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Supplemental Material

Table DR1. Major and trace element compositions of lamprophyres from the eastern North China Craton.

Table DR2. Whole-rock Sr, Nd and Hf isotope compositions of lamprophyres from the eastern North China Craton.

Table DR3. LA-ICPMS Zircon U-Pb isotope compositions of lamprophyres from the eastern North China Craton.

Table DR4. Zircon LA-MC-ICPMS Lu-Hf isotope compositions of lamprophyres from the eastern North China Craton.

Table DR1. Major and trace element compositions of lamprophyres from the eastern North China Craton

Sample type	Spessartite (Type 1 lamprophyre)					Kersantite (Type 2 lamprophyre)						
Sample NO.	16HC01	16HC02	16HC10	16HC12	16HC15	16HC03	16HC06	16HC07	16HC08	16HC09	16HC11	16HC13
Major elements (wt. %)												
SiO_2	48.3	48.7	48.2	50.3	51.3	52.5	55.3	53.3	55.6	52.2	53.5	54.6
Al_2O_3	12.1	12.4	12.8	13.7	13.6	14.5	15.2	15.0	15.4	14.4	14.8	13.8
Fe_2O_3	8.96	8.76	9.30	8.45	8.02	6.68	6.53	7.04	6.12	7.22	6.98	7.16
MnO	0.13	0.13	0.12	0.11	0.11	0.10	0.10	0.10	0.10	0.11	0.11	0.12
MgO	11.5	10.6	11.2	9.84	9.71	7.07	7.18	8.39	6.12	7.36	6.89	8.17
CaO	7.41	7.63	6.95	6.02	5.34	4.73	4.89	3.31	3.98	6.04	5.65	5.72
Na_2O	2.18	2.35	1.92	2.42	2.71	2.39	3.10	2.88	3.47	2.68	3.00	2.63
K_2O	1.71	1.96	1.64	1.92	2.10	2.99	2.41	3.16	2.99	2.30	2.71	2.62
TiO_2	1.05	1.04	1.28	1.12	0.86	0.77	0.70	0.81	0.67	0.81	0.80	0.68
P_2O_5	0.25	0.26	0.26	0.29	0.24	0.31	0.22	0.23	0.24	0.21	0.33	0.16
Cr_2O_3	0.08	0.08	0.09	0.07	0.06	0.04	0.05	0.04	0.03	0.05	0.04	0.08
BaO	0.10	0.14	0.06	0.09	0.10	0.13	0.14	0.10	0.21	0.11	0.11	0.12
SrO	0.06	0.05	0.05	0.06	0.06	0.09	0.07	0.06	0.06	0.06	0.10	0.05
LOI	6.71	5.52	5.69	6.15	5.96	7.59	4.43	5.96	5.13	5.89	4.80	4.46
Total	100.5	99.6	99.5	100.5	100.2	99.8	100.3	100.4	100.1	99.4	99.9	100.3
Mg#	71.8	70.5	70.4	69.7	70.6	67.7	68.5	70.2	66.4	66.9	66.1	69.3
CaO/Al_2O_3	0.61	0.61	0.54	0.44	0.39	0.33	0.32	0.22	0.26	0.42	0.38	0.42
Trace elements (ppm)												
Li	29.1	17.9	19.8	29.1	34.9	37.8	17.0	35.0	22.4	26.5	35.6	27.4
Be	1.37	1.40	1.29	1.67	1.12	1.24	1.25	1.27	1.36	1.17	1.15	1.27
Sc	22.3	21.0	23.1	21.1	21.6	16.2	17.6	19.3	15.5	20.5	16.2	21.0
V	180	174	200	178	172	111	108	150	101	159	113	166
