Table S1. Detailed information for studied samples in Jilongshan Cu-Au deposits.

Ore type	Sample ID	Sample name	gangue mineral assemblages												Ore mineral assemblages								
			Kfs	Pl	Hbl	Bt	Grt	Px	Act	Chl	Qz	Cal	Fl	Py1	Py2	Py3	Py4	Ccp	Bn	Sp	Gn	Po	Mt	Ttr
Porphyry type	JL45	Granodiorite porphyry	xxx	xxx	xx	x				xx	xxx		x		xx			x	x				x	
	JL109	Granodiorite porphyry	xx	xxx	x	x				x	xx				xxx	xx		xxx						
	JL122-1	Granodiorite porphyry	xxx	xx		xx					x					xxx		xxx						x
	JL114	Granodiorite porphyry	x	xxx		xx					xxx					x		xx						
Skarn type	JL64	Grt skarn					xxx		x			x			xxx			xxx					x	
	JL372-8	Px skarn					x	xxx	x	x	x	x				x	x	x		xxx	xxx	xx		
	JL372-13-2	Px-Grt skarn					x	xxx			x	x	x				x	x		xx	xx	xxx		
	JL76	Grt skarn					xxx	x	x		xx	x			xxx	x	xx			x				xx
	JLS-18	Grt skarn					xx		x	x	x		x	x	xxx			x						
	JLS-24	Grt skarn					xxx	x			x	x		x	xxx						xx			
Carbonates type	JL104	Marble									x	xxx		xxx			xx			xx	xx			xxx
	JL5	Marble								x	x	xxx					xxx	xxx						x
	JL39	Marble									x	xxx					xxx	x		xxx	xxx			
	JL122-2	Marble								x	x	xxx					xxx	x						xxx
	JL83	Marble								x	x	xxx				xxx		xxx						
	JLS3-378	Marble									x	xxx			xxx			xxx						

Note: x-trace; xx-minor; xxx-major. Abbreviations: Act-actinolite; Bt-biotite; Bn-bornite; Cal-calcite; Chl-chlorite; Ccp-chalcopyrite; Grt-garnet; Gn-galena; Hbl-hornblende; Kfs-feldspar; Mt-magnetite; Phl-phlogopite; Pl-plagioclase; Po-pyrrhotite; Px-pyroxene; Py-pyrite; Qz-quartz; Sp-sphalerite.

Table S2. EPMA data for Jilongshan pyrite (wt.%).

Types	Point#	Fe	Fe(apfu)	S	S(apfu)	Pb	As	Te	Ag	Ni	Co	Au	Se	Total
Py1 (n=19)	JL104-A6-1-1	44.96	0.80	50.79	1.59	0.26*	1.59	<dl	0.21*	<dl	<dl	<dl	<dl	98.04
	JL104-A6-1-2	44.74	0.80	50.75	1.59	0.53*	1.31	<dl	0.13	<dl	<dl	<dl	<dl	97.70
	JL104-A6-1-3	45.14	0.81	52.09	1.63	0.05	0.64	<dl	0.05	<dl	<dl	<dl	<dl	98.20
	JL104-A6-1-4	41.26	0.74	47.26	1.48	1.99*	4.94	0.26*	0.64*	0.02	<dl	<dl	<dl	97.11
	JL104-A6-1-5	40.93	0.73	48.28	1.51	1.67*	4.72	0.28*	0.69*	<dl	0.02	<dl	<dl	97.38
	JL104-A6-1-6	45.88	0.82	51.30	1.60	<dl	1.18	<dl	0.03	<dl	<dl	<dl	<dl	98.53
	JL104-A6-1-7	44.79	0.80	51.32	1.60	0.21*	1.03	<dl	0.11	<dl	<dl	<dl	<dl	97.71
	JL104-A2-1	45.67	0.82	51.57	1.61	<dl	0.75	<dl	0.03	0.04	0.07	<dl	<dl	100.56
	JL104-A2-2	45.47	0.81	50.92	1.59	<dl	1.13	<dl	0.04	<dl	<dl	<dl	<dl	99.96
	JL104-A2-3	45.35	0.81	51.39	1.61	<dl	1.20	0.03	0.03	<dl	0.07	0.13	<dl	100.60
	JL104-A2-4	44.77	0.80	51.25	1.60	0.12	1.45	<dl	0.04	<dl	0.06	0.09	<dl	100.18
	JL104-A2-5	44.87	0.80	51.78	1.62	0.04	0.76	<dl	<dl	<dl	0.04	<dl	<dl	99.91
	JL98-A5-1	46.98	0.84	52.30	1.63	<dl	0.06	<dl	0.02	<dl	0.05	<dl	0.03	101.90
	JL98-A5-2	46.64	0.83	52.16	1.63	<dl	0.11	<dl	<dl	<dl	0.11	<dl	<dl	101.47
	JL98-A5-3	46.54	0.83	52.60	1.64	<dl	0.26	<dl	<dl	<dl	0.09	<dl	<dl	101.96
	JL98-A5-4	45.87	0.82	52.43	1.64	<dl	<dl	<dl	<dl	<dl	0.05	0.07	0.04	100.92
	JL98-A5-5	46.00	0.82	52.14	1.63	<dl	0.13	<dl	<dl	<dl	0.06	<dl	<dl	100.78
	JL98-A5-6	45.78	0.82	52.31	1.63	<dl	0.11	<dl	<dl	0.04	0.04	<dl	0.02	100.75
	JL98-A6-1	45.91	0.82	51.08	1.60	0.02	0.08	<dl	<dl	<dl	<dl	0.03	<dl	97.34
	Max	46.98	0.84	52.60	1.64	1.99	4.94	0.28	0.69	0.04	0.11	0.13	0.04	99.49
	Min	40.93	0.73	47.26	1.48	0.02	0.06	0.03	0.02	0.02	0.02	0.03	0.02	97.11
	Median	45.47	0.81	51.39	1.61	0.21	0.89	0.26	0.05	0.04	0.06	0.08	0.03	98.13
	Mean	45.13	0.81	51.25	1.60	0.54	1.19	0.19	0.17	0.03	0.06	0.08	0.03	98.11
Py2	JL98-A7-1	47.80	0.85	53.04	1.66	0.07	<dl	<dl	<dl	<dl	0.02	<dl	0.03	101.01

