minerals

Supplementary materials: Geochronology and Genesis of the Xitian W-Sn Polymetallic Deposit in Eastern Hunan Province, South China: Evidence from Zircon U-Pb and Muscovite Ar-Ar Dating, Petrochemistry, and Wolframite Sr-Nd-Pb Isotopes

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Table S1. LA-ICP-MS zircon U-Pb isotopic compositions of altered granite in Xitian W-Sn ore field.

Spot	Th(μg/g)	U(μg/g)	Th/U	$^{207}Pb/^{206}Pb$		$^{207}Pb/^{235}U$		$^{206}Pb/^{238}U$		$^{208}Pb/^{232}Th$		$^{207}Pb/^{206}Pb$		$^{207}Pb/^{235}U$		$^{206}Pb/^{238}U$	
				Ratio	±1σ	Ratio	±1σ	Ratio	±1σ	Ratio	±1σ	Age (Ma)	±1σ	Age (Ma)	±1σ	Age (Ma)	±1σ
19-4s1																	
1	556	3129	0.18	0.0513	0.0009	0.252	0.0054	0.0356	0.0004	0.0076	0.0003	253.8	41	228.2	4	225.3	2
3	648	663	0.98	0.0683	0.0025	0.3282	0.0121	0.0352	0.0008	0.0091	0.0004	879.6	78	288.2	9	223.2	5
4	812	1128	0.72	0.0654	0.0019	0.3198	0.009	0.0356	0.0005	0.0061	0.0002	787	62	281.7	7	225.4	3
5	1118	1404	0.8	0.0713	0.0024	0.3604	0.0148	0.0358	0.0006	0.0094	0.0004	968.5	67	312.5	11	226.7	4
6	334	1452	0.23	0.0602	0.0021	0.2842	0.0101	0.0341	0.0005	0.0078	0.0004	613	44	254	8	216.4	3
7	1274	2821	0.45	0.0718	0.002	0.3521	0.0138	0.0353	0.0009	0.0077	0.0003	988.9	57	306.3	10	223.3	5
8	824	2328	0.35	0.0526	0.0011	0.2575	0.0062	0.0354	0.0004	0.0067	0.0003	309.3	53	232.6	5	224.3	3
9	1172	1797	0.65	0.0775	0.0038	0.3923	0.026	0.0352	0.0008	0.0089	0.0006	1144.5	97	336.1	19	223.2	5
10	643	1018	0.63	0.0524	0.0016	0.2559	0.0082	0.0354	0.0005	0.0078	0.0003	301.9	70	231.4	7	224.1	3
12	1307	2344	0.56	0.053	0.0013	0.2619	0.0067	0.0359	0.0004	0.0102	0.0004	327.8	58	236.2	5	227.2	3
15	509	685	0.74	0.0543	0.0022	0.2742	0.0107	0.0369	0.0006	0.012	0.0005	383.4	86	246.1	9	233.5	3
25	1495	863	1.73	0.0514	0.0017	0.2599	0.0092	0.0366	0.0006	0.0095	0.0003	257.5	74	234.6	7	231.8	4
26	1411	2539	0.56	0.0553	0.0012	0.279	0.0057	0.0366	0.0004	0.0103	0.0004	433	42	250	5	231	2
24-15s1																	
1	7362	59113	0.12	0.0481	0.001	0.1621	0.0042	0.0239	0.0003	0.008	0.0005	105.6	50	152.5	4	152.6	2
2	3347	36429	0.09	0.0479	0.001	0.1592	0.0042	0.0236	0.0003	0.0072	0.0003	94.5	52	150	4	150.6	2

