Yu-Wei Tang, Long Chen, Zi-Fu Zhao, and Yong-Fei Zheng, 2021, Origin of syn-collisional granitoids in the Gangdese orogen: Reworking of the juvenile arc crust and the ancient continental crust: GSA Bulletin, <https://doi.org/10.1130/B35928.1>.

Supplemental Material

Table S1. LA-ICPMS zircon U-Pb isotope and trace element data for Eocene granitoids from the Quxu batholith.

Table S2. LA-MC-ICPMS zircon Lu-Hf isotope compositions for Eocene granitoids from the Quxu batholith.

Table S1. LA-ICPMS zircon U-Pb isotope and trace element data for Eocene granitoids from the Quxu batholith.

Spot	Th ppm	U ppm	Pb ppm	Yb ppm	Th/U	U/Yb	²⁰⁷ Pb/ ²⁰⁶ Pb	1σ	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
12LS14																		
1	188	353	3.26	270	0.53	1.31	0.0486	0.0042	0.0478	0.0035	0.0074	0.0002	128	193	47.4	3.4	47.7	1.5
2	99.9	174	1.61	154	0.57	1.13	0.0588	0.0120	0.0526	0.0059	0.0073	0.0003	561	456	52.0	5.7	47.2	2.1
3	197	409	3.87	316	0.48	1.30	0.0487	0.0043	0.0499	0.0039	0.0077	0.0002	200	131	49.5	3.8	49.4	1.5
4	731	741	7.76	948	0.99	0.78	0.0494	0.0035	0.0505	0.0032	0.0076	0.0002	165	159	50.0	3.1	48.6	1.4
5	152	234	2.41	244	0.65	0.96	0.0484	0.0057	0.0524	0.0051	0.0081	0.0004	117	256	51.9	4.9	52.1	2.5
6	77.8	131	1.30	140	0.60	0.93	0.0509	0.0077	0.0507	0.0059	0.0079	0.0003	235	318	50.3	5.7	50.5	2.1
7	183	364	3.46	234	0.50	1.55	0.0485	0.0041	0.0513	0.0038	0.0080	0.0003	124	185	50.8	3.6	51.1	1.6
8	286	304	3.16	277	0.94	1.10	0.0498	0.0066	0.0471	0.0050	0.0073	0.0003	187	291	46.7	4.9	47.0	1.7
9	154	326	3.09	263	0.47	1.24	0.0497	0.0043	0.0509	0.0036	0.0079	0.0003	191	256	46.2	4.3	46.5	1.3
10	265	459	4.52	331	0.58	1.39	0.0481	0.0044	0.0529	0.0046	0.0081	0.0003	106	204	52.3	4.4	52.0	1.6
11	178	343	3.33	241	0.52	1.43	0.0497	0.0041	0.0533	0.0038	0.0081	0.0003	189	176	52.7	3.7	51.9	1.7
12	226	396	3.95	330	0.57	1.20	0.0558	0.0055	0.0579	0.0054	0.0081	0.0003	443	223	57.1	5.2	52.2	1.7
13	1327	1119	12.03	1216	1.19	0.92	0.0495	0.0033	0.0504	0.0030	0.0072	0.0002	172	159	49.9	2.9	46.1	1.4
14	249	453	4.17	271	0.55	1.67	0.0534	0.0040	0.0523	0.0036	0.0075	0.0003	346	172	51.8	3.5	48.3	1.7
15	173	189	1.95	297	0.92	0.64	0.0497	0.0062	0.0490	0.0051	0.0076	0.0003	189	267	48.6	4.9	48.5	1.7
16	1119	944	10.05	1364	1.19	0.69	0.0463	0.0033	0.0477	0.0033	0.0074	0.0002	13	163	47.3	3.2	47.4	1.4
17	242	446	4.52	253	0.54	1.76	0.0485	0.0051	0.0543	0.0051	0.0083	0.0003	124	226	53.7	4.9	53.5	1.8
18	208	309	3.05	420	0.67	0.74	0.0506	0.0046	0.0518	0.0041	0.0078	0.0003	233	187	51.3	3.9	50.3	1.8
19	289	362	4.01	295	0.80	1.23	0.0490	0.0045	0.0553	0.0045	0.0084	0.0003	146	204	54.7	4.3	54.2	1.8
20	405	537	5.64	294	0.75	1.83	0.0487	0.0039	0.0526	0.0038	0.0081	0.0002	132	178	52.1	3.7	52.1	1.5

Table S1 (continued)