(n=14)	JL98-A7-2	46.59	0.83	53.35	1.67	<dl	<dl	<dl	0.04	<dl	0.03	<dl	<dl	100.06
	JL98-A7-3	46.14	0.82	52.55	1.64	<dl	0.07	<dl	0.05	<dl	0.02	<dl	<dl	98.95
	JL98-A7-4	46.72	0.83	53.49	1.67	<dl	<dl	<dl	<dl	<dl	0.02	<dl	0.02	100.35
	JL98-A7-5	45.99	0.82	53.47	1.67	<dl	<dl	<dl	<dl	<dl	<dl	<dl	<dl	99.53
	JL98-A7-6	46.18	0.82	51.77	1.62	<dl	0.08	<dl	<dl	<dl	0.05	0.06	<dl	100.57
	JL98-A7-7	45.95	0.82	52.01	1.63	<dl	0.04	<dl	<dl	<dl	<dl	0.14	<dl	100.59
	JL98-A7-8	46.20	0.83	52.22	1.63	<dl	<dl	<dl	<dl	<dl	0.06	0.08	<dl	101.02
	JL98-A7-9	46.16	0.82	51.83	1.62	<dl	0.05	<dl	<dl	<dl	<dl	<dl	<dl	100.48
	JL98-A7-10	46.33	0.83	52.38	1.64	<dl	<dl	<dl	<dl	<dl	0.06	<dl	<dl	101.24
	JL98-A7-11	46.10	0.82	52.09	1.63	<dl	<dl	<dl	<dl	<dl	<dl	<dl	<dl	100.64
	JL98-A7-12	45.55	0.81	51.93	1.62	<dl	<dl	<dl	<dl	<dl	0.06	<dl	<dl	99.98
	JL98-A7-13	45.57	0.81	52.17	1.63	<dl	<dl	<dl	<dl	<dl	0.04	<dl	<dl	100.23
	JL98-A7-14	46.11	0.82	52.13	1.63	<dl	<dl	<dl	<dl	<dl	<dl	<dl	<dl	100.69
	Max	47.80	0.85	53.49	1.67	0.07	0.08	<dl	0.05	<dl	0.06	0.14	0.03	101.01
	Min	45.55	0.81	51.77	1.62	0.07	0.04	<dl	0.04	<dl	0.02	0.06	0.02	97.55
	Median	46.15	0.82	52.19	1.63	0.07	0.06	<dl	0.04	<dl	0.04	0.08	0.02	98.40
	Mean	46.24	0.83	52.46	1.64	0.07	0.06	<dl	0.04	<dl	0.04	0.09	0.02	98.81
Py3 (n=20)	JL122-1-A2-1	45.14	0.81	51.71	1.62	<dl	0.23	<dl	<dl	<dl	0.03	<dl	<dl	97.53
	JL122-1-A2-2	45.03	0.80	51.54	1.61	0.08	0.15	<dl	0.13	<dl	0.02	<dl	<dl	97.38
	JL122-1-A2-3	43.67	0.78	51.47	1.61	0.16	0.03	<dl	1.37*	0.03	0.09	<dl	0.23*	98.12
	JL122-1-A2-4	44.35	0.79	52.11	1.63	0.11	0.06	<dl	0.83*	0.04	0.06	<dl	0.06	98.54
	JL122-1-A2-5	46.91	0.84	50.59	1.58	0.02	<dl	<dl	<dl	<dl	<dl	<dl	0.04	98.26
	JL122-1-A2-6	46.43	0.83	53.05	1.66	<dl	<dl	<dl	<dl	<dl	0.02	<dl	0.09	100.05
	JL122-1-A2-7	46.10	0.82	53.11	1.66	<dl	<dl	<dl	0.12	<dl	0.02	<dl	<dl	100.02
	JL122-1-A2-8	46.56	0.83	53.01	1.66	0.03	<dl	<dl	0.07	<dl	0.04	<dl	0.06	100.23
	JL122-1-A2-9	46.42	0.83	53.23	1.66	<dl	<dl	<dl	0.04	<dl	<dl	<dl	0.06	100.42

