

附表 1 Koka 花岗岩锆石 LA-ICP-MS U-Pb 测年结果

Appendix table 1 Zircon LA-ICP-MS U-Pb dating result of Koka granite

样品	Th	U	Th/U	$Pb^{207}/Pb^{206}$		$Pb^{207}/U^{235}$		$Pb^{206}/U^{238}$		$Pb^{208}/Th^{232}$		$Pb^{207}/U^{235}$		$Pb^{206}/U^{238}$	
	( $10^{-6}$ )	( $10^{-6}$ )		比值	1 $\sigma$	比值	1 $\sigma$	比值	1 $\sigma$	比值	1 $\sigma$	年龄(Ma)	1 $\sigma$	年龄(Ma)	1 $\sigma$
KO-11-01	115.11	624.86	0.18	0.067000	0.001019	1.317591	0.023171	0.142710	0.001489	0.044168	0.001042	853.5	10.2	860.0	8.4
KO-11-03	101.71	609.10	0.17	0.066277	0.001454	1.294438	0.030835	0.141746	0.001516	0.043991	0.001633	843.3	13.6	854.5	8.6
KO-11-04	23.45	204.38	0.11	0.067634	0.002830	1.281619	0.052935	0.137866	0.002653	0.042622	0.002048	837.6	23.6	832.6	15.0
KO-11-05	24.29	310.45	0.08	0.066343	0.002117	1.276482	0.042531	0.139700	0.001856	0.040582	0.001494	835.3	19.0	843.0	10.5
KO-11-06	30.93	253.76	0.12	0.067732	0.002842	1.272345	0.058086	0.135304	0.002416	0.045578	0.002483	833.4	26.0	818.1	13.7
KO-11-07	313.42	1126.46	0.28	0.067256	0.001244	1.280809	0.025140	0.138010	0.001233	0.041902	0.000597	837.2	11.2	833.4	7.0
KO-11-08	32.79	148.93	0.22	0.066300	0.002672	1.333998	0.058475	0.145891	0.002816	0.045597	0.001628	860.6	25.4	877.9	15.8
KO-11-10	98.02	514.52	0.19	0.066607	0.001527	1.326024	0.029680	0.144543	0.001399	0.041630	0.000943	857.1	13.0	870.3	7.9
KO-11-11	35.53	362.29	0.10	0.066820	0.001485	1.308211	0.033492	0.141750	0.002034	0.041786	0.001900	849.3	14.7	854.6	11.5
KO-11-12	59.05	506.54	0.12	0.067677	0.001546	1.278635	0.031852	0.137381	0.002201	0.044280	0.001186	836.2	14.2	829.8	12.5
KO-11-14	51.88	190.87	0.27	0.068004	0.002879	1.310082	0.052357	0.140798	0.002095	0.042297	0.001175	850.2	23.0	849.2	11.8
KO-11-16	126.41	729.05	0.17	0.067370	0.001003	1.280658	0.020128	0.137855	0.001210	0.039797	0.000539	837.1	9.0	832.5	6.9
KO-11-18	29.98	179.57	0.17	0.068031	0.002196	1.299186	0.038753	0.139893	0.002171	0.040664	0.001170	845.4	17.1	844.1	12.3
KO-11-19	47.22	196.09	0.24	0.066401	0.002043	1.328396	0.044415	0.145974	0.003192	0.042115	0.001562	858.2	19.4	878.4	18.0
KO-11-21	150.80	914.02	0.16	0.067733	0.001352	1.307214	0.033579	0.139678	0.001999	0.044488	0.001028	848.9	14.8	842.8	11.3
KO-11-22	102.80	614.75	0.17	0.067405	0.001293	1.315564	0.026941	0.141484	0.001501	0.042833	0.000760	852.6	11.8	853.0	8.5
KO-11-23	110.27	682.85	0.16	0.067321	0.000928	1.318132	0.019872	0.142066	0.001505	0.043850	0.000789	853.7	8.7	856.3	8.5
KO-11-24	49.14	559.87	0.09	0.067418	0.001094	1.303345	0.022511	0.140315	0.001525	0.043115	0.001018	847.2	9.9	846.4	8.6
KO-11-25	79.05	501.56	0.16	0.067758	0.001076	1.301963	0.021082	0.139480	0.001441	0.041703	0.000542	846.6	9.3	841.7	8.2
KO-11-26	57.78	306.42	0.19	0.067908	0.001648	1.326449	0.033757	0.141940	0.001840	0.044150	0.001051	857.3	14.7	855.6	10.4
KO-11-27	134.96	670.93	0.20	0.068086	0.000844	1.349354	0.019327	0.143534	0.001286	0.043190	0.000570	867.3	8.4	864.6	7.3
KO-11-28	152.08	847.99	0.18	0.067431	0.002135	1.357552	0.033866	0.146662	0.002392	0.045733	0.001399	870.8	14.6	882.2	13.4
KO-11-29	56.22	366.82	0.15	0.068182	0.001261	1.344785	0.025193	0.143261	0.001368	0.044976	0.000842	865.3	10.9	863.1	7.7
KO-11-30	41.34	155.09	0.27	0.067419	0.001606	1.327589	0.034769	0.142547	0.001580	0.043207	0.000865	857.8	15.2	859.0	8.9

