Samula Na	Mining	Minaral	Mineralization	Mine	Orebody	Mineral accomplace	
Sample No.	zone	Mineral	stage	level	No.	imineral assemblage	
XJS-22	XJS	Scheelite	Stage-3	298	4	Euhedral scheelite + stibnite	
XJS-23	XJS	Scheelite	Stage-3	298	4	Euhedral scheelite + stibnite	
XJS-28	XJS	Scheelite	Stage-3	298	4	Euhedral scheelite + stibnite	
XJS-28-1	XJS	Scheelite	Stage-3	298	4	Euhedral scheelite + stibnite	
XJS-26	XJS	Scheelite	Stage-3	298	4	Scheelite +wolframite	
XJS-36	XJS	Scheelite	Stage-3	298	4	Scheelite +pyrite +stibnite	
XJS-37	XJS	Scheelite	Stage-3	298	4	Scheelite +pyrite +stibnite	
XJS-37-1	XJS	Scheelite	Stage-3	298	4	Scheelite +pyrite +stibnite	
XJS-70	XJS	Scheelite	Stage-3	298	4	Scheelite +pyrite +stibnite	
XJS-72	XJS	Scheelite	Stage-3	298	4	Scheelite +pyrite +stibnite	
XJS-77	XJS	Scheelite	Stage-3	298	4	Scheelite +pyrite +stibnite	
LS-11	LS	Arsenopyrite	Stage-3	430	1	Auriferous disseminated arsenopyrite	
LS-52	LS	Arsenopyrite	Stage-3	430	1	Auriferous disseminated arsenopyrite	
LS-53	LS	Arsenopyrite	Stage-3	430	1	Auriferous disseminated arsenopyrite + stibnite	
LS-57	LS	Arsenopyrite	Stage-4	720	7	Auriferous disseminated arsenopyrite	
LS-58	LS	Arsenopyrite	Stage-4	720	7	Auriferous disseminated arsenopyrite	
LS-60	LS	Arsenopyrite	Stage-4	720	7	Auriferous disseminated arsenopyrite	
XJS-94	XJS	Pyrite	Stage-3	298	4	Auriferous pyrite + stibnite	

Table S1. Sample information from the Longshan Sb-Au deposit, South China.

XJS = Xiejiashan, LS = Longshan

	Average	dwell time/spot	Uncertainty Percent
Isotope	detection limit/spot (sec.)	(sec.)	(%)
<sup>23</sup> Na	0.535	0.01	8.75
<sup>88</sup> Sr	0.008	0.02	0.597
<sup>89</sup> Y	0.0001	0.01	0.970
<sup>95</sup> Mo	0.0006	0.02	22.1
<sup>139</sup> La	0.00005	0.02	1.08
<sup>140</sup> Ce	0.00005	0.02	0.811
<sup>141</sup> Pr	0.00002	0.02	1.41
<sup>146</sup> Nd	0.0002	0.02	1.47
<sup>147</sup> Sm	0.0003	0.02	2.02
<sup>153</sup> Eu	0.0001	0.02	1.63
<sup>157</sup> Gd	0.0004	0.02	1.81
<sup>159</sup> Tb	0.00003	0.02	1.58
<sup>163</sup> Dy	0.0002	0.02	1.43
<sup>165</sup> Ho	0.00004	0.02	1.77
<sup>166</sup> Er	0.0001	0.02	1.88
<sup>169</sup> Tm	0.00005	0.02	3.11
<sup>172</sup> Yb	0.0002	0.02	2.77
<sup>175</sup> Lu	0.00006	0.02	4.48

Table S2. Average minimum detection limits and dwell time for scheelite LA-ICP-MS spot analyses from the Longshan Sb-Au deposit, South China.

Туре	Sample No.	$Sm(\mu g/g)$	Nd(µg/g)	147Sm/144Nd	143Nd/144Nd	2σ	<sup>143</sup> Nd/ <sup>144</sup> Nd (t=210 Ma)	εNd (t=210 Ma)	2σ	<sup>87</sup> Sr/ <sup>86</sup> Sr	2σ
Sch1	XJS-22	4.53	8.68	0.317	0.512459	3	0.512023	-6.73	-0.05	0.720935	10
Sch1	XJS-23	20.3	15.4	0.799	0.513120	7	0.512022	-6.75	-0.13	0.721004	10
Sch1	XJS-28	7.37	11.9	0.376	0.512540	3	0.512023	-6.73	-0.06	0.721002	7
Sch1	XJS-28-1	3.9	6.24	0.378	0.512546	4	0.512027	-6.65	-0.08	0.720858	9
Sch2	XJS-37	5.43	6.00	0.547	0.512384	6	0.511632	-14.4	-0.12	0.721045	7
Sch2	XJS-72	0.683	1.01	0.410	0.512771	11	0.512208	-3.12	-0.21	0.720851	7
Sch2	XJS-77	11.9	13.0	0.554	0.512907	8	0.512146	-4.33	-0.16	0.721925	6
Sch2	XJS-26									0.722770	11
Sch2	XJS-36									0.721171	11
Sch2	XJS-37-1									0.721001	7
Sch2	XJS-70									0.720939	8

Table S3. Results of scheelite Sm-Nd and Sr isotopic analysis from the Longshan Sb-Au deposit, South China.

Sample No.	Mining district	Mineralization stage	Mine level	Orebody No.	Mineral assemblage	Arsenopyrite $\delta^{34}S(\%)$	Pyrite $\delta^{34}$ S (‰)
	IC	Stage 2	420	1	Association discominated anonemyrite	0.2	0 0 (700)
L3-11	LS	Stage-5	430	1	Aumerous disseminated arsenopyrite	0.2	
LS-52	LS	Stage-3	430	1	Auriferous disseminated arsenopyrite	-0.8	
LS-53	LS	Stage-3	430	1	Auriferous disseminated arsenopyrite + stibnite	-1.8	
LS-57	LS	Stage-4	720	7	Auriferous disseminated arsenopyrite	2.9	
LS-58	LS	Stage-4	720	7	Auriferous disseminated arsenopyrite	3.2	
LS-60	LS	Stage-4	720	7	Auriferous disseminated arsenopyrite	2.7	
XJS-94	XJS	Stage-3	298	4	Auriferous pyrite + stibnite		1.6

Table S4. Sulfur isotope composition of sulfides from the Longshan Sb-Au deposit, South China.