445	169.625	303.689	36.833	23.259	114.106	23.350	33.582	19.963	26.083	16.277	20.013	23.211
U	291.400	60.640	58.718	239.717	324.940	97.313	74.518	163.892	51.030	64.001	43.704	57.045	41.355	43.706	50.140
ΣREE	335.532	169.993	148.945	283.083	362.100	147.755	155.498	228.987	258.560	313.867	232.011	246.456	273.532	212.989	256.236
Th/U	0.80	0.26	0.26	0.71	0.93	0.38	0.31	0.70	0.46	0.52	0.46	0.46	0.39	0.46	0.46
Th/Y	0.56	0.10	0.12	0.48	0.66	0.22	0.13	0.43	0.09	0.09	0.08	0.10	0.05	0.09	0.08
Eu/Eu*	0.85	1.01	1.32	1.06	1.05	0.94	1.11	1.02	0.91	0.85	0.91	0.94	1.22	1.08	0.98

Table S3. (continued)

Locality Spot	HD-4 (Dark park)					HD-4 (Bright park)				HD-5							
	HD-4-1	HD-4-2	HD-4-3	HD-4-4	Average	HD-4-5	HD-4-6	HD-4-7	Average	HD-5-1	HD-5-2	HD-5-3	HD-5-4	HD-5-5	HD-5-6	HD-5-7	Average
La	0.011	0.007	0.013	0.000	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ce	4.110	3.649	3.241	1.940	3.235	0.338	0.432	0.296	0.355	0.508	0.532	0.560	0.504	0.356	0.691	0.365	0.502
Pr	0.164	0.141	0.229	0.168	0.175	0.006	0.016	0.000	0.007	0.011	0.010	0.010	0.018	0.005	0.010	0.000	0.009
Nd	2.430	2.159	3.202	2.030	2.455	0.098	0.359	0.166	0.207	0.209	0.187	0.189	0.284	0.110	0.185	0.217	0.197
Sm	6.400	5.472	6.614	4.480	5.741	0.414	0.474	0.232	0.373	0.590	0.566	0.683	0.835	0.672	0.798	0.581	0.675
Eu	4.000	3.607	4.466	3.070	3.786	0.321	0.392	0.148	0.287	0.453	0.473	0.596	0.688	0.520	0.624	0.424	0.540
Gd	37.500	30.369	35.011	25.900	32.195	3.510	3.786	2.081	3.125	4.330	4.570	5.058	3.876	4.138	5.005	3.633	4.373
Tb	13.540	11.383	14.027	10.080	12.258	1.737	1.365	1.204	1.435	1.847	1.946	2.160	1.846	1.526	2.223	1.531	1.868
Dy	163.900	134.995	162.653	129.400	147.737	27.980	24.187	16.268	22.812	25.450	26.400	29.859	24.907	19.793	29.589	19.048	25.006
Ho	54.640	46.483	56.422	45.510	50.764	12.000	11.444	7.485	10.309	9.740	10.290	11.341	9.451	7.458	10.948	7.471	9.528
Er	241.500	192.562	236.875	218.600	222.384	65.720	65.309	40.684	57.238	48.750	51.470	50.405	42.265	35.963	49.574	34.311	44.677
Tm	48.840	39.832	53.078	47.200	47.238	15.990	17.681	10.508	14.726	10.510	11.210	11.863	10.063	8.227	11.497	8.404	10.253
Yb	408.300	349.601	489.993	415.900	415.949	156.200	194.538	115.706	155.481	98.600	102.700	117.396	104.126	82.533	114.180	83.223	100.394
Lu	72.000	60.197	79.015	76.400	71.903	30.910	33.888	21.904	28.901	19.110	20.260	18.910	16.009	13.390	18.110	13.848	17.091
Y	1407.000	1163.195	1358.367	1171.000	1274.891	338.600	306.504	206.385	283.830	270.700	286.700	293.624	245.294	196.709	283.943	192.920	252.841
Nb	33.200	28.360	22.087	14.940	24.647	4.260	4.118	2.789	3.722	0.897	0.894	0.904	0.912	0.802	1.252	0.625	0.898
Ta	18.680	17.190	11.942	11.090	14.726	6.620	8.882	5.658	7.053	0.637	0.629	0.678	0.694	0.576	0.870	0.508	0.656
Ti	1.580	2.511	0.862	0.990	1.486	0.830	1.320	0.309	0.820	0.000	0.320	0.150	0.000	0.654	0.147	0.517	0.255
Hf	11220.000	9306.889	8682.026	10940.000	10037.229	14220.000	10211.752	11136.048	11855.933	6061.000	5993.000	4614.047	4438.822	4387.105	4511.978	4306.550	4901.786
Th	1290.000	1147.565	491.007	323.700	813.068	27.180	25.186	18.388	23.585	50.320	56.210	31.188	46.004	40.377	84.448	38.667	49.602
U	957.000	882.087	801.451	601.400	810.485	122.700	186.387	94.449	134.512	111.600	118.100	96.385	116.228	103.158	164.770	100.940	115.883
ΣREE	1057.335	880.456	1144.838	980.678	1015.827	315.224	353.870	216.681	295.258	220.108	230.614	249.030	214.871	174.692	243.432	173.055	215.115
Th/U	1.35	1.30	0.61	0.54	1.00	0.22	0.14	0.19	0.18	0.45	0.48	0.32	0.40	0.39	0.51	0.38	0.43
Th/Y	0.92	0.99	0.36	0.28	0.64	0.08	0.08	0.09	0.08	0.19	0.20	0.11	0.19	0.21	0.30	0.20	0.20
Eu/Eu*	0.79	0.86	0.90	0.87	0.85	0.81	0.90	0.65	0.81	0.87	0.90	0.98	1.17	0.95	0.96	0.89	0.96