Cr	549	492	577	430	80.2	268	284	256	218	281	266	401
Co	47.6	44.3	40.6	36.7	40.2	24.6	24.5	21.1	21.6	23.0	25.0	33.5
Ni	310	294	105	190	73.8	88.9	90.2	37.4	68.2	41.1	87.9	98.1
Cu	41.4	39.6	20.1	40.0	26.3	22.7	21.4	15.7	18.8	18.5	19.7	27.2
Zn	76.4	73.4	83.2	74.6	79.6	71.0	66.1	68.1	71.9	76.7	76.5	74.9
Ga	16.5	16.8	17.7	17.9	18.3	17.7	18.2	18.4	18.7	18.4	18.1	17.6
Rb	42.4	53.1	31.7	45.1	35.6	87.9	61.5	90.2	87.0	52.5	70.1	52.3
Sr	543	388	460	500	603	755	566	534	502	561	843	484
Y	16.9	16.6	20.2	17.2	23.7	16.1	16.6	20.7	16.8	20.9	16.5	19.1
Zr	122	123	156	134	160	153	161	172	172	168	155	152
Nb	12.8	13.1	12.8	14.2	12.1	8.35	7.74	8.18	8.31	8.05	8.37	8.79
Sn	1.12	1.15	1.12	1.18	1.22	0.82	0.74	0.95	1.18	0.93	0.79	0.90
Cs	5.41	3.79	5.21	4.90	5.35	9.78	2.50	4.41	4.34	4.21	3.38	4.11
Ba	841	1205	464	727	553	1148	1325	876	1993	1033	982	880
La	21.4	22.1	29.4	24.3	29.2	41.5	36.6	35.1	40.0	33.0	40.9	34.8
Ce	44.9	46.4	59.3	49.9	58.9	83.1	70.0	66.8	74.1	63.3	84.8	70.6
Pr	5.48	5.56	7.09	5.98	6.95	9.01	7.78	7.45	8.22	7.26	9.08	7.65
Nd	22.2	22.5	28.0	24.4	27.7	33.8	28.4	28.4	29.9	27.4	34.6	29.5
Sm	4.72	4.52	5.64	4.86	5.43	5.67	4.93	5.17	4.81	5.00	5.76	5.30
Eu	1.36	1.39	1.68	1.45	1.61	1.46	1.30	1.38	1.38	1.44	1.54	1.52
Gd	4.15	4.13	4.88	4.31	4.89	4.11	3.72	4.29	3.77	4.30	4.34	4.47
Tb	0.56	0.57	0.72	0.61	0.74	0.55	0.53	0.62	0.54	0.65	0.56	0.62
Dy	3.24	3.15	4.07	3.52	4.27	3.05	3.00	3.71	3.03	3.74	3.20	3.58
Ho	0.61	0.60	0.73	0.65	0.87	0.57	0.60	0.73	0.59	0.76	0.59	0.68
Er	1.53	1.53	1.97	1.67	2.39	1.52	1.64	2.04	1.63	2.07	1.58	1.87
Tm	0.21	0.21	0.27	0.24	0.33	0.22	0.23	0.29	0.23	0.30	0.23	0.28
Yb	1.32	1.39	1.70	1.48	2.16	1.38	1.49	1.97	1.48	1.93	1.40	1.66
Lu	0.19	0.19	0.24	0.21	0.32	0.22	0.23	0.29	0.23	0.29	0.21	0.26
Hf	3.16	3.14	3.91	3.54	3.83	3.64	3.99	4.21	4.26	4.07	3.71	3.86
Ta	0.75	0.79	0.77	0.88	0.68	0.42	0.41	0.47	0.43	0.46	0.44	0.53
Tl	0.37	0.37	0.28	0.31	0.31	0.67	0.45	0.88	0.84	0.47	0.62	0.47
Pb	7.43	6.40	6.79	10.35	7.67	7.75	17.15	11.01	10.56	10.91	15.66	11.06
Th	4.40	4.61	5.32	5.18	4.65	7.23	7.71	7.97	8.23	7.52	7.32	7.88
U	1.22	1.31	1.31	1.57	1.11	1.19	1.59	1.85	1.37	1.73	1.27	1.74
Fe/Mn	62.0	60.6	69.8	69.1	65.6	60.1	58.8	63.4	55.1	59.1	57.1	53.7
10000*Zn/Fe	12.2	12.0	12.8	12.6	14.2	15.2	14.5	13.8	16.8	15.2	15.7	15.0