3	9909	32824	0.3	0.0467	0.0013	0.1572	0.0048	0.024	0.0003	0.0073	0.0003	35.3	67	148.3	4	152.6	2
4	1737	3277	0.53	0.0527	0.002	0.1738	0.0067	0.0238	0.0004	0.0087	0.0002	316.7	117	162.7	6	151.8	3
6	14922	22144	0.67	0.0469	0.0017	0.1571	0.0054	0.0241	0.0003	0.0054	0.0003	42.7	85	148.2	5	153.4	2
7	9187	40912	0.22	0.047	0.0045	0.1609	0.0157	0.024	0.0003	0.01	0.0015	55.7	209	151.5	14	152.7	2
8	4320	32356	0.13	0.0485	0.0013	0.1619	0.0046	0.0239	0.0003	0.0085	0.0004	120.5	66	152.4	4	152.4	2
11	6041	50472	0.12	0.0485	0.0021	0.1607	0.0074	0.0238	0.0003	0.0084	0.001	124.2	108	151.3	6	151.7	2
13	4923	22261	0.22	0.0512	0.0015	0.1738	0.0051	0.0245	0.0005	0.0087	0.0002	250.1	69	162.7	4	156.2	3
15	5145	24394	0.21	0.0476	0.0012	0.1597	0.0043	0.024	0.0003	0.0077	0.0002	79.7	61	150.4	4	153.1	2
16	3039	16250	0.19	0.0473	0.0012	0.1584	0.0038	0.024	0.0003	0.0074	0.0002	61.2	-	149.3	3	152.9	2
22	7110	32677	0.22	0.0491	0.0012	0.1639	0.005	0.024	0.0004	0.0175	0.0006	153.8	56	154.1	4	152.8	3
23	6016	27595	0.22	0.0494	0.0013	0.1654	0.0046	0.0242	0.0003	0.0076	0.0002	168.6	61	155.4	4	154.2	2

Table S2. LA-ICP-MS zircon trace element compositions of altered granite in Xitian W-Sn ore field (ppm).

Spot	1	3	4	5	6	7	8	9	10	12	15	25	26
19-4s1													
La	4.56	4.41	7.46	4.45	5.41	1.85	7.28	0.55	2.83	8.81	1.19	0.1	13.05
Ce	44.53	56.75	46.46	94.21	18.42	35.81	59.39	55.96	62.25	81.89	30.15	177.79	93.32
Pr	2.78	1.97	2.22	3	1.25	1.22	3.35	0.57	1.79	3.21	0.6	0.65	6.04
Nd	13.11	13	11.16	17.43	4.87	7.18	15.64	4.5	11.42	17.69	5.79	9.68	24.6
Sm	6.92	8.5	6	10.82	2.77	7.73	7.09	5.66	10.77	10.79	6.87	13.25	11.71
Eu	0.88	1.57	1.34	1.75	0.5	1.86	1.05	1.09	2.03	1.44	1.16	3.41	1.63
Gd	26.04	25.64	18.2	33.39	7.16	21.75	22.33	21.4	33.27	36.47	30.45	43.99	32.11
Tb	11.49	8.31	5.81	10.27	3.04	7.39	7.79	7.6	9.81	11.94	8.38	11.75	10.2
Dy	163.64	93.6	64.47	120.28	36.29	81.58	92.93	95.59	109.98	135.75	96.94	124.51	121.8
Ho	71.93	33.01	25.9	45.33	14.38	31.47	35.78	36.72	40.29	49.2	37.42	42.7	47.13
Er	379.21	147.13	124.92	207.14	82.09	170.61	175.36	175.58	180.82	225.4	164.04	183.33	221.29
Tm	97.35	31.56	29.27	45.07	24.74	47.53	42.87	42.67	39.74	53.13	36.26	38.33	51.39