	JL122-1-A2-10	46.83	0.84	52.84	1.65	<dl	<dl	<dl	<dl	0.04	0.03	0.10	<dl	102.33
	JL122-1-A2-11	46.30	0.83	52.51	1.64	<dl	<dl	<dl	<dl	<dl	<dl	<dl	0.08	101.36
	JL122-1-A2-12	47.12	0.84	52.49	1.64	<dl	<dl	<dl	<dl	<dl	0.05	<dl	0.08	102.22
	JL122-1-A2-13	46.52	0.83	52.95	1.65	<dl	<dl	0.02	<dl	0.02	0.04	0.09	<dl	102.13
	JL122-1-A2-14	45.95	0.82	52.28	1.63	<dl	<dl	<dl	0.03	0.04	0.05	<dl	<dl	100.81
	JL122-1-A2-15	46.40	0.83	53.00	1.66	<dl	<dl	0.03	0.02	<dl	0.04	<dl	0.03	102.00
	JL122-1-A2-16	45.99	0.82	52.13	1.63	<dl	<dl	<dl	<dl	<dl	0.04	<dl	0.02	100.62
	JL122-1-A2-17	46.47	0.83	52.64	1.64	<dl	<dl	<dl	<dl	<dl	0.05	<dl	0.03	101.66
	JL122-1-A2-18	46.69	0.83	52.65	1.65	<dl	<dl	<dl	0.03	<dl	<dl	<dl	0.04	101.90
	JL122-1-A2-19	46.03	0.82	52.36	1.64	<dl	<dl	<dl	<dl	0.03	0.07	<dl	0.05	100.99
	JL122-1-A2-20	45.41	0.81	51.87	1.62	<dl	<dl	<dl	0.08	0.11	0.05	0.09	0.04	100.07
	Max	47.12	0.84	53.23	1.66	0.16	0.23	0.03	1.37	0.11	0.09	0.10	0.23	100.42
	Min	43.67	0.78	50.59	1.58	0.02	0.03	0.02	0.02	0.02	0.02	0.09	0.02	97.38
	Median	46.35	0.83	52.50	1.64	0.08	0.10	0.02	0.08	0.04	0.04	0.09	0.05	99.04
	Mean	46.02	0.82	52.38	1.64	0.08	0.12	0.02	0.27	0.04	0.04	0.09	0.06	98.97
	JL104-A5-1	45.93	0.82	53.58	1.67	<dl	<dl	<dl	0.07	<dl	<dl	<dl	<dl	100.68
	JL104-A5-2	45.03	0.80	52.11	1.63	<dl	0.10	<dl	0.07	<dl	0.03	<dl	0.07	98.76
	JL104-A5-3	46.18	0.82	52.74	1.65	<dl	0.03	<dl	<dl	<dl	<dl	<dl	<dl	100.21
	JL104-A6-2-1	38.44	0.69	49.16	1.54	0.10	2.73	<dl	0.51*	<dl	0.02	<dl	<dl	98.68
	JL104-A6-2-2	46.06	0.82	52.81	1.65	0.03	<dl	<dl	0.08	<dl	0.03	<dl	<dl	99.18
	JL104-A6-2-4	46.15	0.82	53.44	1.67	<dl	<dl	<dl	0.03	<dl	0.02	0.04	0.07	99.87
	JL104-A6-3-4	46.52	0.83	52.82	1.65	<dl	0.08	<dl	<dl	<dl	<dl	0.05	0.02	99.55
	JL104-A6-3-6	47.03	0.84	52.44	1.64	<dl	0.04	<dl	<dl	<dl	<dl	<dl	<dl	99.55
	JL104-A6-3-7	46.59	0.83	52.57	1.64	0.13	0.12	<dl	0.05	<dl	<dl	<dl	<dl	99.48
Py4	JL104-A6-4-5	46.43	0.83	53.73	1.68	0.04	<dl	<dl	<dl	<dl	0.03	<dl	0.02	100.31
(n=28)	JL104-A6-4-6	46.55	0.83	53.28	1.67	<dl	<dl	<dl	<dl	<dl	<dl	0.03	0.06	100.05