Notes: LOI: loss on ignition; Mg#=atomic $[Mg^{2+}/(Mg^{2+}+Fe^{2+})]\times100$.

Table DR2. Whole-rock Sr, Nd and Hf isotope compositions of lamprophyres from the eastern North China Craton

Sample type	Sample No.	Rb	Sr	$^{87}Rb/^{86}Sr$	$^{87}Sr/^{86}Sr(\pm2\sigma)$	$(^{87}Sr/^{86}Sr)_i$	Sm	Nd	$^{147}Sm/^{144}Nd$	$^{143}Nd/^{144}Nd(\pm2\sigma)$	$\varepsilon_{Nd}(t)$	T_{DM2}(Ma)	Lu	Hf	$^{176}Lu/^{177}Hf$	$^{176}Hf/^{176}Hf(\pm2\sigma)$	$\varepsilon_{Hf}(t)$	T_{DM2}(Ma)
Spessartite (Type 1 lamprophyre)	16HC01	42.4	543	0.2259	0.709005±14	0.708507	4.7	22.2	0.1284	0.512463±10	-2.1	1317	0.19	3.2	0.008437	0.282693±7	-0.3	1272
	16HC02	53.1	388	0.3962	0.708804±15	0.707931	4.5	22.5	0.1216	0.512485±5	-1.5	1259	0.19	3.1	0.008716	0.282681±6	-0.7	1303
	16HC10	31.7	460	0.1996	0.707929±18	0.707489	5.6	28.0	0.1219	0.512414±4	-2.9	1373	0.24	3.9	0.008847	0.282622±6	-2.8	1435
	16HC12	45.1	500	0.2608	0.708954±15	0.708379	4.9	24.4	0.1206	0.512492±4	-1.3	1246	0.21	3.5	0.008274	0.282680±7	-0.7	1299
	16HC15	35.6	603	0.1709	0.708179±13	0.707803	5.4	27.7	0.1183	0.512358±4	-3.9	1451	0.32	3.8	0.011686	0.282556±6	-5.4	1619
Kersantite (Type 2 lamprophyre)	16HC03	87.9	755	0.3370	0.712155±11	0.711412	5.7	33.8	0.1014	0.511944±6	-11.7	2053	0.22	3.6	0.008444	0.282348±6	-12.5	2041
	16HC06	61.5	566	0.3145	0.710291±9	0.709598	4.9	28.4	0.1048	0.512154±4	-7.6	1731	0.23	4.0	0.008018	0.282567±6	-4.7	1549
	16HC08	87.0	502	0.5019	0.712218±18	0.711112	4.8	29.9	0.0972	0.511911±5	-12.2	2092	0.23	4.3	0.007723	0.282336±6	-12.8	2059
	16HC11	70.1	843	0.2406	0.712235±9	0.711705	5.8	34.6	0.1005	0.512076±4	-9.1	1842	0.21	3.7	0.008207	0.282356±5	-12.1	2019

Notes: The initial isotopic ratios are calculated at t = 155 Ma based on whole-rock Rb, Sr, Sm, Nd, Lu and Hf contents measured by ICP-MS; The Chondrite uniform reservoir values(CHUR): $^{147}Sm/^{144}Nd = 0.1967$, $^{143}Nd/^{144}Nd = 0.512638$. $^{176}Lu/^{177}Hf = 0.0332$, $^{176}Hf/^{176}Hf = 0.282772$.

Table DR3. LA-ICPMS Zircon U-Pb isotope compositions of lamprophyres from the eastern North China Craton