Yb	1027.55	311.23	309.94	438.56	329.75	585.68	459.99	484.03	387.27	519.39	353.91	354.01	511.9
Lu	207.88	63.11	70.29	85.73	91.85	144.2	97.4	91.64	80.24	106.47	74.31	69.54	108.14
Y	2257	998	789	1379	469	1067	1132	1168	1238	1501	1051	1284	1463
ΣREE	2058	800	723	1117	623	1146	1028	1024	973	1262	847	1073	1254
LREE	72.77	86.2	74.65	131.66	33.22	55.64	93.81	68.33	91.09	123.83	45.76	204.88	150.35
HREE	1985.08	713.59	648.8	985.78	589.31	1090.21	934.45	955.21	881.42	1137.75	801.7	868.16	1103.96
LREE/HREE	0.04	0.12	0.12	0.13	0.06	0.05	0.1	0.07	0.1	0.11	0.06	0.24	0.14
Eu/Eu*	0.17	0.3	0.36	0.26	0.32	0.41	0.23	0.26	0.3	0.2	0.21	0.39	0.24
Ce/Ce*	2.85	4.5	2.66	5.79	1.61	5.36	2.8	20.68	6.26	3.61	8.24	74.14	2.45
$(Sm/La)_N$	6.07	7.71	3.22	9.73	2.05	16.71	3.90	41.16	15.22	4.90	23.09	530.00	3.59
Y/Ho	10.39	3.88	4.32	4.19	5.19	4.07	5.05	6.49	3.74	4.56	5.45	3.22	4.02
$\log fO_2$	−17	−15	−15	−16	−16	−16	−17	−18	−19	−18	−15	−17	−18
24-15s1													
La	132	4.26	24	49.3	9.11	22.9	1.85	17.3	5.59	1.69	9.49	4.81	0.21
Ce	465	72	125	188	98.7	124	69.3	124	96.3	82.6	82.2	108	65.6
Pr	51	4.52	8.37	14.5	5.86	11.4	1.78	7.22	4.29	2.03	6.02	4.91	0.31
Nd	264	38.6	49.7	77	42.1	68	14.5	38.9	26.5	15.7	36.6	34.2	6.15
Sm	172	65.5	39.6	31.6	50.4	59.7	28.6	66.8	45.8	29	24	41.8	23.8
Eu	0.28	0.22	0.7	0.71	0.91	0.087	0.26	0.27	0.38	0.47	0.11	0.14	0.29
Gd	586	320	210	91.3	200	263	193	348	237	169	115	238	217
Tb	262	157	85.5	29.5	85.6	119	91.1	179	106	74.2	50.3	109	94.5
Dy	3840	2253	1234	364	1132	1804	1328	2690	1485	1057	707	1522	1346
Ho	1462	831	459	128	406	697	511	1018	526	399	270	551	515
Er	7564	4206	2243	601	1917	3695	2532	5245	2596	1963	1355	2685	2521
Tm	1799	1031	473	129	430	929	584	1222	622	438	324	587	550
Yb	19,464	11,963	4565	1334	4443	11,212	6191	12,805	6760	4775	3562	5993	5361
Lu	3001	1729	727	196	648	1813	879	2038	922	648	532	848	823

Y	43,198	25,035	14,336	3995	12,125	20,146	15,841	31,130	16,253	12,551	8364	17,176	16,186
ΣREE	39,062	22,674	10,245	3234	9468	20,818	12,426	25,799	13,432	9654	7073	12,727	11,524
LREE	1084	185	248	361	207	286	116	255	179	131	158	194	96
HREE	37,977	22,488	9997	2873	9261	20,532	12,310	25,544	13,253	9523	6914	12,533	11,428
LREE/HREE	0.03	0.01	0.02	0.13	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.01
Eu/Eu*	0.01	0.01	0.02	0.04	0.02	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01
Ce/Ce*	1.33	3.37	2.07	1.63	3.05	1.78	8.03	2.6	4.32	8.88	2.46	4.61	48.6
$(Sm/La)_N$	5.21	61.50	6.60	2.56	22.13	10.43	61.84	15.45	32.77	68.64	10.12	34.76	453.33
Y/Ho	29.55	30.13	31.23	31.21	29.86	28.90	31.00	30.58	30.90	31.46	30.98	31.17	31.43
$\log fO_2$	−13	−16	−13	−14	−14	−14	−15	−15	−13	−15	−16	−16	−19

Oxygen fugacity ($\log fO_2$) were calculated by using the model proposed by [1].