附表 2 Koka 花岗岩锆石微量元素测试结果 (10<sup>-6</sup>)

Appendix table 2 Zircon trace elements analysis result of Koka granite (10<sup>-6</sup>)

测点	Ti	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Zr	U	Th	Ce <sup>4+</sup> /Ce <sup>3+</sup>	T (°C)
KO-11-01	12.36	0.00	9.66	0.12	2.78	7.00	3.79	49.01	16.65	194.23	73.49	306.78	60.40	528.80	105.74	3612.26	148.49	115.11	78.9	758.0
KO-11-02	25.56	0.03	24.64	0.50	11.54	23.33	16.75	122.80	35.87	388.04	138.83	558.64	111.85	970.95	179.85	4051.35	59.33	60.09	17.0	719.6
KO-11-03	4.04	0.01	65.07	0.20	4.52	11.57	4.98	70.75	24.37	281.59	104.92	435.63	85.92	734.32	138.12	3690.11	148.20	101.71	146.3	818.6
KO-11-04	6.59	0.02	14.39	0.07	1.70	4.52	2.69	30.21	10.24	129.77	50.14	223.50	48.09	454.96	86.20	4015.36	50.12	23.45	51.2	903.0
KO-11-05	7.18	0.00	7.00	0.04	1.02	2.87	1.23	20.02	7.35	93.15	36.65	162.10	34.65	316.32	61.82	21.41	78.05	24.29	78.0	710.0
KO-11-06	4.21	0.03	14.81	0.11	1.99	4.84	1.92	26.41	9.50	110.10	41.87	180.65	37.39	339.13	62.47	3978.31	61.81	30.93	32.7	754.8
KO-11-07	11.41	0.59	26.34	0.47	5.01	11.16	7.02	78.91	26.55	305.53	111.80	457.21	88.07	753.41	146.58	3472.71	275.38	313.42	8.4	763.1
KO-11-08	34.69	0.05	13.32	0.35	7.55	16.36	12.71	78.65	23.31	248.04	87.94	362.90	72.97	642.87	126.78	3856.67	35.91	32.79	9.4	713.7
KO-11-09	19.79	0.05	16.29	0.42	7.89	15.51	12.63	73.24	21.57	233.41	82.61	343.98	68.63	606.54	119.65	3268.71	43.17	38.50	10.7	810.1
KO-11-10	14.56	0.14	14.82	0.18	3.28	7.79	5.36	49.78	17.24	201.34	76.89	327.63	66.02	587.36	114.43	3762.10	123.95	98.02	12.8	942.5
KO-11-12	0.83	0.05	9.86	0.41	8.84	21.64	8.23	111.77	34.12	385.27	134.29	533.61	104.56	907.78	160.02	3933.39	122.68	59.05	6.1	836.6
KO-11-14	26.69	0.02	20.54	0.51	10.94	23.65	16.13	117.12	34.13	367.97	128.98	520.61	102.19	874.66	167.84	3770.85	46.73	51.88	15.9	589.1
KO-11-15	9.68	0.94	23.37	0.72	8.18	15.17	5.64	93.92	29.88	335.06	119.80	487.56	93.59	793.87	149.85	3551.09	231.13	160.90	4.5	797.6