Spot	Content (ppm)			Atomic ratios							Apparent ages (Ma)			
	U	Th	Pb	Th/U	$^{207}Pb/^{206}Pb$	1σ	$^{207}Pb/^{235}U$	1σ	$^{206}Pb/^{238}U$	1σ	$^{207}Pb/^{235}U$	1σ	$^{206}Pb/^{238}U$	1σ
16HC01 Spessartite (Type 1 lamprophyre)														
1	162	42	4.13	0.26	0.0502	0.0023	0.1628	0.0073	0.0242	0.0004	153	6	154	2
2	216	116	97.6	0.54	0.1362	0.0017	7.2199	0.0911	0.3877	0.0030	2139	11	2112	14
3	51	55	2.65	1.08	0.0513	0.0036	0.2804	0.0196	0.0402	0.0007	251	16	254	4
4	111	81	3.12	0.73	0.0549	0.0033	0.1784	0.0100	0.0244	0.0004	167	9	155	2
5	54	48	2.58	0.88	0.0516	0.0036	0.2826	0.0189	0.0404	0.0007	253	15	255	4
6	323	317	16.7	0.98	0.0700	0.0020	0.3858	0.0118	0.0399	0.0003	331	9	252	2
7	600	289	229	0.48	0.1155	0.0015	5.4256	0.0715	0.3394	0.0027	1889	11	1884	13
8	335	330	16.7	0.99	0.0506	0.0013	0.2823	0.0073	0.0404	0.0004	252	6	255	3
9	394	485	21.5	1.23	0.0507	0.0012	0.2829	0.0067	0.0404	0.0004	253	5	255	2
10	775	31	258	0.04	0.1168	0.0014	5.2292	0.0680	0.3230	0.0024	1857	11	1804	12
11	1075	428	28.1	0.40	0.0493	0.0010	0.1664	0.0033	0.0244	0.0002	156	3	155	1
12	448	420	23.0	0.94	0.0571	0.0018	0.3229	0.0083	0.0401	0.0004	284	6	253	2
13	480	395	23.8	0.82	0.0551	0.0011	0.3056	0.0068	0.0400	0.0003	271	5	253	2
14	44	18	2.02	0.40	0.0484	0.0036	0.2630	0.0168	0.0399	0.0008	237	14	252	5
15	273	250	14.0	0.92	0.0503	0.0021	0.2851	0.0097	0.0400	0.0004	255	8	253	2
16	263	228	13.1	0.86	0.0498	0.0017	0.2758	0.0095	0.0402	0.0004	247	8	254	2
17	351	133	80.2	0.38	0.0808	0.0010	2.2255	0.0341	0.1990	0.0020	1189	11	1170	11
18	219	56	5.62	0.26	0.0448	0.0017	0.1495	0.0054	0.0244	0.0003	141	5	155	2
19	463	257	182	0.55	0.1130	0.0012	5.1438	0.0871	0.3305	0.0043	1843	14	1841	21
20	3987	484	97.4	0.12	0.0458	0.0006	0.1550	0.0023	0.0246	0.0002	146	2	157	1
21	1233	7	387	0.01	0.1070	0.0013	4.5332	0.0515	0.3093	0.0022	1737	10	1737	11
22	258	162	7.45	0.63	0.0524	0.0020	0.1786	0.0064	0.0245	0.0003	167	6	156	2
16HC15 Spessartite (Type 1 lamprophyre)														
1	305	161	98.1	0.53	0.1126	0.0021	4.3950	0.0836	0.2817	0.0034	1711	16	1600	17
2	1048	228	25.2	0.22	0.0511	0.0020	0.1690	0.0062	0.0239	0.0003	159	5	152	2
3	1252	393	30.8	0.31	0.0511	0.0014	0.1716	0.0053	0.0241	0.0004	161	5	154	3
4	245	40	5.71	0.16	0.0576	0.0050	0.1861	0.0158	0.0239	0.0005	173	14	152	3
5	1095	206	25.9	0.19	0.0492	0.0016	0.1628	0.0052	0.0241	0.0003	153	5	154	2
6	34	31	1.75	0.90	0.0609	0.0084	0.3301	0.0411	0.0408	0.0012	290	31	258	7
7	457	253	20.3	0.55	0.0554	0.0022	0.3071	0.0118	0.0403	0.0005	272	9	255	3
8	118	72	5.3	0.61	0.0564	0.0036	0.3107	0.0193	0.0404	0.0008	275	15	255	5
9	910	89	284.8	0.10	0.1122	0.0023	4.9034	0.1026	0.3151	0.0031	1803	18	1766	15
10	148	65	56.0	0.44	0.1139	0.0028	5.4218	0.1322	0.3439	0.0041	1888	21	1905	20
11	3453	322	83.6	0.09	0.0494	0.0008	0.1660	0.0028	0.0243	0.0002	156	2	155	1
12	375	138	145	0.37	0.1420	0.0021	8.2238	0.2334	0.4126	0.0081	2256	26	2227	37
13	1095	517	30.0	0.47	0.0489	0.0011	0.1670	0.0040	0.0247	0.0003	157	3	157	2
14	75	36	2.0	0.48	0.0515	0.0039	0.1706	0.0113	0.0247	0.0005	160	10	157	3
16HC03 Kersantite (Type 2 lamprophyre)														
1	839	184	21.4	0.22	0.0511	0.0015	0.1735	0.0052	0.0245	0.0002	162	5	156	1
2	702	213	18.5	0.30	0.0497	0.0014	0.1691	0.0048	0.0246	0.0003	159	4	157	2
3	402	68	10.4	0.17	0.0487	0.0016	0.1631	0.0051	0.0243	0.0002	153	4	155	1
4	1425	218	35.7	0.15	0.0502	0.0010	0.1704	0.0035	0.0246	0.0002	160	3	157	1
5	167	83	4.67	0.49	0.0558	0.0059	0.1824	0.0157	0.0245	0.0004	170	14	156	3
6	180	88	5.12	0.49	0.0480	0.0023	0.1669	0.0080	0.0254	0.0004	157	7	162	3
7	212	102	5.90	0.48	0.0504	0.0021	0.1730	0.0073	0.0249	0.0003	162	6	158	2
8	87	72	2.66	0.83	0.0535	0.0034	0.1818	0.0113	0.0248	0.0004	170	10	158	3
9	459	319	214	0.70	0.1330	0.0016	6.7243	0.0891	0.3654	0.0031	2076	12	2008	15
10	225	59	5.94	0.26	0.0517	0.0022	0.1773	0.0073	0.0250	0.0004	166	6	159	2
11	637	1498	43.7	2.35	0.0519	0.0013	0.2908	0.0070	0.0405	0.0004	259	6	256	2
12	1455	404	38.4	0.28	0.0504	0.0014	0.1715	0.0037	0.0246	0.0002	161	3	157	1
13	1064	1387	35.2	1.30	0.0504	0.0011	0.1680	0.0035	0.0242	0.0002	158	3	154	1

