GSA DATA REPOSITORY 2010095

ANALYTICAL TECHNIQUES

Zircon mineral separates were prepared from bulk rock samples by crushing, gravity, and magnetic separation, heavy liquids, and hand picking under fiber optic illumination at the Australian National University Research School of Earth Sciences (ANU-RSES). Zircons were mounted in epoxy, ground to approximately half-thickness, and polished with 6 μm and 1 μm diamond suspension. Cathodoluminescence (CL) images for zircon characterization were collected using scanning electron microscope, together with transmitted and reflected light images using a petrographic microscope. Zircon U-Th-Pb isotopic analyses were collected using SHRIMP II at ANU-RSES and SHRIMP RG at Geoscience Australia, following procedures described in Williams (1998). Data were reduced using the SQUID Excel Macro of Ludwig (2001). The U-Pb ratios have been normalized relative to a value of 0.0668 for the Temora reference zircon, equivalent to an age of 417 Ma (Black et al., 2003). Data appear in Data Repository Table DR1. Ages are reported as weighted mean of $^{206}Pb/^{238}U$ ages for coherent zircon populations.

Uncertainties given for individual analyses (ratios and ages) are at the one-sigma level. Probability density plots with stacked histograms and weighted mean $^{206}Pb/^{238}U$ ages and Tera-Wasserburg (1972) concordia plots were calculated using ISOPLOT/EX (Ludwig, 2003). ISOPLOT/EX employs the “Mixture Modeling” algorithm of Sambridge and Compston (1994) to un-mix statistical age populations or groupings, which are in turn used to calculate weighted mean $^{206}Pb/^{238}U$ ages. Uncertainties are reported as 95% confidence limits.

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TABLE DR1. Summary of SHRIMP U-Pb zircon results for leucogranite sheets in the Fosdick Mountains

Grain spot	U (ppm)	Th (ppm)	Th/U	^{206}Pb* (ppm)	$^{204}Pb/^{206}Pb$	f_{206} %	Total $^{238}U/^{206}Pb$	±	$^{207}Pb/^{206}Pb$	±	Radiogenic ratios $^{206}Pb/^{238}U$
***Sample M6-L188** - granite sill from Mt. Lockhart (Location:S 76° 26.435 , W 145° 11.623)											
Rims											
1.1	763	42	0.055	10.6	0.000302	0.25	61.98	0.74	0.0500	0.0010	0.0161
3.1	1517	142	0.094	24.2	-	0.08	53.89	0.58	0.0490	0.0006	0.0185
4.2	2613	10	0.004	39.9	0.000034	0.15	56.28	0.59	0.0495	0.0005	0.0177
6.1	1210	6	0.005	17.4	0.000046	0.15	59.65	0.66	0.0493	0.0007	0.0167
8.1	2545	7	0.003	38.7	0.000046	0.13	56.53	0.60	0.0493	0.0005	0.0177
12.1	1002	29	0.029	14.1	-	<0.01	61.08	0.69	0.0480	0.0008	0.0164
13.1	1043	33	0.032	14.7	0.000400	0.29	60.94	0.68	0.0505	0.0010	0.0164
14.1	1009	5	0.005	14.3	0.000164	0.04	60.61	0.68	0.0485	0.0007	0.0165
15.1	479	165	0.344	24.7	0.000112	0.13	16.67	0.19	0.0552	0.0006	0.0599
17.1	2496	149	0.060	40.4	0.000149	0.10	53.11	0.56	0.0492	0.0005	0.0188
18.1	1683	66	0.039	25.0	0.000815	1.02	57.81	0.62	0.0563	0.0010	0.0171
20.1	1915	31	0.016	28.4	0.000236	0.18	57.98	0.62	0.0497	0.0005	0.0172
21.1	2623	53	0.020	42.5	0.001755	2.91	53.04	0.55	0.0715	0.0005	0.0183
22.1	1713	8	0.005	25.4	0.000023	0.11	58.03	0.61	0.0491	0.0005	0.0172
Cores											
2.1	172	216	1.261	2.7	0.000693	1.28	55.18	0.91	0.0585	0.0021	0.0179
4.1	100	106	1.058	1.6	0.002504	1.47	53.00	0.96	0.0601	0.0025	0.0186
5.1	419	166	0.396	6.6	0.000482	0.41	54.81	0.72	0.0516	0.0011	0.0182
6.2	306	450	1.470	4.8	0.000946	0.43	54.78	0.73	0.0518	0.0013	0.0182
7.1	851	151	0.178	13.8	0.000068	0.29	53.03	0.60	0.0508	0.0008	0.0188