Spot	Th ppm	U ppm	Pb ppm	Yb ppm	Th/U	U/Yb	$\frac{^{207}\text{Pb}}{^{206}\text{Pb}}$	1 σ	$\frac{^{207}\text{Pb}}{^{235}\text{U}}$	1 σ	$\frac{^{206}\text{Pb}}{^{238}\text{U}}$	1 σ	$\frac{^{207}\text{Pb}}{^{206}\text{Pb}}$	1 σ	$\frac{^{207}\text{Pb}}{^{235}\text{U}}$	1 σ	$\frac{^{206}\text{Pb}}{^{238}\text{U}}$	1 σ
12LS29																		
1	481	757	7.44	375	0.64	2.02	0.0446	0.0023	0.0452	0.0023	0.0075	0.0002	error		44.9	2.2	48.1	1.4
2	336	585	5.86	416	0.57	1.41	0.0445	0.0026	0.0471	0.0028	0.0078	0.0002	error		46.8	2.7	50.0	1.4
3	74.9	237	2.12	84.3	0.32	2.81	0.0488	0.0037	0.0465	0.0030	0.0074	0.0002	139	167	46.1	2.9	47.4	1.5
4	454	574	5.89	374	0.79	1.54	0.0420	0.0025	0.0432	0.0025	0.0075	0.0002	error	error	42.9	2.5	48.3	1.4
5	754	820	8.58	426	0.92	1.93	0.0476	0.0024	0.0469	0.0023	0.0073	0.0002	76	114.8	46.5	2.2	46.8	1.3
6	403	592	5.86	500	0.68	1.18	0.0444	0.0025	0.0451	0.0026	0.0073	0.0002	error		44.8	2.5	47.0	1.4
7	1099	972	10.14	606	1.13	1.60	0.0475	0.0026	0.0470	0.0026	0.0072	0.0002	72	126	46.6	2.6	46.0	1.3
8	392	594	6.21	473	0.66	1.26	0.0493	0.0026	0.0524	0.0028	0.0078	0.0002	161	124	51.9	2.7	49.9	1.5
9	476	627	6.27	415	0.76	1.51	0.0473	0.0025	0.0466	0.0025	0.0072	0.0002	65	122	46.2	2.4	46.1	1.3
10	528	613	6.39	416	0.86	1.47	0.0456	0.0023	0.0467	0.0024	0.0074	0.0002	error		46.3	2.4	47.8	1.4
11	383	506	5.21	327	0.76	1.55	0.0445	0.0028	0.0461	0.0029	0.0076	0.0002	error		45.8	2.8	48.9	1.5
12	282	517	4.92	366	0.55	1.41	0.0452	0.0025	0.0455	0.0025	0.0073	0.0002	error		45.2	2.4	46.8	1.4
13	455	627	6.38	439	0.73	1.43	0.0479	0.0030	0.0486	0.0028	0.0075	0.0002	100	131	48.2	2.7	48.2	1.4
14	538	611	6.16	514	0.88	1.19	0.0459	0.0024	0.0457	0.0023	0.0073	0.0002	error		45.3	2.3	46.6	1.4
15	273	462	4.46	373	0.59	1.24	0.0481	0.0029	0.0494	0.0030	0.0075	0.0002	102	137	48.9	2.9	48.0	1.4
16	349	490	4.81	405	0.71	1.21	0.0478	0.0029	0.0481	0.0029	0.0075	0.0002	87	146	47.7	2.8	48.0	1.5
17	241	381	3.85	314	0.63	1.22	0.0484	0.0031	0.0498	0.0031	0.0077	0.0002	120	144	49.4	3.0	49.5	1.5
18	316	479	4.77	376	0.66	1.27	0.0468	0.0027	0.0482	0.0028	0.0076	0.0002	43	130	47.8	2.7	48.9	1.5
19	1145	1107	11.77	437	1.03	2.53	0.0467	0.0021	0.0465	0.0021	0.0074	0.0002	35.3	107	46.1	2.0	47.5	1.4
20	4805	3771	39.8	1326	1.27	2.84	0.0476	0.0016	0.0451	0.0016	0.0070	0.0002	80	87	44.8	1.6	44.9	1.3
21	737	892	9.31	556	0.83	1.61	0.0479	0.0026	0.0490	0.0026	0.0076	0.0002	95	122	48.5	2.5	48.8	1.4

Table S1 (continued)