Table S3. (continued)

Locality Spot	HD-6									HD-7						
	HD-6-1	HD-6-2	HD-6-3	HD-6-4	HD-6-5	HD-6-6	HD-6-7	HD-6-8	Average	HD-7-1	HD-7-2	HD-7-3	HD-7-4	HD-7-5	HD-7-6	Average
La	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ce	1.123	1.684	0.806	1.070	1.321	1.065	0.749	1.346	1.145	0.515	0.393	0.568	0.437	0.335	0.480	0.455
Pr	0.009	0.065	0.023	0.042	0.007	0.017	0.000	0.014	0.022	0.007	0.013	0.018	0.000	0.015	0.004	0.010
Nd	0.192	0.980	0.107	0.618	0.292	0.193	0.310	0.369	0.383	0.218	0.215	0.237	0.133	0.197	0.158	0.193
Sm	0.781	2.900	0.996	2.056	2.231	0.943	0.780	0.725	1.427	0.660	0.630	0.545	0.420	0.584	0.439	0.546
Eu	0.690	1.847	0.573	1.418	0.925	0.771	0.484	1.035	0.968	0.428	0.418	0.482	0.436	0.349	0.515	0.438
Gd	6.590	15.030	5.746	10.496	9.016	6.772	4.121	9.264	8.379	3.640	3.400	4.240	3.330	2.839	4.221	3.612
Tb	2.895	5.800	2.302	3.852	3.973	3.046	2.296	3.878	3.505	1.580	1.399	1.847	1.284	1.248	1.622	1.497
Dy	40.630	71.100	34.992	47.180	50.841	39.969	29.858	49.009	45.447	23.470	20.300	27.840	18.206	16.943	23.864	21.770
Ho	15.490	23.830	14.107	16.389	19.401	15.179	12.979	19.420	17.099	10.590	8.280	11.810	8.077	6.908	10.471	9.356
Er	77.000	109.100	68.160	72.355	86.951	72.933	62.967	87.210	79.585	61.900	47.700	65.350	43.241	34.970	53.631	51.132
Tm	17.480	23.700	16.175	16.054	20.248	16.985	14.950	20.364	18.244	15.530	12.180	15.690	11.406	9.081	13.586	12.912
Yb	167.100	221.400	162.761	152.235	194.841	166.617	150.588	198.221	176.720	163.100	128.100	156.700	122.197	100.077	137.844	134.670
Lu	32.910	41.630	33.268	29.798	39.269	33.906	28.984	37.504	34.659	34.000	27.460	31.970	27.180	22.268	29.971	28.808
Y	412.400	621.600	367.609	410.466	501.351	404.982	351.132	506.835	447.047	308.600	241.100	340.500	225.076	186.286	285.216	264.463
Nb	1.202	2.350	1.558	1.534	1.558	1.199	1.485	1.629	1.564	1.384	1.047	1.544	1.111	0.698	1.299	1.181
Ta	0.800	1.333	0.998	0.988	0.813	0.773	1.118	0.975	0.975	0.923	0.795	0.873	0.775	0.584	0.677	0.771
Ti	0.000	0.000	0.213	0.152	0.333	0.308	0.501	0.000	0.188	0.000	0.000	0.000	0.152	0.144	0.253	0.091
Hf	6706.000	6075.000	6039.136	5709.900	5885.484	6098.986	5136.412	5135.946	5848.358	6327.000	6429.000	6425.000	5954.015	5660.977	5478.713	6045.784
Th	42.580	69.340	21.025	43.348	42.570	50.446	18.763	48.282	42.044	13.440	11.350	15.250	11.133	10.126	13.951	12.542
U	69.310	104.100	51.488	69.979	70.871	77.759	47.071	75.443	70.753	46.370	36.160	50.470	36.875	31.794	46.414	41.347
ΣREE	362.890	519.066	340.015	353.563	429.315	358.395	309.066	428.360	387.584	315.638	250.488	317.297	236.347	195.815	276.806	265.399
Th/U	0.61	0.67	0.41	0.62	0.60	0.65	0.40	0.64	0.59	0.29	0.31	0.30	0.30	0.32	0.30	0.30
Th/Y	0.10	0.11	0.06	0.11	0.08	0.12	0.05	0.10	0.09	0.04	0.05	0.04	0.05	0.05	0.05	0.05
Eu/Eu*	0.93	0.86	0.73	0.93	0.63	0.93	0.83	1.22	0.86	0.84	0.87	0.97	1.13	0.83	1.16	0.95