KO-11-16	9.79	0.01	15.41	0.24	5.17	12.88	5.65	80.63	27.08	310.49	110.88	458.73	90.90	784.88	145.46	3816.28	177.96	126.41	32.9	908.5
KO-11-18	15.73	0.02	15.28	0.24	5.07	9.88	6.77	51.53	15.77	178.84	67.44	293.83	61.44	562.74	114.56	3720.34	43.23	29.98	22.5	794.0
KO-11-20	29.56	0.14	21.96	0.25	3.85	9.09	6.28	62.97	21.49	249.95	92.34	385.36	76.14	668.37	130.22	3559.10	180.57	161.57	16.5	845.3
KO-11-21	10.43	0.98	20.03	0.67	7.50	14.90	5.63	90.15	29.20	335.39	120.99	496.32	97.17	837.76	159.65	3713.22	222.70	150.80	3.9	910.1
KO-11-22	8.51	0.06	17.83	0.46	8.88	22.64	12.75	122.61	38.89	441.55	154.44	629.81	122.44	1069.72	196.51	3767.48	152.54	102.80	10.5	921.5
KO-11-23	9.93	0.00	10.59	0.13	2.86	7.93	3.78	49.95	17.52	216.72	83.87	362.90	73.54	652.15	126.84	3730.72	167.94	110.27	73.6	800.6
KO-11-24	2.92	0.14	17.78	0.13	2.08	5.29	1.36	35.02	12.68	156.55	60.40	261.95	53.41	484.12	89.02	3807.94	138.17	49.14	23.0	779.9
KO-11-25	10.80	0.09	24.66	0.20	3.32	7.60	5.87	55.08	20.61	255.00	100.02	442.96	88.98	786.69	158.07	3412.51	126.20	79.05	26.4	795.5
KO-11-26	20.17	0.02	29.78	0.34	6.85	14.98	9.17	75.65	24.40	275.83	102.07	439.38	89.90	816.22	155.36	3749.20	73.51	57.78	34.8	682.3
KO-11-27	10.45	0.02	12.93	0.15	3.25	9.08	4.38	61.81	21.03	240.76	88.10	367.41	71.21	619.32	121.65	3501.87	169.98	134.96	23.7	804.2
KO-11-28	13.06	1.03	18.66	0.47	5.39	10.87	4.54	70.21	23.52	270.04	98.94	409.63	80.13	698.42	132.02	3714.33	206.48	152.08	4.5	874.1
KO-11-29	15.00	0.00	14.93	0.11	2.16	5.59	4.45	41.85	15.32	187.38	72.13	316.75	66.05	594.03	115.60	3863.62	90.43	56.22	85.9	800.8
KO-11-30	31.13	0.03	17.36	0.54	10.67	22.25	15.57	105.99	31.07	334.68	118.46	477.77	93.10	806.23	155.82	3709.75	38.26	41.34	11.5	824.6

注：锆石结晶温度计算公式： $T(K) = \frac{(4800 \pm 86)}{(5.711 \pm 0.072) - \lg \alpha_{\text{SiO}_2} + \lg \alpha_{\text{TiO}_2} - \lg (\text{Ti-in-zircon})}$ ； $\lg \alpha_{\text{SiO}_2}$  视为 1， $\lg \alpha_{\text{TiO}_2}$  视为 0.6。

附表 3 Koka 金矿花岗岩主微量元素测试结果

Appendix table 3 Major and trace elements analysis result of Koka goldfield granite