Spot	Th ppm	U ppm	Pb ppm	Yb ppm	Th/U	U/Yb	$^{207}\text{Pb}/$ ^{206}Pb	1 σ	$^{207}\text{Pb}/$ ^{235}U	1 σ	$^{206}\text{Pb}/$ ^{238}U	1 σ	$^{207}\text{Pb}/$ ^{206}Pb	1 σ	$^{207}\text{Pb}/$ ^{235}U	1 σ	$^{206}\text{Pb}/$ ^{238}U	1 σ
12LS36																		
1	456	369	3.65	126	1.24	2.92	0.0469	0.0039	0.0410	0.0030	0.0064	0.0002	43	189	40.8	3.0	41.0	1.3
2	1102	847	8.68	173	1.30	4.91	0.0486	0.0025	0.0428	0.0022	0.0065	0.0002	128	-72	42.6	2.2	41.5	1.3
3	772	734	7.02	124	1.05	5.91	0.0447	0.0027	0.0398	0.0024	0.0064	0.0002	error		39.7	2.3	41.4	1.2
4	790	768	7.13	124	1.03	6.19	0.0439	0.0022	0.0388	0.0021	0.0064	0.0002	error		38.7	2.0	41.0	1.2
5	2676	2652	26.1	237	1.01	11.21	0.0519	0.0022	0.0476	0.0019	0.0067	0.0002	280	91.6525	47.2	1.9	43.2	1.4
6	442	414	3.88	90.7	1.07	4.57	0.0441	0.0032	0.0390	0.0027	0.0065	0.0002	error		38.8	2.7	41.5	1.3
7	446	436	4.13	92.2	1.02	4.72	0.0470	0.0032	0.0413	0.0026	0.0066	0.0002	56	156	41.1	2.5	42.1	1.3
8	491	421	4.22	94.5	1.17	4.45	0.0509	0.0034	0.0455	0.0030	0.0066	0.0002	235	154	45.2	2.9	42.1	1.3
9	592	685	6.20	102	0.86	6.75	0.0472	0.0025	0.0426	0.0023	0.0066	0.0002	61	122	42.3	2.2	42.2	1.3
10	678	517	5.18	160	1.31	3.23	0.0512	0.0030	0.0453	0.0027	0.0064	0.0002	250	133	45.0	2.6	41.0	1.3
11	473	446	4.13	95.8	1.06	4.66	0.0491	0.0030	0.0415	0.0026	0.0062	0.0002	154	-53	41.3	2.5	40.1	1.2
12	4429	2273	25.2	346	1.95	6.57	0.0529	0.0023	0.0466	0.0021	0.0064	0.0002	328	94	46.2	2.1	41.3	1.3
13	400	462	4.19	86.4	0.87	5.34	0.0483	0.0030	0.0422	0.0025	0.0065	0.0002	122	131	42.0	2.4	41.8	1.4
14	485	513	4.77	111	0.95	4.62	0.0486	0.0031	0.0433	0.0027	0.0066	0.0002	128	144	43.1	2.6	42.3	1.4
15	568	542	5.16	96.2	1.05	5.63	0.0466	0.0029	0.0405	0.0024	0.0064	0.0002	28	144	40.3	2.4	41.4	1.3
16	436	403	3.70	86.2	1.08	4.67	0.0484	0.0034	0.0404	0.0027	0.0061	0.0002	117	156	40.3	2.6	39.5	1.3
17	742	620	6.05	115	1.20	5.37	0.0459	0.0031	0.0417	0.0029	0.0066	0.0003	error		41.5	2.8	42.4	1.7
18	1117	791	8.17	193	1.41	4.09	0.0482	0.0032	0.0428	0.0028	0.0066	0.0003	109	152	42.6	2.7	42.7	1.8
19	507	443	4.38	94.9	1.14	4.67	0.0462	0.0030	0.0412	0.0027	0.0066	0.0002	5.7	161	41.0	2.6	42.2	1.4
20	251	404	3.34	74.1	0.62	5.45	0.0506	0.0039	0.0442	0.0033	0.0066	0.0003	220	180	44.0	3.2	42.4	1.8
21	7276	4719	52.3	414	1.54	11.41	0.0496	0.0019	0.0461	0.0022	0.0069	0.0003	176	91	45.7	2.1	44.1	1.9
22	574	472	4.57	120	1.22	3.92	0.0481	0.0030	0.0413	0.0025	0.0064	0.0002	106	150	41.1	2.5	41.3	1.5
23	373	442	4.12	78.6	0.84	5.62	0.0458	0.0029	0.0427	0.0027	0.0068	0.0002	error		42.4	2.6	43.7	1.4
24	524	540	5.02	95.6	0.97	5.64	0.0481	0.0026	0.0421	0.0022	0.0065	0.0002	106	122	41.9	2.2	41.8	1.4

Table S1 (continued)