Table DR3. (continued)

Spot	Content (ppm)			Atomic ratios							Apparent ages (Ma)			
	U	Th	Pb	Th/U	$^{207}Pb/^{206}Pb$	1σ	$^{207}Pb/^{235}U$	1σ	$^{206}Pb/^{238}U$	1σ	$^{207}Pb/^{235}U$	1σ	$^{206}Pb/^{238}U$	1σ
14	260	103	6.92	0.40	0.0517	0.0018	0.1740	0.0060	0.0246	0.0003	163	5	156	2
16HC11 Kersantite (Type 2 lamprophyre)														
1	1999	179	49.4	0.09	0.0545	0.0010	0.1887	0.0035	0.0252	0.0003	176	3	161	2
2	293	192	137	0.66	0.1372	0.0018	7.3467	0.1048	0.3887	0.0040	2155	13	2117	18
3	280	50	6.75	0.18	0.0511	0.0017	0.1732	0.0054	0.0243	0.0003	162	5	155	2
4	2863	305	70.0	0.11	0.0534	0.0010	0.1829	0.0040	0.0247	0.0003	171	3	157	2
5	2865	281	70.4	0.10	0.0521	0.0009	0.1799	0.0035	0.0249	0.0002	168	3	159	2
6	424	566	22.4	1.34	0.0523	0.0015	0.2929	0.0093	0.0405	0.0005	261	7	256	3
7	273	280	13.5	1.03	0.0548	0.0029	0.2998	0.0147	0.0395	0.0004	266	11	250	3
8	642	627	32.0	0.98	0.0506	0.0011	0.2814	0.0061	0.0402	0.0003	252	5	254	2
9	466	210	215	0.45	0.1369	0.0016	7.4731	0.0999	0.3946	0.0035	2170	12	2144	16
10	961	91	23.7	0.09	0.0499	0.0011	0.1732	0.0043	0.0251	0.0003	162	4	160	2
11	2151	202	53.6	0.09	0.0506	0.0011	0.1775	0.0034	0.0250	0.0002	166	3	159	2
12	312	183	143	0.59	0.1346	0.0017	7.2209	0.1017	0.3879	0.0035	2139	13	2113	16
13	985	419	25.8	0.43	0.0496	0.0025	0.1670	0.0070	0.0247	0.0005	157	6	157	3
14	3254	437	80.5	0.13	0.0490	0.0006	0.1689	0.0026	0.0249	0.0002	158	2	159	1
15	687	538	327	0.78	0.1322	0.0013	7.0084	0.0913	0.3835	0.0033	2112	12	2093	16
16	164	78	73.9	0.48	0.1328	0.0017	7.0728	0.0976	0.3876	0.0036	2121	12	2112	17
17	474	207	209	0.44	0.1320	0.0014	7.0248	0.1138	0.3868	0.0043	2115	14	2108	20
18	307	207	144	0.68	0.1355	0.0018	7.1916	0.1118	0.3882	0.0038	2135	14	2115	18

Table DR4. Zircon LA-MC-ICPMS Lu-Hf isotope compositions of lamprophyres from the eastern North China Craton