样号	KO-5	KO-6	KO-11	KO-12	KO-13	KO-16
SiO <sub>2</sub>	78.40	74.85	70.92	74.35	67.94	76.50
Al <sub>2</sub> O <sub>3</sub>	11.05	12.34	15.04	12.07	16.51	12.11
Fe <sub>2</sub> O <sub>3</sub>	1.36	2.66	1.85	1.72	2.54	0.65
FeO	1.98	1.41	1.53	0.91	0.53	2.44
FeO <sup>T</sup>	3.20	3.80	3.19	2.46	2.81	3.02
CaO	0.06	0.26	0.56	1.85	1.29	0.26
MgO	0.17	0.36	0.31	0.36	0.39	0.15
K <sub>2</sub> O	0.80	2.20	1.67	1.85	2.08	1.07
Na <sub>2</sub> O	5.36	3.66	6.43	4.40	6.68	5.58
TiO <sub>2</sub>	0.16	0.55	0.20	0.18	0.21	0.16
P <sub>2</sub> O <sub>5</sub>	0.02	0.17	0.02	0.02	0.02	0.02
MnO	0.04	0.06	0.02	0.05	0.04	0.04
灼失	0.02	0.96	0.94	1.88	1.46	0.35
Total	99.41	99.48	99.49	99.64	99.68	99.31
Na <sub>2</sub> O+K <sub>2</sub> O	6.16	5.86	8.10	6.25	8.76	6.65
K <sub>2</sub> O/Na <sub>2</sub> O	0.15	0.60	0.26	0.42	0.31	0.19
A/NK	1.58	1.64	1.57	1.56	1.57	1.57
A/CNK	1.55	1.55	1.42	1.09	1.28	1.48
Cr	3.49	6.34	24.10	5.51	3.41	17.00
Rb	14.10	25.30	32.70	37.90	38.10	20.00
W	0.90	3.10	1.36	1.47	1.59	2.28
Sb	0.21	0.48	0.67	0.46	0.60	0.61
Sr	19.70	45.00	40.40	86.90	89.60	37.60
Ba	225	566	480	461	495	316
V	10.10	39.10	7.03	6.65	7.67	1.50
Nb	16.90	16.40	22.00	20.20	23.80	24.70
Ta	1.15	1.08	1.61	1.42	1.62	1.66
Zr	329	308	301	254	320	382
Hf	14.50	13.50	16.20	13.50	16.80	17.80
U	1.40	1.54	2.49	2.65	2.73	3.22
Th	1.66	3.18	3.32	5.73	4.79	5.34
La	38.70	34.40	56.90	54.40	52.00	51.20
Ce	95.40	86.80	143.00	137.00	132.00	126.00
Pr	12.10	11.00	18.00	17.40	16.50	15.70
Nd	54.20	48.80	80.40	76.00	72.00	68.70
Sm	12.40	11.30	18.60	17.50	17.00	16.20
Eu	2.43	2.68	2.99	2.60	2.71	2.36
Gd	10.60	9.51	15.90	15.00	14.60	14.10
Tb	1.84	1.66	2.76	2.64	2.59	2.57
Dy	11.80	10.20	17.40	16.50	16.20	16.70
Ho	2.48	2.10	3.70	3.41	3.39	3.54
Er	6.97	5.70	10.20	9.59	9.46	10.00
Tm	1.13	0.92	1.66	1.56	1.59	1.63
Yb	7.53	6.16	11.20	10.40	10.50	11.00
Lu	1.06	0.88	1.61	1.43	1.50	1.50
Y	57.00	89.40	76.60	83.50	78.90	82.90
La/Sm	3.12	3.04	3.06	3.11	3.06	3.16
Gd/Yb	1.41	1.54	1.42	1.44	1.39	1.28
ΣREE	258.64	232.11	384.32	365.43	352.04	341.20

注：主量元素质量分数单位为%；微量和稀土元素含量单位为 10<sup>-6</sup>。