Spot	Th ppm	U ppm	Pb ppm	Yb ppm	Th/U	U/Yb	$^{207}\text{Pb}/^{206}\text{Pb}$	1 σ	$^{207}\text{Pb}/^{235}\text{U}$	1 σ	$^{206}\text{Pb}/^{238}\text{U}$	1 σ	$^{207}\text{Pb}/^{206}\text{Pb}$	1 σ	$^{207}\text{Pb}/^{235}\text{U}$	1 σ	$^{206}\text{Pb}/^{238}\text{U}$	1 σ
12LS39																		
1	701	783	6.74	127	0.90	6.18	0.0475	0.0027	0.0439	0.0025	0.0067	0.0002	72.3	139	43.6	2.4	43.1	1.2
2	672	716	6.06	105	0.94	6.79	0.0474	0.0028	0.0421	0.0023	0.0065	0.0002	77.9	133	41.9	2.3	41.5	1.2
3	433	432	3.80	102	1.00	4.22	0.0478	0.0037	0.0429	0.0031	0.0066	0.0002	100	165	42.7	3.0	42.4	1.3
4	481	448	4.12	95.3	1.07	4.70	0.0473	0.0036	0.0438	0.0031	0.0067	0.0002	64.9	174	43.5	3.0	43.2	1.3
5	144	190	1.60	149	0.76	1.27	0.0509	0.0055	0.0446	0.0038	0.0069	0.0002	235	243	44.3	3.7	44.1	1.5
6	619	488	4.77	109	1.27	4.49	0.0472	0.0035	0.0452	0.0031	0.0069	0.0002	57.5	176	44.8	3.0	44.5	1.3
7	568	462	4.32	117	1.23	3.97	0.0457	0.0035	0.0425	0.0030	0.0065	0.0002	error		42.3	2.9	41.9	1.2
8	2508	2993	25.9	241	0.84	12.40	0.0489	0.0018	0.0453	0.0017	0.0067	0.0002	143	89.8	45.0	1.6	43.0	1.1
9	435	1014	7.82	114	0.43	8.89	0.0475	0.0028	0.0428	0.0024	0.0066	0.0002	72.3	133	42.5	2.3	42.5	1.2
10	1225	2330	17.07	198	0.53	11.78	0.0492	0.0022	0.0417	0.0019	0.0061	0.0002	167	102.8	41.5	1.9	39.3	1.1
11	840	1110	9.33	139	0.76	7.97	0.0465	0.0027	0.0414	0.0023	0.0065	0.0002	33.4	133	41.2	2.2	41.6	1.2
12	604	505	4.81	104	1.20	4.87	0.0473	0.0034	0.0442	0.0029	0.0069	0.0002	61.2	172	43.9	2.8	44.2	1.3
13	686	1212	9.33	146	0.57	8.33	0.0481	0.0025	0.0425	0.0023	0.0064	0.0002	106	128	42.3	2.2	41.1	1.1
14	661	1054	8.70	133	0.63	7.95	0.0488	0.0026	0.0440	0.0022	0.0066	0.0002	200	124	43.7	2.1	42.6	1.2
15	621	701	7.02	111	0.89	6.31	0.0501	0.0034	0.0484	0.0030	0.0069	0.0002	198	159	48.0	2.9	44.6	1.4
16	692	858	7.04	108	0.81	7.92	0.0470	0.0027	0.0412	0.0022	0.0064	0.0002	55.7	133	41.0	2.1	40.9	1.1
17	510	494	4.39	87.9	1.03	5.62	0.0485	0.0033	0.0428	0.0028	0.0066	0.0002	124	156	42.6	2.7	42.6	1.2
18	961	1857	14.66	241	0.52	7.72	0.0445	0.0025	0.0418	0.0019	0.0064	0.0002	error		41.5	1.8	41.4	1.1
19	382	339	3.37	151	1.13	2.24	0.0500	0.0041	0.0479	0.0032	0.0074	0.0002	195	178	47.5	3.1	47.4	1.4
20	847	2115	15.36	178	0.40	11.87	0.0486	0.0024	0.0415	0.0019	0.0064	0.0002	128	114.8	41.3	1.9	41.0	1.1
21	3398	2875	26.1	454	1.18	6.33	0.0465	0.0019	0.0424	0.0016	0.0066	0.0002	33.4	87.0	42.2	1.6	42.5	1.2

Table S1 (continued)