Table S3. $^{40}Ar/^{39}Ar$ laser stepwise heating analytical data for two muscovite samples from the Xitian W-Sn ore field.

Stage	Incremental heating	$^{36}Ar_{Air}$	$^{37}Ar_{Ca}$	$^{38}Ar_{Cl}$	$^{39}Ar_{K}$	$^{40}Ar^*$	Age	±2σ	$^{40}Ar^*$(%)	$^{39}Ar_{K}$(%)	K/Ca	±2σ
Sample no. 1401-3-1, J=0.00597658												
1	3.00%	8.352237	0.455045	0.0000001	113.4174	1964.729	178.15	± 3.85	44.32	2.97	96	± 114
2	3.50%	0.353951	0.0682	0.0000001	140.3255	2405.689	176.39	± 1.27	95.82	3.67	796	± 4843
3	4.00%	0.417355	1.220178	0.0000001	391.9233	6271.402	165.16	± 0.82	98.06	10.26	124	± 39
4	4.50%	0.373381	2.80973	0.0000001	301.6886	4752.649	162.71	± 0.81	97.72	7.89	42	± 6
5	5.00%	0.442124	2.33422	0.0000001	380.7179	5864.459	159.25	± 0.70	97.81	9.96	63	± 13
6	5.50%	0.363324	2.113471	0.0000001	335.4711	5089.276	156.94	± 0.68	97.92	8.78	61	± 11
7	6.00%	0.279337	0.71212	0.0000001	317.3702	4812.307	156.87	± 0.66	98.3	8.3	172	± 117
8	6.60%	0.257147	0.753279	0.0000001	315.0922	4772.848	156.72	± 0.66	98.42	8.24	162	± 91
9	7.20%	0.214422	0.483887	0.0000001	296.6023	4488.735	156.58	± 0.65	98.59	7.76	237	± 165
10	8.00%	0.186587	0.186982	0.0000001	248.6592	3756.227	156.3	± 0.69	98.54	6.51	515	± 1070
11	9.00%	0.364393	1.739365	0.0000001	362.0685	5471.214	156.35	± 0.69	98.06	9.47	81	± 18

12	10.00%	0.309666	1.300001	0.0000001	395.4027	5985.141	156.61	± 0.65	98.48	10.35	118	± 42
13	12.00%	0.101247	0	0.0000001	222.9344	3334.773	154.84	± 0.65	99.1	5.83	1688	± 43766
Sample no. 1401-5-3, J = 0.00601125												
1	3.50%	0.805392	1.24328	0.0244828	70.293	983.31	146.01	± 0.90	80.5	0.33	21.9	± 5.5
2	4.00%	1.126541	2.75436	0.0916141	226.388	3115.69	143.74	± 0.68	90.33	1.05	31.8	± 2.8
3	4.50%	0.932214	3.54879	0.0801365	305.397	4303.38	147.03	± 0.62	93.97	1.41	33.3	± 2.4
4	5.00%	0.729517	4.09692	0.0427813	266.075	3831.62	150.13	± 0.71	94.66	1.23	25.1	± 2.4
5	5.50%	0.866444	4.2281	0.0469309	346.414	4986.62	150.07	± 0.63	95.1	1.6	31.7	± 2.0
6	6.00%	0.79134	1.92265	0	355.298	5119.39	150.21	± 0.61	95.62	1.64	71.5	± 13.6
7	6.60%	0.749541	3.09221	0.0191758	418.406	6025.35	150.13	± 0.60	96.44	1.94	52.4	± 5.5
8	7.20%	1.08782	3.69424	0	483.226	6958.74	150.13	± 0.60	95.57	2.24	50.6	± 6.0
9	8.00%	1.477193	4.62408	0.0629329	599.808	8630.43	150.01	± 0.70	95.17	2.78	50.2	± 5.2
10	9.00%	2.034087	9.33838	0.0835925	1200.907	17249.8	149.76	± 0.62	96.62	5.56	49.8	± 2.5
11	10.00%	2.228974	13.3435	0.3811791	1471.32	21164.56	149.97	± 0.62	96.97	6.81	42.7	± 2.2
12	12.00%	2.994688	11.46637	0.417022	2116.678	30449.44	149.98	± 0.62	97.16	9.79	71.4	± 4.3
13	15.00%	2.917203	14.405	0.4643653	2332.692	33549.73	149.95	± 0.59	97.48	10.79	62.7	± 3.1
14	18.00%	3.51359	32.99599	0.8970278	3544.872	50852.81	149.58	± 0.65	97.98	16.4	41.6	± 2.1
15	21.00%	3.396023	51.91925	1.2386831	3702.481	53202.34	149.82	± 0.64	98.13	17.13	27.6	± 0.7
16	25.00%	2.93518	21.59519	1.2257019	4107.682	58955.43	149.65	± 0.64	98.53	19.01	73.6	± 3.4
17	30.00%	0.330773	4.1854	0.0804839	63.155	871.98	144.18	± 2.88	89.91	0.29	5.8	± 0.3