Table S3. (continued)

Locality Spot	HD-8							HD-9						
	HD-8-1	HD-8-2	HD-8-3	HD-8-4	HD-8-5	HD-8-6	Average	HD-9-1	HD-9-2	HD-9-3	HD-9-4	HD-9-5	HD-9-6	Average
La	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.001
Ce	0.767	0.990	0.699	0.783	0.311	0.836	0.731	0.298	0.215	0.165	0.253	0.292	0.326	0.258
Pr	0.009	0.007	0.010	0.000	0.004	0.006	0.006	0.000	0.031	0.013	0.003	0.000	0.007	0.009
Nd	0.173	0.169	0.147	0.208	0.002	0.344	0.174	0.112	0.104	0.051	0.060	0.034	0.100	0.077
Sm	0.501	0.520	0.478	0.444	0.413	0.511	0.478	0.303	0.301	0.202	0.278	0.320	0.349	0.292
Eu	0.362	0.484	0.323	0.496	0.127	0.378	0.362	0.224	0.269	0.260	0.269	0.221	0.295	0.256
Gd	4.210	5.320	3.124	4.171	1.997	4.511	3.889	2.260	1.763	1.930	2.222	2.084	2.162	2.070
Tb	2.083	2.835	1.984	2.266	0.999	2.374	2.090	1.037	0.906	0.775	0.989	0.937	1.170	0.969
Dy	34.830	47.470	31.060	38.581	15.210	38.881	34.339	14.120	12.651	11.204	12.848	12.800	15.490	13.185
Ho	15.780	20.570	14.225	17.212	6.888	16.504	15.196	5.690	4.732	4.782	5.181	5.001	5.924	5.218
Er	90.000	114.400	78.232	89.582	36.517	86.170	82.484	29.830	25.376	23.386	27.253	24.476	29.379	26.617
Tm	22.410	27.630	19.503	21.958	9.115	21.925	20.423	6.960	5.908	6.044	6.656	6.106	7.460	6.523
Yb	220.400	265.300	201.323	222.641	103.993	216.230	204.981	70.800	61.289	65.396	70.566	63.118	76.560	67.955
Lu	43.780	52.130	40.626	44.022	19.505	40.436	40.083	14.280	12.952	12.231	14.543	13.014	15.903	13.821
Y	450.300	582.000	394.501	462.260	187.032	463.447	423.257	158.600	138.359	129.830	141.554	138.631	162.546	144.920
Nb	3.040	4.040	2.325	2.661	0.660	3.181	2.651	0.424	0.384	0.524	0.406	0.430	0.368	0.423
Ta	1.347	1.448	1.208	1.309	0.397	1.351	1.177	0.308	0.285	0.280	0.283	0.323	0.299	0.296
Ti	2.570	2.760	2.360	2.124	1.457	3.047	2.386	0.000	0.211	0.203	0.000	0.419	0.162	0.166
Hf	6642.000	6506.000	6157.474	5973.829	5083.305	4812.302	5862.485	6119.000	5381.589	4440.544	5439.134	5522.057	5417.715	5386.673
Th	29.740	41.170	28.091	33.435	9.419	36.311	29.694	8.670	11.941	11.408	13.038	11.615	9.825	11.083
U	73.450	92.700	69.787	80.235	27.010	81.415	70.766	31.220	38.374	37.951	40.505	37.490	34.238	36.629
ΣREE	435.305	537.825	391.735	442.363	195.082	429.106	405.236	145.914	126.497	126.438	141.122	128.403	155.130	137.251
Th/U	0.40	0.44	0.40	0.42	0.35	0.45	0.42	0.28	0.31	0.30	0.32	0.31	0.29	0.30
Th/Y	0.07	0.07	0.07	0.07	0.05	0.08	0.07	0.05	0.09	0.09	0.09	0.08	0.06	0.08