Spot	Th ppm	U ppm	Pb ppm	Yb ppm	Th/U	U/Yb	$\frac{^{207}\text{Pb}}{^{206}\text{Pb}}$	1 σ	$\frac{^{207}\text{Pb}}{^{235}\text{U}}$	1 σ	$\frac{^{206}\text{Pb}}{^{238}\text{U}}$	1 σ	$\frac{^{207}\text{Pb}}{^{206}\text{Pb}}$	1 σ	$\frac{^{207}\text{Pb}}{^{235}\text{U}}$	1 σ	$\frac{^{206}\text{Pb}}{^{238}\text{U}}$	1 σ
12LS44																		
1	810	600	5.87	168	1.35	3.57	0.0429	0.0026	0.0377	0.0021	0.0064	0.0002	error	error	37.6	2.1	41.3	1.2
2	440	460	4.24	77.5	0.96	5.94	0.0467	0.0030	0.0418	0.0026	0.0065	0.0002	35	154	41.6	2.6	41.7	1.2
3	533	582	5.26	93.1	0.92	6.25	0.0462	0.0027	0.0409	0.0023	0.0065	0.0002	9	133	40.7	2.3	41.8	1.2
4	685	660	6.08	120	1.04	5.49	0.0476	0.0028	0.0417	0.0023	0.0064	0.0002	76	133.31	41.5	2.3	41.2	1.2
5	481	632	5.37	111	0.76	5.71	0.0470	0.0026	0.0410	0.0022	0.0064	0.0002	56	117	40.8	2.2	41.0	1.2
6	433	394	3.79	102	1.10	3.85	0.0470	0.0030	0.0415	0.0025	0.0065	0.0002	56	139	41.3	2.5	42.0	1.3
7	430	402	3.69	90.7	1.07	4.43	0.0463	0.0033	0.0406	0.0029	0.0064	0.0002	13	163	40.4	2.8	41.2	1.2
8	342	340	3.12	84.0	1.01	4.05	0.0474	0.0031	0.0412	0.0026	0.0064	0.0002	78	143	41.0	2.5	41.0	1.3
9	657	705	6.16	136	0.93	5.18	0.0484	0.0025	0.0415	0.0022	0.0062	0.0002	120	115	41.3	2.2	40.0	1.2
10	525	441	4.14	124	1.19	3.56	0.0452	0.0031	0.0395	0.0026	0.0065	0.0002	error		39.3	2.6	41.7	1.3
11	845	761	7.20	123	1.11	6.18	0.0474	0.0023	0.0423	0.0021	0.0065	0.0002	78	111	42.1	2.0	41.9	1.2
12	498	424	4.04	109	1.17	3.89	0.0452	0.0030	0.0397	0.0025	0.0065	0.0002	error		39.5	2.5	42.0	1.3
13	463	456	4.28	101	1.02	4.50	0.0505	0.0032	0.0463	0.0029	0.0066	0.0002	220	144	45.9	2.8	42.6	1.3
14	617	655	5.79	119	0.94	5.50	0.0490	0.0028	0.0426	0.0024	0.0064	0.0002	146	133	42.4	2.3	41.2	1.2
15	500	542	5.12	91.1	0.92	5.95	0.0477	0.0026	0.0443	0.0024	0.0068	0.0002	83	122	44.0	2.3	43.7	1.3
16	1022	701	7.82	138	1.46	5.10	0.0499	0.0026	0.0478	0.0025	0.0070	0.0002	191	124	47.4	2.4	44.7	1.3
17	533	442	4.33	169	1.21	2.61	0.0480	0.0034	0.0440	0.0032	0.0068	0.0002	101.9	159	43.7	3.1	43.4	1.4
18	595	526	4.91	98.7	1.13	5.33	0.0480	0.0025	0.0415	0.0021	0.0063	0.0002	98	119	41.3	2.0	40.5	1.2
19	568	565	5.40	94.2	1.01	6.00	0.0447	0.0023	0.0407	0.0020	0.0066	0.0002	error		40.5	2.0	42.7	1.3
20	475	452	4.54	107	1.05	4.24	0.0470	0.0030	0.0444	0.0028	0.0068	0.0002	50	144	44.1	2.7	43.9	1.3
21	530	426	4.34	109	1.24	3.89	0.0451	0.0029	0.0415	0.0025	0.0067	0.0002	error		41.3	2.4	43.2	1.3
22	655	496	4.97	137	1.32	3.62	0.0502	0.0028	0.0445	0.0023	0.0065	0.0002	211	123	44.2	2.2	41.7	1.2

Table S2. LA-MC-ICPMS zircon Lu-Hf isotope compositions for Eocene granitoids from the Quxu batholith.