Table S4. Major and trace element compositions of the skarn in Xitian W-Sn ore field.

Sample No.	**17-3S3**	**CL3-3**	**CL3-4**	**LS1-6**	**LB2-3**	**LS5**	**CL1**
Major elements (%)							
SiO_2	49.6	30.8	51.2	30.1	41	39.4	44.1
TiO_2	0.07	0.56	0.44	0.21	0.07	0.1	0.56
Al_2O_3	2.33	12.5	6.99	3.52	2.66	9.76	9.86
TFe_2O_3	10.32	8.47	2.4	23.96	11.13	2.12	3.4
MnO	0.82	0.24	0.1	0.66	0.29	0.13	0.07
MgO	11.4	12.85	2.47	5.37	9.77	3.54	1.86
CaO	14.8	16.25	29.7	20.9	18.4	34.8	27.7
Na_2O	0.16	0.03	0.28	0.07	0.1	0.05	0.09
K_2O	0.09	1.04	4.13	0.04	0.87	4.68	3.41
P_2O_5	0.01	0.18	0.11	0.03	0.03	0.05	0.12
SO_3	7.12	0.1	0.03	10.2	9.74	1.34	0.67
LOI	4.96	17.29	2.44	2.73	4.68	3.43	8.17
Total	101.68	100.31	100.29	97.79	98.74	99.4	100.01
Trace elements (%)							
V	17	64	30	26	46	19	71
Cr	10	40	30	20	10	10	60
Cs	2.85	23.7	19	1.8	32.5	176.5	8.53
Ga	6.6	18.5	7.4	14.4	13.4	16.7	11.5
Rb	7.9	121.5	254	3.4	173	1710	176
Ba	5.5	121	189	3.7	34.1	49.2	341
Th	1.66	12.15	10.25	4.24	1.86	2.92	12.3
U	0.87	2.75	2.67	2.92	3.66	1.61	2.35
Ta	0.4	0.9	0.8	0.3	0.1	0.2	0.9
Nb	1.9	10.6	10.4	4.4	2.5	5	11.1
Sr	23.7	169	156	47.6	17.8	93.4	439
Zr	28	202	241	84	23	44	199
Hf	0.7	5.3	6.1	2	0.6	1	5.2
La	9.8	42.2	29.6	14.4	12.9	13.7	35.4
Ce	16.8	79.2	58.7	27.7	24	28.1	69
Pr	1.88	8.65	6.57	2.97	2.63	3.4	7.65
Nd	6.5	30.3	23.9	11.2	9.2	12.1	27.9
Sm	1.4	5.94	4.86	2.42	1.77	3.21	5.62
Eu	0.16	1.38	0.78	0.59	0.46	0.66	1.06
Gd	1.27	5.02	4.12	2.29	1.62	2.94	4.88
Tb	0.17	0.73	0.62	0.35	0.23	0.49	0.74
Dy	0.99	4.43	3.82	2.25	1.39	2.93	4.32
Ho	0.21	0.85	0.79	0.45	0.27	0.54	0.91
Er	0.58	2.73	2.28	1.33	0.81	1.6	2.76
Tm	0.06	0.37	0.31	0.17	0.13	0.23	0.37