Eu/Eu*	0.76	0.89	0.81	1.11	0.43	0.76	0.81	0.83	1.13	1.28	1.05	0.83	1.04	1.01

Table S3. (continued)

Locality Spot	HD-10							HD-11					
	HD-10-1	HD-10-2	HD-10-3	HD-10-4	HD-10-5	HD-10-6	Average	HD-11-1	HD-11-2	HD-11-3	HD-11-4	HD-11-5	Average
La	0.000	0.000	0.005	0.000	0.000	0.000	0.001	0.000	0.003	0.000	0.003	0.000	0.001
Ce	0.522	0.898	0.882	0.919	1.078	0.804	0.851	0.861	1.108	0.966	0.909	0.734	0.916
Pr	0.007	0.013	0.016	0.031	0.015	0.000	0.014	0.000	0.014	0.008	0.015	0.005	0.009
Nd	0.124	0.217	0.367	0.274	0.279	0.154	0.236	0.187	0.122	0.258	0.206	0.043	0.163
Sm	0.518	0.780	0.962	0.802	1.030	0.536	0.771	0.641	0.362	0.519	0.427	0.415	0.473
Eu	0.374	0.671	0.629	0.728	0.707	0.515	0.604	0.440	0.262	0.390	0.276	0.240	0.322
Gd	3.440	6.350	5.840	5.644	7.140	4.683	5.516	4.683	2.403	3.119	2.501	2.085	2.958
Tb	1.563	2.645	2.811	2.327	3.135	2.068	2.425	2.075	1.308	1.354	1.180	1.045	1.392
Dy	21.700	37.830	34.388	33.046	42.480	27.854	32.883	23.150	15.656	16.875	14.055	14.521	16.851
Ho	8.710	15.020	14.329	12.351	16.860	11.170	13.073	8.597	5.679	5.751	4.902	5.177	6.021
Er	44.700	74.700	66.686	58.109	83.100	52.300	63.266	35.731	23.394	26.667	21.009	23.160	25.992
Tm	9.790	16.100	14.719	13.092	17.620	11.658	13.830	7.015	4.877	5.864	4.237	4.954	5.389
Yb	91.500	144.400	137.654	129.135	156.200	111.019	128.318	64.030	38.722	53.230	37.396	43.645	47.405
Lu	17.400	27.430	25.523	20.955	29.530	21.674	23.752	11.996	6.826	10.530	6.650	7.917	8.784
Y	239.400	405.100	368.153	321.234	452.600	292.217	346.451	227.193	166.041	182.269	151.656	158.024	177.036
Nb	0.623	1.363	1.214	1.170	1.742	0.965	1.179	0.465	0.542	0.605	0.593	0.257	0.492
Ta	0.486	0.812	0.811	0.726	0.934	0.572	0.723	0.373	0.298	0.375	0.302	0.174	0.304
Ti	0.000	0.310	0.473	0.258	0.000	0.000	0.174	0.439	0.910	0.000	0.439	0.362	0.430
Hf	6052.000	5946.000	5396.405	4085.616	5883.000	5287.458	5441.746	5209.468	5094.918	5023.299	5157.382	5565.361	5210.086
Th	25.600	73.400	71.732	66.807	91.100	46.894	62.589	22.638	10.330	11.477	10.071	7.066	12.316
U	56.700	112.100	112.096	111.405	129.100	85.852	101.209	48.441	19.367	19.865	17.725	15.770	24.233
ΣREE	200.348	327.054	304.811	277.413	359.174	244.436	285.539	159.406	100.735	125.531	93.768	103.939	116.676
Th/U	0.45	0.65	0.64	0.60	0.71	0.55	0.62	0.47	0.53	0.58	0.57	0.45	0.51
Th/Y	0.11	0.18	0.19	0.21	0.20	0.16	0.18	0.10	0.06	0.06	0.07	0.04	0.07
Eu/Eu*	0.86	0.92	0.81	1.05	0.80	0.99	0.90	0.78	0.86	0.94	0.82	0.79	0.83