Spot	$^{176}\text{Yb}/^{177}\text{Hf}$	$^{176}\text{Lu}/^{177}\text{Hf}$	$^{176}\text{Hf}/^{177}\text{Hf}$	2 σ	Age (Ma)	$\varepsilon_{\text{Hf}}(t)$	2 σ	T _{DM1} (Ma)	f _{Lu/Hf}	T _{DM2} (Ma)
12LS14										
1	0.019893	0.000723	0.283045	0.000020	50	10.3	0.4	291	-0.98	438
2	0.012857	0.000470	0.283051	0.000021	50	10.5	0.4	281	-0.99	424
3	0.019240	0.000739	0.283054	0.000019	50	10.6	0.3	277	-0.98	416
4	0.015118	0.000528	0.283056	0.000018	50	10.7	0.3	273	-0.98	411
5	0.075381	0.003040	0.283085	0.000028	50	11.6	0.5	250	-0.91	352
6	0.020962	0.000743	0.283040	0.000019	50	10.1	0.3	298	-0.98	449
7	0.010809	0.000393	0.283046	0.000018	50	10.3	0.3	287	-0.99	434
8	0.020225	0.000749	0.283076	0.000022	50	11.4	0.4	247	-0.98	368
9	0.021838	0.000766	0.283049	0.000019	50	10.4	0.3	285	-0.98	429
10	0.019984	0.000776	0.283046	0.000020	50	10.3	0.4	289	-0.98	435
11	0.014393	0.000515	0.283031	0.000020	50	9.8	0.4	308	-0.98	468
12	0.026075	0.000924	0.283047	0.000019	50	10.3	0.3	290	-0.97	434
13	0.019578	0.000731	0.283049	0.000020	50	10.4	0.4	286	-0.98	429
14	0.027032	0.000978	0.283046	0.000019	50	10.3	0.3	292	-0.97	437
15	0.020984	0.000767	0.283049	0.000023	50	10.4	0.4	286	-0.98	429
16	0.039385	0.001523	0.282990	0.000041	50	8.3	0.7	376	-0.95	563
17	0.082196	0.002849	0.282976	0.000030	50	7.8	0.5	411	-0.92	599
18	0.018287	0.000706	0.283039	0.000023	50	10.1	0.4	299	-0.98	452
19	0.016980	0.000589	0.283009	0.000019	50	9.0	0.3	340	-0.98	518
20	0.039084	0.001521	0.283078	0.000024	50	11.4	0.4	249	-0.95	364

Table S2 (continued)

Spot	$^{176}\text{Yb}/^{177}\text{Hf}$	$^{176}\text{Lu}/^{177}\text{Hf}$	$^{176}\text{Hf}/^{177}\text{Hf}$	2σ	Age (Ma)	$\epsilon_{\text{Hf}}(t)$	2σ	T_{DM1} (Ma)	$f_{\text{Lu/Hf}}$	T_{DM2} (Ma)
12LS29										
1	0.020605	0.000840	0.283022	0.000025	48	9.4	0.4	324	-0.97	491
2	0.037581	0.001368	0.282977	0.000020	48	7.8	0.4	394	-0.96	595
3	0.012885	0.000536	0.282966	0.000021	48	7.5	0.4	400	-0.98	617
4	0.036450	0.001315	0.282947	0.000023	48	6.8	0.4	435	-0.96	662
5	0.096906	0.003573	0.282912	0.000025	48	5.5	0.4	517	-0.89	746
6	0.035376	0.001320	0.282963	0.000022	48	7.3	0.4	413	-0.96	627
7	0.040857	0.001517	0.283099	0.000024	48	12.1	0.4	218	-0.95	317
8	0.037167	0.001384	0.282918	0.000024	48	5.7	0.4	479	-0.96	729
9	0.031538	0.001195	0.282944	0.000023	48	6.6	0.4	439	-0.96	670
10	0.029308	0.001079	0.282944	0.000022	48	6.6	0.4	438	-0.97	670
11	0.045921	0.001674	0.282999	0.000024	48	8.6	0.4	365	-0.95	545
12	0.027194	0.001003	0.282802	0.000026	48	1.6	0.5	638	-0.97	991
13	0.041736	0.001480	0.282942	0.000024	48	6.6	0.4	446	-0.96	675
14	0.051642	0.001794	0.282976	0.000022	48	7.7	0.4	400	-0.95	598
15	0.032136	0.001214	0.282975	0.000021	48	7.7	0.4	395	-0.96	600
16	0.046466	0.001598	0.282962	0.000023	48	7.3	0.4	417	-0.95	628
17	0.027776	0.000971	0.282917	0.000024	48	5.7	0.4	475	-0.97	731
18	0.030908	0.001126	0.282968	0.000022	48	7.5	0.4	404	-0.97	615
19	0.057600	0.002013	0.283079	0.000024	48	11.4	0.4	251	-0.94	364
20	0.057958	0.002066	0.282984	0.000025	48	8.0	0.4	391	-0.94	581
21	0.032020	0.001232	0.282974	0.000026	48	7.7	0.5	397	-0.96	602

Table S2 (continued)

