

118925: biotite monzogranite, Lookout Rocks

Location and sampling

NULLAGINE (SF 51-5)

121°23'38"E 21°56'12"S

Sampled on 10 October 1993

The sample was taken from an exfoliated slab from a large tor, on the south side and about 5 m from the base of a hill with distinctive, large pencil-like tors on its top, to the north of Lookout Rocks.

Tectonic unit/relations

This sample is of a granitic phase of the Gregory Granitic Complex.

Petrographic description

The sample consists of albite phenocrysts, up to 10 mm diameter, in a coarse matrix of microcline, quartz and lesser biotite, with minor titanite, opaques and epidote and accessory apatite and zircon. The rock has been weakly deformed, resulting in kinked twin lamellae in the plagioclase, and intergranular recrystallization to a fine mosaic. Zircon is abundant and grains are large, ≥ 0.7 mm long.

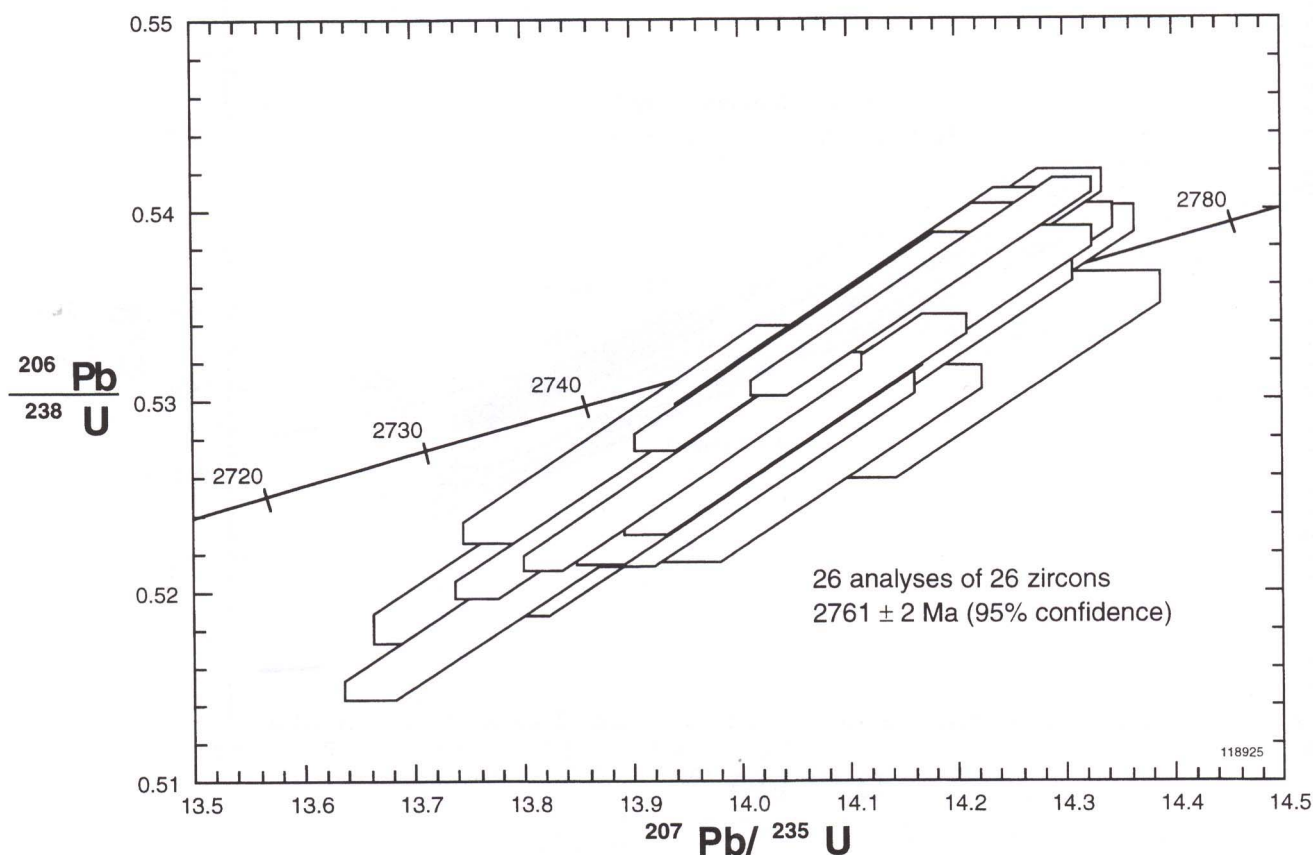


Figure 24. Concordia plot for sample 118925: biotite monzogranite, Lookout Rocks

Table 23. Ion microprobe analytical results for sample 118925: biotite monzogranite, Lookout Rocks