Table S3. (continued)

Locality Spot	HD-12							HD-13							
	HD-12-1	HD-12-2	HD-12-3	HD-12-4	HD-12-5	HD-12-6	Average	HD-13-1	HD-13-2	HD-13-3	HD-13-4	HD-13-5	HD-13-6	HD-13-7	Average
La	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.007	0.001
Ce	0.478	0.472	0.423	0.334	0.455	0.509	0.445	0.784	0.753	0.914	0.981	1.561	0.954	1.129	1.011
Pr	0.007	0.008	0.010	0.007	0.004	0.005	0.007	0.011	0.016	0.003	0.008	0.024	0.011	0.018	0.013
Nd	0.141	0.074	0.096	0.067	0.085	0.165	0.105	0.216	0.111	0.118	0.103	0.184	0.130	0.087	0.136
Sm	0.263	0.326	0.353	0.222	0.461	0.332	0.326	0.415	0.368	0.345	0.601	0.678	0.560	0.360	0.475
Eu	0.223	0.218	0.240	0.176	0.285	0.176	0.220	0.363	0.286	0.333	0.500	0.636	0.445	0.320	0.412
Gd	2.286	1.991	2.229	1.645	2.224	2.267	2.107	2.887	2.678	3.374	3.342	5.718	4.199	3.750	3.707
Tb	1.065	0.901	1.014	0.778	0.947	0.964	0.945	1.570	1.804	2.067	2.213	3.207	2.520	2.581	2.280
Dy	14.287	13.010	13.973	10.774	13.579	12.106	12.955	26.867	27.760	34.043	35.274	48.290	39.712	39.396	35.906
Ho	6.457	5.388	5.561	4.816	5.516	5.277	5.502	13.003	12.884	15.407	16.041	19.981	17.347	17.510	16.025
Er	33.592	27.205	28.288	24.035	28.348	26.434	27.984	81.882	79.702	85.726	90.750	108.643	96.379	97.530	91.516
Tm	8.355	6.563	6.757	5.995	6.876	6.587	6.856	23.140	21.670	23.066	23.289	27.558	24.882	25.293	24.128
Yb	86.711	68.592	71.983	61.144	69.307	62.016	69.959	259.475	241.837	243.986	252.997	280.704	260.458	262.111	257.367
Lu	18.555	14.192	15.323	13.588	14.966	13.198	14.971	59.415	54.118	52.323	54.215	58.398	55.165	55.494	55.590
Y	179.223	146.580	154.775	131.603	152.384	142.532	151.183	405.238	400.169	460.358	481.427	592.828	516.516	522.890	482.775
Nb	0.604	0.389	0.393	0.389	0.406	0.401	0.430	1.453	1.489	1.266	1.340	2.381	1.696	1.647	1.610
Ta	0.432	0.340	0.328	0.299	0.326	0.272	0.333	1.151	0.913	0.851	0.920	1.406	0.920	1.039	1.028
Ti	0.531	0.000	0.621	0.201	0.424	0.000	0.296	0.211	0.177	0.556	0.595	0.225	0.293	0.435	0.356
Hf	5691.479	6026.995	5812.594	5771.247	6246.029	5836.514	5897.476	6682.308	6594.393	6482.997	6441.341	6411.995	6391.984	6291.100	6470.874
Th	16.247	8.616	9.334	7.488	9.365	8.148	9.866	26.814	30.814	47.104	51.422	221.150	61.772	77.262	73.763
U	41.962	23.129	26.697	24.102	24.062	23.180	27.189	55.849	57.440	81.259	85.964	204.163	97.980	107.613	98.610
ΣREE	172.421	138.940	146.250	123.581	143.053	130.037	142.380	470.028	443.987	461.704	480.316	555.582	502.766	505.585	488.567
Th/U	0.39	0.37	0.35	0.31	0.39	0.35	0.36	0.48	0.54	0.58	0.60	1.08	0.63	0.72	0.75
Th/Y	0.09	0.06	0.06	0.06	0.06	0.06	0.07	0.07	0.08	0.10	0.11	0.37	0.12	0.15	0.15
Eu/Eu*	0.88	0.83	0.83	0.89	0.86	0.62	0.81	1.01	0.88	0.94	1.08	0.99	0.89	0.84	0.95