Yb	0.5	2.38	2.24	1.2	0.68	1.77	2.25
Lu	0.07	0.36	0.33	0.18	0.11	0.23	0.39
Y	6.1	24.3	21.6	13.2	8.4	15	26.6
ΣREE	40.4	184.5	138.9	67.5	56.2	71.9	163.3
LREE	36.5	167.7	124.4	59.3	51	61.2	146.6
HREE	3.9	16.9	14.5	8.2	5.2	10.7	16.6
LREE/HREE	9.5	9.9	8.6	7.2	9.7	5.7	8.8
LaN/YbN	13.2	12	8.9	8.1	12.8	5.2	10.6
Eu/Eu*	0.36	0.75	0.52	0.76	0.82	0.65	0.61
Ce/Ce*	0.87	0.93	0.95	0.95	0.92	0.94	0.95

Table S5. Sr–Nd–Pb isotopic compositions of wolframite in Xitian W-Sn ore field.

Sample No.	LS3-1a	LS10	LB2-1	1407-15-11S8
Rb (μg/g)	175.5	1308	88.67	31.56
Sr (μg/g)	67.97	85.34	107.9	15.69
$^{87}Rb/^{86}Sr$	7.493	44.79	2.382	5.831
$^{87}Sr/^{86}Sr$	0.736219	0.810408	0.723412	0.725421
±2σ (mean)	0.000010	0.000013	0.000013	0.000011
$(^{87}Sr/^{86}Sr)_i$	0.72003	0.71363	0.71827	0.71282
Sm (μg/g)	7.845	3.212	6.858	2.909
Nd (μg/g)	39.89	10.29	25.29	11.82
$^{147}Sm/^{144}Nd$	0.1189	0.1888	0.1640	0.1487
$^{143}Nd/^{144}Nd$	0.511889	0.511832	0.511998	0.512303
±2σ (mean)	0.000011	0.000009	0.000013	0.000014
$(^{143}Nd/^{144}Nd)_i$	0.511771	0.511644	0.511835	0.512155
$\varepsilon_{Nd}(t)$	−13.1	−15.58	−11.85	−5.61
T_{2DM} (Ma)	2006	2168	1896	1396
$^{206}Pb/^{204}Pb$	18.4893	18.5245	18.5249	18.5692
±2σ (mean)	0.001	0.0009	0.0008	0.0007
$^{207}Pb/^{204}Pb$	15.7243	15.8571	15.7843	15.8772
±2σ (m)	0.0008	0.0007	0.0006	0.0006
$^{208}Pb/^{204}Pb$	39.0553	39.3347	39.106	39.4155
±2σ (mean)	0.0015	0.0016	0.0015	0.0016
μ	9.7	9.96	9.81	9.99
ω	39.81	42.11	40.4	42.38
Th/U	3.97	4.09	3.99	4.11
V1	77.83	85.47	79.96	88.56
V2	53.56	55.18	56.1	56.93
Δα	76.9	78.96	78.98	81.56
Δβ	26.09	34.75	30	36.06
Δγ	48.95	56.45	50.31	58.62