Spot	$^{176}\text{Yb}/^{177}\text{Hf}$	$^{176}\text{Lu}/^{177}\text{Hf}$	$^{176}\text{Hf}/^{177}\text{Hf}$	2σ	Age (Ma)	$\varepsilon_{\text{Hf}}(t)$	2σ	T_{DM1} (Ma)	$f_{\text{Lu/Hf}}$	T_{DM2} (Ma)
12LS36										
1	0.0079	0.0003	0.282874	0.000023	42	4.1	0.4	526	-0.99	830
2	0.0105	0.0004	0.282770	0.000021	42	0.4	0.4	672	-0.99	1066
3	0.0199	0.0007	0.282837	0.000022	42	2.7	0.4	584	-0.98	916
4	0.0099	0.0004	0.282722	0.000020	42	-1.3	0.4	738	-0.99	1174
5	0.0268	0.0009	0.282735	0.000022	42	-0.8	0.4	732	-0.97	1146
6	0.0088	0.0003	0.282727	0.000021	42	-1.1	0.4	731	-0.99	1163
7	0.0064	0.0002	0.282765	0.000025	42	0.2	0.4	676	-0.99	1076
8	0.0141	0.0005	0.282737	0.000022	42	-0.8	0.4	720	-0.99	1140
9	0.0082	0.0003	0.282768	0.000020	42	0.3	0.4	673	-0.99	1070
10	0.0073	0.0003	0.282747	0.000022	42	-0.4	0.4	702	-0.99	1117
11	0.0084	0.0003	0.282758	0.000021	42	-0.1	0.4	688	-0.99	1094
12	0.0153	0.0006	0.282746	0.000024	42	-0.5	0.4	708	-0.98	1119
13	0.0084	0.0003	0.282761	0.000021	42	0.1	0.4	683	-0.99	1086
14	0.0157	0.0005	0.282799	0.000023	42	1.4	0.4	634	-0.98	1000
15	0.0098	0.0003	0.282825	0.000026	42	2.3	0.5	595	-0.99	942
16	0.0078	0.0003	0.282757	0.000023	42	-0.1	0.4	688	-0.99	1096
17	0.0109	0.0004	0.282722	0.000022	42	-1.3	0.4	739	-0.99	1175
18	0.0131	0.0004	0.282743	0.000023	42	-0.5	0.4	710	-0.99	1127
19	0.0123	0.0004	0.282742	0.000025	42	-0.6	0.4	711	-0.99	1129
20	0.0077	0.0003	0.282763	0.000022	42	0.2	0.4	680	-0.99	1081
21	0.0316	0.0011	0.282694	0.000037	42	-2.3	0.6	793	-0.97	1238
22	0.0122	0.0004	0.282721	0.000022	42	-1.4	0.4	741	-0.99	1177
23	0.0097	0.0003	0.282750	0.000023	42	-0.3	0.4	699	-0.99	1111
24	0.0154	0.0005	0.282757	0.000022	42	-0.1	0.4	692	-0.98	1094

Table S2 (continued)

Spot	$^{176}\text{Yb}/^{177}\text{Hf}$	$^{176}\text{Lu}/^{177}\text{Hf}$	$^{176}\text{Hf}/^{177}\text{Hf}$	2σ	Age (Ma)	$\epsilon_{\text{Hf}}(t)$	2σ	T_{DMI} (Ma)	$f_{\text{Lu/Hf}}$	T_{DM2} (Ma)
12LS39										
1	0.007395	0.000301	0.282757	0.000024	42	-0.1	0.4	689	-0.99	1095
2	0.005471	0.000223	0.282746	0.000018	42	-0.5	0.3	703	-0.99	1120
3	0.006305	0.000251	0.282733	0.000023	42	-0.9	0.4	722	-0.99	1150
4	0.006926	0.000275	0.282744	0.000025	42	-0.5	0.5	706	-0.99	1124
5	0.011454	0.000537	0.282986	0.000022	42	8.0	0.4	372	-0.98	576
6	0.007375	0.000289	0.282751	0.000023	42	-0.3	0.4	697	-0.99	1108
7	0.007756	0.000298	0.282743	0.000022	42	-0.6	0.4	709	-0.99	1127
8	0.012811	0.000494	0.282739	0.000021	42	-0.7	0.4	718	-0.99	1137
9	0.006611	0.000268	0.282737	0.000020	42	-0.8	0.4	716	-0.99	1140
10	0.007221	0.000281	0.282726	0.000019	42	-1.2	0.3	731	-0.99	1164
11	0.007150	0.000277	0.282740	0.000021	42	-0.7	0.4	712	-0.99	1133
12	0.006911	0.000268	0.282754	0.000020	42	-0.2	0.4	693	-0.99	1103
13	0.008237	0.000318	0.282760	0.000019	42	0.0	0.3	685	-0.99	1089
14	0.005579	0.000220	0.282758	0.000020	42	0.0	0.4	686	-0.99	1093
15	0.004753	0.000187	0.282772	0.000024	42	0.5	0.4	666	-0.99	1060
16	0.012172	0.000486	0.282956	0.000021	42	7.0	0.4	413	-0.99	644
17	0.025084	0.001007	0.282938	0.000020	42	6.3	0.4	445	-0.97	685

Table S2 (continued)