Table S3. (continued)

Locality Spot	HD-14							HD-15						
	HD-14-1	HD-14-2	HD-14-3	HD-14-4	HD-14-5	HD-14-6	Average	HD-15-1	HD-15-2	HD-15-3	HD-15-4	HD-15-5	HD-15-6	Average
La	0.000	0.000	0.000	0.000	0.000	0.010	0.002	0.000	0.000	0.035	0.000	0.005	0.003	0.007
Ce	0.583	0.786	0.708	0.909	0.594	0.458	0.673	1.085	0.588	0.359	0.393	0.439	0.873	0.623
Pr	0.020	0.000	0.024	0.025	0.023	0.007	0.017	0.012	0.023	0.005	0.005	0.000	0.012	0.009
Nd	0.166	0.310	0.370	0.397	0.223	0.151	0.269	0.190	0.118	0.041	0.106	0.113	0.118	0.114
Sm	0.543	0.662	0.689	1.006	0.613	0.526	0.673	0.512	0.428	0.145	0.282	0.317	0.303	0.331
Eu	0.594	0.584	0.580	0.656	0.519	0.379	0.552	0.351	0.296	0.107	0.163	0.144	0.365	0.238
Gd	4.791	5.730	4.971	5.421	4.770	3.058	4.790	3.609	2.452	1.208	1.723	1.636	2.751	2.230
Tb	2.218	2.760	2.365	2.667	2.004	1.380	2.233	1.547	1.301	0.516	0.850	0.708	1.341	1.044
Dy	29.198	33.133	30.065	35.870	25.726	19.791	28.964	22.212	17.331	6.675	12.510	10.832	17.453	14.502
Ho	11.616	13.291	12.348	14.490	10.298	7.998	11.674	9.115	7.316	3.145	5.618	4.693	6.829	6.119
Er	58.976	65.839	62.847	73.795	53.047	39.332	58.973	43.976	37.927	17.610	28.971	25.561	36.294	31.723
Tm	13.994	15.462	14.880	17.047	12.707	9.794	13.981	10.349	9.263	4.574	7.697	7.057	8.422	7.894
Yb	138.908	152.131	149.792	171.514	134.716	97.269	140.722	101.590	96.933	50.727	88.260	79.537	81.284	83.055
Lu	29.980	32.911	32.726	35.916	30.232	21.220	30.498	20.885	21.005	11.705	19.629	17.463	16.945	17.939
Y	322.930	360.665	340.304	413.392	286.519	220.998	324.135	259.576	210.311	94.939	163.789	146.161	203.077	179.642
Nb	1.044	0.944	1.638	1.875	1.284	0.938	1.287	0.655	0.806	0.611	1.025	0.648	0.542	0.714
Ta	0.676	0.814	0.991	0.958	0.868	0.609	0.819	0.577	0.733	0.521	0.911	0.565	0.377	0.614
Ti	0.110	0.259	0.116	0.000	0.071	0.227	0.131	0.000	0.275	0.000	0.000	0.171	0.446	0.149
Hf	5591.489	5634.438	5411.749	5614.535	5329.105	5862.203	5573.920	6877.585	8500.255	8557.894	9591.593	7853.415	6488.881	7978.271
Th	20.185	24.007	18.509	21.639	16.452	11.367	18.693	17.686	26.390	12.021	24.880	21.698	14.690	19.560
U	58.019	65.325	61.448	66.399	50.700	35.689	56.263	41.886	65.782	37.726	68.656	52.767	33.397	50.036
ΣREE	291.589	323.599	312.366	359.714	275.473	201.376	294.019	215.431	194.982	96.851	166.206	148.505	172.992	165.828
Th/U	0.35	0.37	0.30	0.33	0.32	0.32	0.33	0.42	0.40	0.32	0.36	0.41	0.44	0.39
Th/Y	0.06	0.07	0.05	0.05	0.06	0.05	0.06	0.07	0.13	0.13	0.15	0.15	0.07	0.11
Eu/Eu*	1.13	0.92	0.96	0.86	0.93	0.91	0.94	0.79	0.88	0.78	0.72	0.61	1.22	0.85

