Table DR1: Major and trace element analyses of composite dike (GR-L), enclave (ER-1) and fine-grained equigranular granite (Hch-2) samples

	composite dyke COM5*	enclave ER1	equigranular EQU10*
wt %			
SiO2	68.67	69.46	77.02
TiO2	0.55	0.42	0.07
Al2O3	15.32	15.94	12.94
Fe2O3	3.61	2.77	0.89
MnO	0.06	0.05	0.02
MgO	0.78	0.52	0.08
CaO	1.69	1.64	0.48
Na2O	3.49	4.47	2.90
K2O	5.71	4.63	5.60
P2O5	0.13	0.09	-
L.O.I.	1.03	1.3	0.89
ppm			
Cs	23	15.5	8
Sc	-	4	-
Cr	-	6.8	<LLD
V	40	23	5
Co	6	3.6	0.5
Ni	3	1.4	0.5
Cu	6	54.2	2.8
Zn	60	35	10
Ga	21.8	21.8	17.6
As	-	1.4	2.9
Rb	348	281	373.3
Sr	103	139.5	11.2
Y	103	35	89
Zr	372	505.6	62
Nb	18	23	16.2
Ba	480	773.6	18
La	101.7	64	13
Ce	107.2	122.9	28.2
Pr	21.33	12.2	4.55
Nd	73	43.4	19.4
Sm	13.9	7.4	4.4
Eu	1.03	1	0.17
Gd	11.53	5.58	4.71
Tb	1.81	1.04	1.09
Dy	10.31	5.56	5.84
Ho	1.92	1.17	1.41
Er	5.46	3.46	4.34
Tm	0.81	0.59	0.69
Yb	4.84	3.9	4.74
Lu	0.66	0.57	0.71
Hf	9.8	12.7	2.1
Ta	1.4	2.5	2.9
Pb	11	9.1	14.1
Th	25.5	28	32.5

U	6.4	9.3	17.6
W	1	25.6	-

* analyses published in Slaby & Martin (2008)

Table DR2. U-Th-Pb isotopic data for zircon grains from sample ER1

Sample-grain.spot	Zircon type	% $^{206}Pb_c$	ppm U	ppm Th	$^{232}Th/^{238}U$	ppm $^{206}Pb^*$	(1) $^{206}Pb/^{238}U$ Age	±1sd	(1) $^{207}Pb/^{206}Pb$ Age	±1sd	% Dis-cor-dant	Total $^{238}U/^{206}Pb$	±%	Total $^{207}Pb/^{206}Pb$	±%	(1) $^{238}U/^{206}Pb^*$	±%	(1) $^{207}Pb^*/^{206}Pb^*$	±%	Chemical analysis (spot over spot, ppm) P	Ca	Ti	Y	Ba	La	Ce
ER1-1.1	DisP	1.37	2092	1404	0.69	87.9	303.9	1.0	335	52	10	20.435	0.30	0.0642	1.1	20.719	0.34	0.0532	2.3							
ER1-2.1	Magm	0.06	7300	13917	1.97	341	341.0	0.8	313	8	-8	18.398	0.25	0.05315	0.31	18.409	0.25	0.05263	0.35	389	14	14	5911	2	1	104
ER1-3.1	DisP + Incl	0.26	9160	25197	2.84	550	434.5	1.8	334	10	-23	14.304	0.42	0.05526	0.34	14.342	0.42	0.05311	0.43	572	3511	80	7114	35	31	222
ER1-4.1	Magm + DifR + DisP	1.8	7732	10581	1.41	319	297.4	2.6	306	108	3	20.800	0.84	0.0670	2.5	21.180	0.88	0.0525	4.7	785	5859	9	4920	82	89	227
ER1-5.1	DisP + DifR	5.9	2131	812.3	0.39	78.4	254.8	1.7	316	92	24	23.350	0.53	0.0997	1.2	24.810	0.67	0.0527	4.0							
ER1-6.1	Magm	1.21	6102	13221	2.24	282	333.8	0.9	319	48	-4	18.587	0.25	0.06255	0.99	18.815	0.29	0.0528	2.1							
ER1-7.1	Magm + DifR	0.58	6026	9603	1.65	246	298.1	0.8	327	17	10	21.003	0.26	0.05764	0.36	21.126	0.27	0.05297	0.77							
ER1-8.1	DisP	1.06	3160	2754	0.90	132	302.8	0.9	302	58	0	20.573	0.28	0.06091	1.2	20.794	0.32	0.0524	2.6							
ER1-9.1	Magm + Difr + DisP	0.82	3441	3719	1.12	135	285.4	0.8	311	27	9	21.911	0.28	0.05912	0.65	22.092	0.29	0.05258	1.2							
ER1-10.1	Magm	0.53	4047	4475	1.14	175	315.6	1.0	280	71	-11	19.824	0.28	0.0562	2.0	19.931	0.31	0.0519	3.1							
ER1-11.1	DisP	0.07	2378	640	0.28	98.7	303.8	0.9	320	15	5	20.708	0.31	0.0534	0.57	20.724	0.31	0.0528	0.67	380	658	4	1934	0	2	26
ER1-12.1	Magm + DisP	0.78	3571	4052	1.17	152	309.8	0.9	278	33	-10	20.155	0.28	0.0581	1.1	20.314	0.29	0.0518	1.5							
ER1-13.1	Magm	0.02	7117	12609	1.83	317	325.5	0.8	321	8	-1	19.306	0.26	0.05299	0.33	19.310	0.26	0.05283	0.34	606	263	7	7768	7	1	242
ER1-14.1	DisP	1.15	2281	2429	1.10	95.5	303.1	1.0	270	39	-11	20.532	0.31	0.06088	0.60	20.771	0.34	0.0517	1.7							
ER1-15.1	DisP	2.9	2471	1792	0.75	100	288.4	1.2	267	89	-7	21.226	0.31	0.07480	1.00	21.858	0.42	0.0516	3.9							
ER1-16.1	Magm + DisP	0.34	3295	3525	1.11	135	298.5	3.2	369	32	24	21.03	1.09	0.05671	0.92	21.10	1.09	0.0540	1.4							
ER1-17.1	DisP + Incl	2.6	2966	1267	0.44	128	306.6	3.4	249	82	-19	19.99	1.09	0.07241	1.02	20.53	1.12	0.0512	3.6							
ER1-18.1	DisP + Incl	0.39	12035	38029	3.27	615	370.8	8.2	312	28	-16	16.82	2.3	0.05576	0.84	16.89	2.3	0.0526	1.2	476	12048	14	8788	4	1	231
ER1-19.1	DisP	5.0	2755	1901	0.71	122	308.7	3.7	259	186	-16	19.36	1.10	0.0920	1.9	20.39	1.23	0.0514	8.1							
ER1-19.2	DisP + DifR	2.2	4248	1164	0.28	208	349.2	4.5	374	357	7	17.57	1.07	0.0717	8.3	17.96	1.31	0.0541	16	861	1359	17	4471	54	34	131
ER1-19.3	Magm	0.15	7611	10836	1.47	361	345.8	3.6	319	17	-8	18.12	1.06	0.05397	0.59	18.14	1.06	0.05276	0.74							
ER1-19.4	Magm	0.57	7899	16000	2.09	419	383.9	3.9	315	25	-18	16.20	1.06	0.05732	0.54	16.30	1.06	0.05268	1.09							
ER1-19.5	Magm	0.02	9793	18766	1.98	471	351.1	3.4	305	8	-13	17.86	0.99	0.05258	0.33	17.86	0.99	0.05244	0.34	619	182	9	6764	1	0	133
ER1-20.1	DisP + Incl	0.17	9434	26840	2.94	570	437.6	4.5	305	16	-30	14.21	1.05	0.05385	0.46	14.24	1.05	0.05246	0.70	615	762	20	8483	4	5	193
ER1-20.2	Magm	1.7	3359	4294	1.32	148	317.9	3.4	356	80	12	19.44	1.09	0.0675	2.1	19.78	1.11	0.0536	3.5	321	1099	37	4152	60	47	169
ER1-21.1	Magm	0.17	5178	7038	1.40	234	330.5	3.5	340	25	3	18.98	1.07	0.05460	0.71	19.01	1.07	0.05325	1.12							