8.2	1172	314	0.268	19.4	-	0.03	51.82	0.57	0.0488	0.0006	0.0193
9.1	2099	14	0.006	32.9	0.000270	0.46	54.81	0.58	0.0520	0.0005	0.0182
10.1	225	138	0.611	3.7	0.000779	0.56	52.57	0.75	0.0529	0.0019	0.0189
11.1	131	107	0.814	2.0	0.000790	0.42	55.31	0.93	0.0516	0.0021	0.0180
12.2	140	123	0.881	2.2	0.000305	0.39	53.61	0.88	0.0515	0.0020	0.0186
13.2	419	468	1.117	6.4	0.000375	0.17	55.82	0.71	0.0497	0.0011	0.0179
14.2	365	350	0.958	5.7	0.000257	0.27	54.86	0.71	0.0505	0.0012	0.0182
15.2	1189	880	0.740	60.4	0.000013	<0.01	16.92	0.18	0.0539	0.0004	0.0591
16.1	401	101	0.252	6.3	-	0.28	55.04	0.70	0.0505	0.0012	0.0181
18.2	779	138	0.177	77.5	0.000035	0.04	8.633	0.101	0.0633	0.0006	0.1158
19.1	312	373	1.195	5.0	-	0.21	53.87	0.72	0.0501	0.0013	0.0185

***Sample C6-BB112** - leucogranite sheet from Bird Bluff (Location: S 76° 30.197 , W 144° 35.618)

Rims

1.1	1365	41	0.03	19.0	0.000027	0.12	61.75	0.67	0.0490	0.0006	0.0162
2.1	3400	244	0.07	49.0	0.000133	0.02	59.66	0.62	0.0483	0.0004	0.0168
3.1	2833	181	0.06	40.3	-	0.03	60.35	0.63	0.0484	0.0004	0.0166
4.1	1873	87	0.05	26.2	0.000180	0.08	61.33	0.65	0.0487	0.0005	0.0163
5.1	2823	144	0.05	39.6	0.000089	0.05	61.21	0.64	0.0485	0.0006	0.0163
6.1	3417	242	0.07	47.8	0.000060	0.12	61.36	0.64	0.0490	0.0005	0.0163
7.1	2535	223	0.09	39.8	0.000046	0.00	54.75	0.57	0.0484	0.0005	0.0183
8.1	2416	121	0.05	33.2	0.000059	0.15	62.54	0.66	0.0492	0.0005	0.0160
9.1	2011	61	0.03	27.3	0.000128	0.08	63.37	0.67	0.0486	0.0005	0.0158
12.1	1829	80	0.04	25.5	-	0.07	61.53	0.66	0.0487	0.0006	0.0162
13.1	2282	108	0.05	31.5	0.000086	0.07	62.29	0.71	0.0486	0.0005	0.0160
14.1	1696	34	0.02	35.6	-	0.18	40.87	0.43	0.0506	0.0005	0.0244
15.1	1960	83	0.04	26.6	0.000054	0.08	63.35	0.68	0.0487	0.0005	0.0158
16.1	2521	164	0.07	35.0	0.000177	0.32	61.89	0.65	0.0506	0.0005	0.0161
17.1	2304	117	0.05	31.8	0.000112	0.01	62.26	0.67	0.0481	0.0005	0.0161

Cores											
3.2	747	1430	1.91	36.9	-0.00004	0.13	17.40	0.19	0.0548	0.0005	0.0574
10.1	680	50	0.07	33.7	9	<0.01	17.35	0.19	0.0533	0.0005	0.0577
11.1	693	407	0.59	32.4	0.00008 7	0.10	18.35	0.20	0.0541	0.0005	0.0544
12.2	2009	1091	0.54	318.8	0.00001 0	0.02	5.415	0.055	0.0757	0.0002	0.1846
15.2	323	147	0.46	63.7	0.00004 9	0.08	4.360	0.048	0.1093	0.0006	0.2292
17.2	250	327	1.31	12.2	-	0.04	17.63	0.25	0.0540	0.0008	0.0567

Uncertainties given at the 1σ level.

f_{206} % denotes the percentage of ^{206}Pb that is common Pb.

Correction for common Pb made using the measured $^{238}U/^{206}Pb$ and $^{207}Pb/^{206}Pb$ ratios following Tera and Wasserburg (1972) as outlined in Williams (1998).