Corrected formula and selected parameters as follows: $(^{87}Sr/^{86}Sr)_i = (^{87}Sr/^{86}Sr)_{sample} - ^{87}Rb/^{86}Sr\ (e^{\lambda t} - 1)$, $\lambda = 1.42 \times 10^{-11}$ year $^{-1}$ [2]; $(^{143}Nd/^{144}Nd)_i = (^{143}Nd/^{144}Nd)_{sample} - (^{147}Sm/^{144}Nd)_m \times (e^{\lambda t} - 1)$, $\lambda = 6.54 \times 10^{-12}$ year $^{-1}$ [3]; $\varepsilon_{Nd}(t) = [(^{143}Nd/^{144}Nd)_{sample} / (^{143}Nd/^{144}Nd)_{CHUR}(t) - 1] \times 10^4$; $(^{87}Sr/^{86}Sr)_{UR} = 0.7045$, $(^{87}Rb/^{86}Sr)_{UR} = 0.0827$, $(^{143}Nd/^{144}Nd)_{CHUR} = 0.512638$, $(^{147}Sm/^{144}Sm)_{CHUR} = 0.1967$ (CHUR = chondritic uniform reservoir), $\lambda_{^{238}U} = 1.55125 \times 10^{-10}$ year^{-1}; $\lambda_{^{235}U} = 9.8485 \times 10^{-10}$ year^{-1}; $\lambda_{^{232}Th} = 4.9475 \times 10^{-11}$year^{-1} [2].

Table S6. Synthesis of the metallogenic ages of the W–Sn deposits associated with the granitic pluton in the Nanling range

Province	Related granitic pluton	Deposit	Ages (Ma)	Mineral	Method	Reference
Hunan	Xitian	Hejiangkou	156.6 ± 0.7	Muscovite	Ar-Ar	This study
		Heshuxia	149.5 ± 0.8	Muscovite	Ar-Ar	This study
		Lonngshang	152.8 ± 1.1	Zircon	LA-MC-ICPMS U-Pb	This study
		Heshuxia	226.0 ± 2.8	Zircon	LA-MC-ICPMS U-Pb	This study
	Wangxianling	Shuiyuanshan	220.6 ± 1.1	Molybdenite	Re-Os	[4]
		Yeziwo	227.2 ± 1.5	Molybdenite	Re-Os	[4]
		Hehuaping	224.0 ± 1.9	Molybdenite	Re-Os	[5]
	Jiuyishan	Da'ao	151.3 ± 2.4	Molybdenite	Re-Os	[6]
	Qitianling	Furong	159.9 ± 1.9	Cassiterite	LA-MC-ICPMS U-Pb	[7]
		Xintianling	159.1 ± 1.9	Molybdenite	Re-Os	[8]
		Shizhuyuan	149 ± 2	Garnet, fluorite, and wolframite	Sm-Nd	[9]
		Hongqiling	153.3 ± 1.0	Muscovite	Ar-Ar	[8]
		Jinchuantang	158.8 ± 6.6	Molybdenite	Re-Os	[10]
	Yaogangxian	Yaogangxian	154.9 ± 2.6	Molybdenite	Re-Os	[11]
		Heshangtan	160 ± 3.3	Molybdenite	Re-Os	[12]
	Dengfuxian	Xiangdong	150 ± 5.2	Molybdenite	Re-Os	[6]
		Dalong	154 ± 8.0	Sphalerite	Rb-Sr	[13]
	Xianghualing	Xianghualing	156 ± 4	Cassiterite	LA-MC-ICPMS U-Pb	[14]
Jiangxi	Dajishan	Dajiashan	161.1 ± 1.3	Molybdenite	Re-Os	[15]
	Taoxikeng	Taoxikeng	154.4 ± 3.8	Muscovite	Ar-Ar	[16]
	Xihuashan	Xihuashan	157.8 ± 0.9	Molybdenite	Re-Os	[17]
Guangxi	Guposhan	Maohedong	163.4 ± 1.4	Muscovite	Ar-Ar	[18]
		Lantoushan	162.5 ± 1.2	Muscovite	Ar-Ar	[18]
		Sanchachong	162.1 ± 1.3	Muscovite	Ar-Ar	[18]
		Liuheao	160.0 ± 1.5	Muscovite	Ar-Ar	[18]
	-	Limu	214.1 ± 1.9	Muscovite	Ar-Ar	[19]

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