Spot	$^{176}Yb/^{177}Hf$	$^{176}Lu/^{177}Hf$	$^{176}Hf/^{177}Hf$	1σ	Age (Ma)	$\varepsilon_{Hf}(t)$	1σ	T_{DM2} (Ma)	1σ
16HC01 Spessartite (Type 1 lamprophyre)									
1	0.015868	0.000669	0.282038	0.000015	154	-22.6	0.5	2627	33
2	0.024257	0.000953	0.281433	0.000014	2112	-44.1	0.5	3955	31
3	0.028744	0.001066	0.282032	0.000017	254	-22.9	0.6	2642	38
4	0.031083	0.001379	0.282031	0.000015	155	-22.9	0.5	2647	33
5	0.011835	0.000495	0.282051	0.000018	255	-22.1	0.6	2597	39
6	0.019597	0.000849	0.282750	0.000015	252	2.5	0.5	1040	35
7	0.017394	0.000730	0.281509	0.000014	1884	-41.4	0.5	3789	31
8	0.019951	0.000844	0.282732	0.000019	255	1.9	0.7	1082	43
9	0.031040	0.001301	0.282738	0.000017	255	2.1	0.6	1070	39
10	0.011906	0.000598	0.281459	0.000012	1804	-43.1	0.4	3897	26
11	0.090367	0.003889	0.282058	0.000018	155	-22.3	0.6	2602	40
12	0.010642	0.000448	0.282732	0.000015	253	1.9	0.5	1080	33
13	0.022207	0.000951	0.282734	0.000016	253	2.0	0.6	1077	37
14	0.025271	0.001021	0.282087	0.000020	252	-20.9	0.7	2522	45
15	0.011561	0.000505	0.282717	0.000019	253	1.4	0.7	1112	42
16	0.011402	0.000490	0.282735	0.000017	254	2.0	0.6	1072	38
17	0.019943	0.000833	0.281874	0.000021	1170	-28.4	0.7	2990	45
18	0.011286	0.000498	0.282040	0.000013	155	-22.5	0.5	2621	29
19	0.031032	0.001237	0.281447	0.000018	1841	-43.6	0.6	3927	39
20	0.043720	0.001962	0.282135	0.000015	157	-19.3	0.5	2420	34
21	0.002374	0.000118	0.281533	0.000010	1737	-40.4	0.4	3734	22
22	0.038690	0.001740	0.282811	0.000016	156	4.6	0.6	909	36
16HC15 Spessartite (Type 1 lamprophyre)									
1	0.014969	0.000609	0.281550	0.000015	1600	-39.9	0.5	3701	32
2	0.149355	0.005942	0.281837	0.000029	152	-30.3	1.0	3098	65
3	0.072541	0.002796	0.282923	0.000028	154	8.5	1.0	663	65
4	0.045282	0.001939	0.281938	0.000019	152	-26.3	0.7	2855	43
5	0.079701	0.003060	0.282704	0.000033	154	0.7	1.2	1159	73
6	0.024404	0.000958	0.282050	0.000027	258	-22.2	0.9	2603	59
7	0.017934	0.000742	0.282770	0.000019	255	3.2	0.7	995	42
8	0.026482	0.000981	0.282097	0.000021	255	-20.6	0.7	2499	46
9	0.007577	0.000322	0.281444	0.000021	1766	-43.6	0.8	3929	47
10	0.005076	0.000177	0.281462	0.000017	1905	-42.9	0.6	3888	36
11	0.021182	0.001037	0.282064	0.000022	155	-21.7	0.8	2571	48
12	0.012809	0.000547	0.281302	0.000017	2227	-48.7	0.6	4239	38
13	0.033065	0.001325	0.282010	0.000031	157	-23.7	1.1	2694	69
14	0.046882	0.002020	0.282879	0.000030	157	7.0	1.1	757	68
16HC03 Kersantite (Type 2 lamprophyre)									
1	0.024274	0.001061	0.282072	0.000015	156	-21.5	0.5	2554	34
2	0.015100	0.000709	0.281922	0.000015	157	-26.7	0.5	2884	34
3	0.014488	0.000638	0.281980	0.000012	155	-24.7	0.4	2755	26
4	0.045109	0.001989	0.281970	0.000015	157	-25.2	0.5	2786	32
5	0.007105	0.000285	0.281840	0.000016	156	-29.6	0.6	3062	35
6	0.023957	0.000998	0.281892	0.000018	162	-27.8	0.7	2953	41
7	0.022516	0.000985	0.281875	0.000018	158	-28.4	0.6	2989	40
8	0.020065	0.000854	0.281909	0.000019	158	-27.2	0.7	2914	42
9	0.032501	0.001331	0.281462	0.000019	2008	-43.1	0.7	3894	41
10	0.008140	0.000302	0.281913	0.000013	159	-27.0	0.5	2901	29
11	0.089741	0.003467	0.282098	0.000021	256	-20.8	0.8	2511	47
12	0.089285	0.003895	0.281916	0.000017	157	-27.3	0.6	2914	38
13	0.035811	0.001595	0.281980	0.000017	154	-24.8	0.6	2761	37
14	0.018249	0.000816	0.281998	0.000017	156	-24.1	0.6	2718	38
16HC11 Kersantite (Type 2 lamprophyre)									
1	0.034855	0.001423	0.282116	0.000017	161	-19.9	0.6	2459	37
2	0.039059	0.001492	0.281467	0.000019	2117	-42.9	0.7	3884	42
3	0.029378	0.001312	0.282055	0.000016	155	-22.1	0.6	2594	35
4	0.034195	0.001464	0.282150	0.000014	157	-18.8	0.5	2385	30
5	0.040741	0.001701	0.282067	0.000015	159	-21.7	0.5	2570	34
6	0.026155	0.001046	0.282079	0.000018	256	-21.2	0.6	2539	40
7	0.011986	0.000502	0.282700	0.000019	250	0.8	0.7	1151	44
8	0.027522	0.001162	0.282670	0.000021	254	-0.3	0.7	1223	46
9	0.026637	0.001164	0.281525	0.000018	2144	-40.8	0.6	3756	40
10	0.017970	0.000831	0.281810	0.000015	160	-30.7	0.5	3132	34
11	0.024334	0.001036	0.282092	0.000012	159	-20.8	0.4	2510	27
12	0.022222	0.000841	0.281460	0.000018	2113	-43.1	0.6	3896	39