Spot	$^{176}\text{Yb}/^{177}\text{Hf}$	$^{176}\text{Lu}/^{177}\text{Hf}$	$^{176}\text{Hf}/^{177}\text{Hf}$	2 σ	Age (Ma)	$\epsilon_{\text{Hf}}(t)$	2 σ	T_{DM1} (Ma)	$f_{\text{Lu/Hf}}$	T_{DM2} (Ma)
12LS44										
1	0.0165	0.0006	0.282776	0.000023	42	0.6	0.4	668	-0.98	1053
2	0.0074	0.0003	0.282821	0.000020	42	2.2	0.3	599	-0.99	950
3	0.0119	0.0004	0.282754	0.000021	42	-0.2	0.4	695	-0.99	1101
4	0.0118	0.0004	0.282753	0.000023	42	-0.2	0.4	697	-0.99	1104
5	0.0104	0.0004	0.282737	0.000024	42	-0.8	0.4	718	-0.99	1140
6	0.0089	0.0003	0.282742	0.000023	42	-0.6	0.4	710	-0.99	1129
7	0.0102	0.0004	0.282768	0.000021	42	0.3	0.4	675	-0.99	1071
8	0.0104	0.0004	0.282776	0.000022	42	0.6	0.4	664	-0.99	1053
9	0.0208	0.0008	0.282681	0.000023	42	-2.8	0.4	804	-0.98	1268
10	0.0089	0.0003	0.282728	0.000020	42	-1.1	0.4	729	-0.99	1160
11	0.0181	0.0007	0.282813	0.000021	42	1.9	0.4	616	-0.98	968
12	0.0111	0.0004	0.282758	0.000024	42	0.0	0.4	689	-0.99	1093
13	0.0109	0.0004	0.282770	0.000022	42	0.4	0.4	673	-0.99	1067
14	0.0088	0.0003	0.282742	0.000022	42	-0.6	0.4	709	-0.99	1128
15	0.0073	0.0003	0.282757	0.000020	42	-0.1	0.4	688	-0.99	1094
16	0.0165	0.0006	0.282742	0.000020	42	-0.6	0.4	715	-0.98	1130
17	0.0155	0.0006	0.282863	0.000022	42	3.7	0.4	545	-0.98	855
18	0.0111	0.0004	0.282795	0.000023	42	1.3	0.4	638	-0.99	1010
19	0.0157	0.0006	0.282769	0.000022	42	0.4	0.4	676	-0.98	1068
20	0.0081	0.0003	0.282754	0.000020	42	-0.2	0.4	693	-0.99	1102
21	0.0115	0.0004	0.282802	0.000023	42	1.5	0.4	628	-0.99	993
22	0.0140	0.0005	0.282768	0.000024	42	0.3	0.4	677	-0.99	1071

Note: $\epsilon_{\text{Hf}}(t) = \{[(^{176}\text{Hf}/^{177}\text{Hf})_{\text{s}} - (^{176}\text{Lu}/^{177}\text{Hf})_{\text{s}} \times (e^{\lambda t} - 1)] / [(^{176}\text{Hf}/^{177}\text{Hf})_{\text{CHUR}} - (^{176}\text{Lu}/^{177}\text{Hf})_{\text{CHUR}} \times (e^{\lambda t} - 1)] - 1\} \times 10000$,

$T_{\text{DM1}} = 1/\lambda \times \ln\{1 + [(^{176}\text{Hf}/^{177}\text{Hf})_{\text{s}} - (^{176}\text{Hf}/^{177}\text{Hf})_{\text{DM}}] / [(^{176}\text{Lu}/^{177}\text{Hf})_{\text{s}} - (^{176}\text{Lu}/^{177}\text{Hf})_{\text{DM}}]\}$,

$T_{\text{DM2}} = T_{\text{DM1}} - (T_{\text{DM1}} - t) \times [(f_{\text{cc}} - f_{\text{s}})/(f_{\text{cc}} - f_{\text{DM}})]$, $f_{\text{Lu/Hf}} = (^{176}\text{Lu}/^{177}\text{Hf})_{\text{s}} / (^{176}\text{Lu}/^{177}\text{Hf})_{\text{CHUR}} - 1$.

Where $(^{176}\text{Lu}/^{177}\text{Hf})_{\text{CHUR}} = 0.0336$, $(^{176}\text{Hf}/^{177}\text{Hf})_{\text{CHUR}} = 0.282785$ (Bouvier et al., 2008); $(^{176}\text{Lu}/^{177}\text{Hf})_{\text{DM}} = 0.0384$, $(^{176}\text{Hf}/^{177}\text{Hf})_{\text{DM}} = 0.28325$ (Griffin et al., 2000); $(^{176}\text{Lu}/^{177}\text{Hf})_{\text{CC}} = 0.015$ (Griffin et al., 2002); $\lambda = 1.867 \times 10^{-11} \text{ year}^{-1}$ (Söderlund et al., 2004).

Abbreviations: t, crystallization age; S, sample; CHUR, chondritic uniform reservoir; DM, depleted mantle; CC, average continental crust.

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