JL39-A3-1	46.15	0.82	52.77	1.65	0.25	<dl	<dl	<dl	<dl	0.05	0.04	0.06	99.38
JL39-A3-2	46.70	0.83	52.90	1.65	0.03	<dl	<dl	<dl	<dl	0.04	<dl	0.06	99.93
JL39-A3-3	45.90	0.82	53.21	1.66	0.04	<dl	<dl	0.03	<dl	0.03	<dl	<dl	99.28
JL39-A9-1	46.56	0.83	52.89	1.65	<dl	<dl	<dl	<dl	<dl	0.04	<dl	0.03	99.59
JL122-2-A5-1	46.70	0.83	53.18	1.66	<dl	0.06	<dl	<dl	0.02	0.05	<dl	<dl	100.08
JL122-2-A5-2	46.36	0.83	52.32	1.63	0.11	<dl	<dl	0.06	<dl	0.07	<dl	0.03	99.06
JL122-2-A5-3	46.71	0.83	52.31	1.63	0.04	<dl	<dl	<dl	<dl	<dl	<dl	0.05	99.30
JL122-2-A5-4	46.38	0.83	52.54	1.64	0.11	<dl	<dl	<dl	<dl	<dl	<dl	0.04	99.16
JL122-2-A5-5	46.70	0.83	53.18	1.66	0.04	0.03	<dl	0.03	<dl	0.03	0.06	<dl	100.15
JL5-A1-1	46.18	0.82	52.66	1.65	<dl	0.04	<dl	<dl	<dl	0.18	<dl	0.04	101.57
JL5-A1-2	46.48	0.83	52.83	1.65	<dl	<dl	<dl	0.02	<dl	0.07	<dl	0.04	101.91
JL5-A1-3	45.32	0.81	52.31	1.63	<dl	0.39	<dl	<dl	0.07	0.09	0.08	<dl	100.70
JL5-A3-1	46.61	0.83	52.96	1.65	<dl	0.08	<dl	<dl	<dl	0.05	<dl	0.04	102.23
JL5-A3-2	46.81	0.84	52.70	1.65	<dl	<dl	<dl	<dl	<dl	<dl	0.05	<dl	102.04
JL5-A3-3	46.73	0.83	52.62	1.64	<dl	0.04	<dl	<dl	0.02	0.06	<dl	<dl	101.95
JL5-A4-1	46.85	0.84	52.87	1.65	<dl	<dl	<dl	<dl	<dl	0.08	<dl	0.04	102.33
JL5-A4-2	45.86	0.82	52.75	1.65	<dl	<dl	<dl	<dl	<dl	0.04	<dl	0.04	101.16
Max	47.03	0.84	53.73	1.68	0.25	2.73	<dl	0.51	0.07	0.18	0.08	0.07	100.68
Min	38.44	0.69	49.16	1.54	0.03	0.03	<dl	0.02	0.02	0.02	0.03	0.02	98.26
Median	46.45	0.83	52.79	1.65	0.04	0.07	<dl	0.05	0.02	0.04	0.05	0.04	99.51
Mean	46.07	0.82	52.70	1.65	0.08	0.31	<dl	0.09	0.04	0.05	0.05	0.04	99.51

Note: <dl, below detection limit; *, affected by mineral inclusions.

Table S3. LA-ICP-MS data for Jilongshan pyrite (ppm)