Locality Spot	HD-16						Average
	HD-16-1	HD-16-2	HD-16-3	HD-16-4	HD-16-5	HD-16-6	
La	0.010	0.000	0.000	0.003	0.000	0.000	0.002
Ce	0.815	0.541	0.884	1.051	0.960	0.943	0.866
Pr	0.000	0.001	0.018	0.005	0.007	0.020	0.008
Nd	0.126	0.088	0.425	0.313	0.171	0.211	0.222
Sm	0.386	0.358	0.713	0.517	0.379	0.993	0.558
Eu	0.378	0.246	0.736	0.635	0.399	0.797	0.532
Gd	3.172	2.269	5.852	5.624	3.758	7.075	4.625
Tb	1.717	1.170	2.615	2.794	1.716	2.670	2.114
Dy	27.351	16.606	34.418	39.023	22.844	36.388	29.438
Ho	11.859	8.320	12.892	16.405	9.299	13.767	12.090
Er	62.416	48.361	61.280	80.433	48.285	63.811	60.765
Tm	15.049	12.398	13.915	18.552	12.011	14.490	14.402
Yb	148.181	131.088	132.578	176.640	119.644	137.023	140.859
Lu	30.264	28.078	26.338	35.926	26.378	27.329	29.052
Y	330.765	234.076	343.686	438.333	251.773	352.094	325.121
Nb	1.923	1.310	1.561	1.431	1.236	1.809	1.545
Ta	0.900	0.961	0.999	0.788	0.717	0.985	0.892
Ti	0.732	0.666	0.816	1.188	0.538	0.728	0.778
Hf	5487.758	5480.238	5163.074	5465.955	5514.622	5139.895	5375.257
Th	26.306	18.861	56.154	50.889	27.371	59.847	39.905
U	44.648	35.253	62.187	59.613	34.988	66.136	50.471
ΣREE	301.726	249.523	292.664	377.921	245.852	305.516	295.534
Th/U	0.59	0.54	0.90	0.85	0.78	0.90	0.79
Th/Y	0.08	0.08	0.16	0.12	0.11	0.17	0.12
Eu/Eu*	1.04	0.83	1.10	1.14	1.02	0.92	1.01