Zircon types: Magm = magmatic, DifR = diffusion-reaction front, DisP = dissolution-precipitation, Incl = inclusions (DisP zircon)

Errors are 1-sigma; Pb_c and Pb^* indicate the common and radiogenic portions, respectively.

(1) Common Pb corrected using measured ^{204}Pb.

Errors in standard calibrations were 0.44% (session 1, Analyses 1.1 to 15.1) and 0.68% (session 2, analyses 16.1 to 21.1).

These errors are not included in the table, but were added to U-Pb ratios for calculation of age populations for the whole dataset.

SHRIMP analysis procedure

The mount was cleaned, gold-coated and imaged using a scanning electron microscope fitted with a cathodoluminescence (CL) detector. Isotopic analysis of zircon was carried out using the Sensitive High Resolution Ion Microprobe (SHRIMP II) at the National Institute of Polar Research (NIPR) in Tokyo. Data were collected in three sessions, two for geochronological and another for compositional analysis. Analytical spots were 20-30 µm across, produced by a beam of O2- ions with a current of -5nA (session 1) and -3nA (session 2) on the sample surface. The standard used for the reference value of U concentration in zircon was zircon SL13 (U=238 ppm) provided by the Australian National University. U-Pb ratios were corrected for instrumental interelement fractionation using ratios measured on standard zircon FC1 (1099 Ma; Paces and Miller, 1993). Common Pb corrections were based on measured 204Pb.

Data reduction and processing was conducted using SQUID (version 1.12a) and ISOPLOT (version 3.50) software provided by K.R. Ludwig from the Berkeley Geochemistry Center of University of California (Ludwig, 2001 & 2003). Data errors include the spot-to-spot variation in standard analyses and the decay-constant error of the concordia curve. Errors on the mean of standard calibration ratios were 0.44% (session 1, analyses 1.1 to 15.1) and 0.68% (session 2, analyses 16.1 to 21.1). These errors are not included in the table, but were added to U-Pb ratios for calculation of age populations for the whole dataset. Chemical analyses (P, Ca, Ti, Y, Ba and REEs) were performed on selected spots by reanalyzing locations of geochronological analyses. Counts were normalized against 30Si in standard glass NIST610. Values in ppm measured in standard zircon 91500 were within 15% of published values.

References

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Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
1	9	19	2	89	36	451	163	679	148	1327	219
7	46	49	5	164	57	654	216	842	175	1546	230
22	92	27	3	68	26	339	132	588	134	1248	207
1	5	5	0	22	9	133	54	252	61	611	112
1	18	31	3	128	49	608	222	942	207	1919	313
2	24	47	6	182	65	754	248	958	197	1719	252
12	62	38	2	84	29	338	128	610	155	1626	289
0	8	20	2	97	40	503	183	757	162	1447	228
3	31	45	4	166	61	733	256	1032	218	1939	299
14	65	44	2	95	33	363	119	476	103	942	148