Table DR4 (continued)

Spot	$^{176}Yb/^{177}Hf$	$^{176}Lu/^{177}Hf$	$^{176}Hf/^{177}Hf$	1σ	Age (Ma)	$\varepsilon_{Hf}(t)$	1σ	T_{DM2} (Ma)	1σ
13	0.022239	0.000932	0.281956	0.000017	157	-25.6	0.6	2811	38
14	0.025865	0.001068	0.282058	0.000012	159	-22.0	0.4	2585	26
15	0.056620	0.002162	0.281453	0.000019	2093	-43.5	0.7	3918	42
16	0.014772	0.000650	0.281420	0.000017	2112	-44.5	0.6	3984	38
17	0.023886	0.001057	0.281648	0.000016	2108	-36.5	0.6	3487	36
18	0.039042	0.001448	0.281395	0.000019	2115	-45.5	0.7	4041	42

Notes: $\varepsilon_{Hf}(t)$ and T_{DM2} were calculated by the formula:
$\varepsilon_{Hf}(t) = \{[(^{176}Hf/^{177}Hf)_S - (^{176}Lu/^{177}Hf)_S \times (e^{\lambda t} - 1)]/[(^{176}Hf/^{177}Hf)_{CHUR} - (^{176}Lu/^{177}Hf)_{CHUR} \times (e^{\lambda t} - 1)] - 1\} \times 10000$,
$T_{DM1} = 1/\lambda \times \{1 + [(^{176}Hf/^{177}Hf)_S - (^{176}Hf/^{177}Hf)_{DM}]/[(^{176}Lu/^{177}Hf)_S - (^{176}Lu/^{177}Hf)_{DM})]\}$,
$T_{DM2} = T_{DM1} - (T_{DM1} - t)((f_{CC} - f_S)/(f_{CC} - f_{DM}))$, $f_{Lu/Hf} = (^{176}Lu/^{177}Hf)_S/(^{176}Lu/^{177}Hf)_{CHUR} - 1$.
where $(^{176}Lu/^{177}Hf)_{CHUR} = 0.0332$, $(^{176}Hf/^{177}Hf)_{CHUR} = 0.282772$; $(^{176}Lu/^{177}Hf)_{DM} = 0.0384$, $(^{176}Hf/^{177}Hf)_{DM} = 0.28325$;
$(^{176}Lu/^{177}Hf)_{CC} = 0.015$; $\lambda = 1.865 \times 10^{-11}$ year^{-1}.
Abbreviations: S, sample; CHUR, chondritic reservoir; DM, depleted mantle; CC, average continental crust.