<i>Grain .spot</i>	<i>U (ppm)</i>	<i>Th (ppm)</i>	<i>Pb (ppm)</i>	<i>f206%</i>	<i>²⁰⁷Pb/²⁰⁶Pb</i>	<i>±1σ</i>	<i>²⁰⁸Pb/²⁰⁶Pb</i>	<i>±1σ</i>	<i>²⁰⁶Pb/²³⁸U</i>	<i>±1σ</i>	<i>²⁰⁷Pb/²³⁵U</i>	<i>±1σ</i>	<i>% concordance</i>	<i>²⁰⁷Pb/²⁰⁶Pb Age</i>	<i>±1σ</i>
1.1	197	110	122	0.090	0.19233	0.00071	0.15188	0.00099	0.5345	0.0059	14.174	0.171	100	2762	6
2.1	557	260	334	0.049	0.19216	0.00041	0.12814	0.00047	0.5267	0.0057	13.956	0.156	99	2761	3
3.1	290	147	179	0.151	0.19142	0.00061	0.13933	0.00086	0.5353	0.0058	14.127	0.165	100	2754	5
4.1	164	121	103	0.095	0.19249	0.00080	0.20313	0.00122	0.5245	0.0058	13.922	0.171	98	2764	7
5.1	263	227	172	0.082	0.19225	0.00059	0.23649	0.00095	0.5295	0.0058	14.037	0.164	99	2761	5
6.1	175	157	117	0.099	0.19266	0.00071	0.24614	0.00116	0.5343	0.0059	14.194	0.172	100	2765	6
7.1	305	181	190	0.060	0.19261	0.00053	0.16274	0.00071	0.5333	0.0058	14.163	0.164	100	2765	5
8.1	152	113	96	0.116	0.19181	0.00081	0.20713	0.00130	0.5231	0.0058	13.835	0.171	98	2758	7
9.1	186	123	117	0.046	0.19244	0.00072	0.18203	0.00106	0.5323	0.0059	14.125	0.171	100	2763	6
10.1	363	240	228	0.180	0.19091	0.00054	0.18029	0.00082	0.5282	0.0057	13.904	0.160	99	2750	5
11.1	309	233	199	0.031	0.19135	0.00053	0.20758	0.00077	0.5345	0.0058	14.103	0.163	100	2754	5
12.1	470	268	291	0.051	0.19132	0.00043	0.15510	0.00056	0.5330	0.0057	14.061	0.158	100	2754	4
13.1	605	308	372	0.064	0.19174	0.00039	0.14018	0.00049	0.5359	0.0058	14.168	0.158	100	2757	3
14.1	413	179	247	0.060	0.19274	0.00046	0.11954	0.00054	0.5287	0.0057	14.051	0.159	99	2766	4
15.1	279	172	173	0.029	0.19233	0.00056	0.16856	0.00075	0.5281	0.0058	14.005	0.163	99	2762	5
16.1	365	236	228	0.042	0.19274	0.00049	0.17991	0.00067	0.5271	0.0057	14.008	0.160	99	2766	4
17.1	356	238	224	0.065	0.19183	0.00060	0.18011	0.00083	0.5302	0.0051	14.024	0.148	99	2758	5
18.1	357	254	227	0.105	0.19290	0.00062	0.19108	0.00090	0.5323	0.0052	14.158	0.150	99	2767	5
19.1	187	105	116	0.200	0.19416	0.00090	0.15238	0.00132	0.5313	0.0054	14.223	0.166	99	2778	8
20.1	355	179	219	0.130	0.19163	0.00062	0.13405	0.00080	0.5369	0.0052	14.186	0.150	101	2756	5
21.1	371	292	239	0.042	0.19170	0.00059	0.21326	0.00088	0.5323	0.0052	14.069	0.148	100	2757	5
22.1	460	311	283	0.081	0.19242	0.00053	0.18056	0.00075	0.5193	0.0050	13.778	0.142	98	2763	5
23.1	354	263	227	0.075	0.19232	0.00061	0.20028	0.00089	0.5338	0.0052	14.153	0.150	100	2762	5
24.1	661	438	410	0.067	0.19185	0.00045	0.17818	0.00062	0.5246	0.0050	13.877	0.140	99	2758	4
25.1	319	122	188	0.082	0.19378	0.00065	0.10360	0.00075	0.5267	0.0051	14.073	0.150	98	2774	5
26.1	352	179	212	0.035	0.19306	0.00061	0.13832	0.00074	0.5264	0.0051	14.013	0.148	98	2768	5

Zircon morphology

The zircons isolated from this sample range in colour from light pink to dark yellow, brown or black, are euhedral and equant in shape and between $120 \times 150 \mu\text{m}$ and $250 \times 400 \mu\text{m}$ in size. Many grains are structureless or contain indistinct traces of oscillatory zoning, and fluid and mineral inclusions are common. Many grains are extensively fractured.

Analytical details

This sample was analysed on 13 and 27 November 1998. The counter deadtime during both analysis sessions was 32 ns. Thirteen analyses of the CZ3 standard obtained during the first analysis session indicated a Pb^*/U calibration error of 1.06 (1 σ %). Analyses 1.1 to 6.1 were obtained during the first analysis session. During the second analysis session, ten analyses of the CZ3 standard indicated a Pb^*/U calibration error of 0.923 (1 σ %). Common-Pb corrections were applied assuming Broken Hill common-Pb isotopic compositions for all analyses.

Results

Twenty-six analyses were obtained from 26 zircons. Results are given in Table 23 and shown on a concordia plot in Figure 24.

Interpretation

All analyses are concordant and have $^{207}\text{Pb}/^{206}\text{Pb}$ ratios defining a single population corresponding to a weighted mean date of $2761 \pm 2 \text{ Ma}$ (chi-squared = 1.44). This is interpreted as the time of igneous crystallization of the monzogranite.

Recommended reference for this publication:

NELSON, D. R., 1999, 118925: biotite monzogranite, Lookout Rocks; in Compilation of geochronology data, 1998: Western Australia Geological Survey, Record 1999/2, p. 94–96.

OR

NELSON, D. R., 1999, 118925: biotite monzogranite, Lookout Rocks; Geochronology dataset 462; in Compilation of geochronology data, June 2006 update: Western Australia Geological Survey.

Data obtained: 27/11/1998; Data released: 16/06/1999