Type	Point#	Co	Ni	Cu	Zn	Ge	As	Se	Ag	Cd	Sb	Te	Au	Tl	Bi	Pb
	JL104-1-A6-1	1.1	3.7	1868	166	6.9	21861	<dl	1001	11	824	1223	84	1048	0.59	7102
	JL104-1-A6-2	<dl	<dl	5481	272	7.0	53581	<dl	3026	36	2375	4352	294	3618	1.5	19189
	JL104-1-A6-3	<dl	<dl	3594	38	5.1	31935	19	2187	30	2218	2483	165	1875	0.99	14632
	JL104-1-A6-4	<dl	<dl	1335	31	5.8	21740	15	781	8.5	785	900	74	1025	0.40	5599
	JL104-1-A6-5	<dl	<dl	4278	8.1	7.5	39422	23	2612	31	2175	3356	242	2553	0.76	14913
	JL104-1-A6-6	<dl	<dl	991	103	7.1	17548	<dl	656	14	1365	468	28	890	0.46	8816
	JL104-1-A6-7	<dl	4.7	4175	44	6.4	40860	22	2345	28	2238	2697	209	3058	1.2	15204
Py1*	JL104-1-A6-8	<dl	<dl	3542	32	9.5	30362	20	2040	24	1951	2308	206	2528	0.93	13474
(n=16)	JL104-1-A6-9	<dl	<dl	3338	168	8.5	32288	<dl	1764	23	2030	2018	119	2549	0.80	13796
	JL104-1-A6-10	<dl	<dl	3148	155	11	29523	<dl	1678	22	1955	1614	88	2433	0.96	13512
	JL104-2-A4-1	<dl	<dl	4342	17116*	<dl	41393	<dl	2014	1419	4045	1009	47	\	<dl	10307
	JL104-2-A4-2	<dl	<dl	1347	8070*	<dl	18254	<dl	1218	264	2339	407	28	\	<dl	3600
	JL104-2-A2-1	<dl	<dl	3550	<dl	<dl	73515	<dl	4237	<dl	5345	7948	557	\	<dl	14402
	JL104-2-A2-2	<dl	<dl	4763	111	<dl	88106	<dl	4835	<dl	5926	9515	579	\	4.3	15274
	JL104-2-A2-3	<dl	<dl	3850	348	<dl	81829	<dl	4140	<dl	5400	8503	652	\	<dl	13847
	JL104-2-A2-4	<dl	<dl	4925	259	<dl	86894	<dl	5197	<dl	6068	10105	726	\	4.1	16789
	JL64-A5-1	758	731	1759*	<dl	6.0	137	508	9.9	<dl	0.95	44	<dl	0.01	2.4	4.6
	JL64-A5-2	808	797	<dl	<dl	5.6	192	444	<dl	<dl	<dl	50	<dl	<dl	<dl	<dl
	JL64-A5-3	780	764	138	<dl	5.7	247	443	3.9	<dl	<dl	76	<dl	<dl	1.3	0.83
Py2	JL64-A5-4	1102	492	1510*	27	5.6	178	488	17	<dl	0.86	62	<dl	0.02	11	7.9
(n=26)	JL109-A2-1	677	22	<dl	<dl	6.1	6.6	204	<dl	<dl	<dl	1.6	<dl	<dl	<dl	<dl
	JL109-A2-2	61	38	<dl	<dl	6.0	8.2	278	<dl	<dl	<dl	<dl	<dl	<dl	<dl	<dl
	JL109-A2-3	256	47	<dl	<dl	5.0	5.6	198	<dl	<dl	<dl	<dl	<dl	<dl	<dl	<dl
	JL98-A7-1	4.2	1.8	<dl	<dl	6.2	55	79	<dl	<dl	<dl	<dl	<dl	<dl	0.03	<dl

	JL98-A7-2	9.3	5.5	26	<dl	5.2	820	77	0.51	<dl	2.2	37	0.09	0.03	54	3.2
	JL98-A7-3	6.7	3.8	19	<dl	3.7	526	66	<dl	<dl	<dl	23	<dl	0.02	35	3.0
	JL98-A7-4	32	<dl	4.7	<dl	5.8	561	73	<dl	<dl	0.59	27	<dl	<dl	11	1.7
	JL98-A7-5	22	<dl	<dl	<dl	7.0	89	71	0.20	<dl	<dl	30	<dl	<dl	36	3.4
	JL98-A7-6	<dl	<dl	<dl	<dl	4.0	62	79	<dl	<dl	<dl	<dl	<dl	<dl	<dl	<dl
	JL98-A7-7	19	<dl	<dl	<dl	4.1	82	79	0.06	<dl	<dl	2.0	<dl	<dl	3.5	1.3
	JL98-A7-8	15	<dl	<dl	<dl	5.3	186	63	<dl	<dl	<dl	1.8	<dl	0.01	1.6	0.65
	JL76-A2-11	357	<dl	<dl	<dl	5.1	579	450	<dl	<dl	<dl	52	<dl	<dl	0.10	0.01
	JL76-A2-12	278	<dl	7.0	<dl	5.4	597	457	0.68	<dl	0.85	46	<dl	0.05	0.09	6.5
	JL76-A2-13	135	<dl	<dl	<dl	5.5	432	924	<dl	<dl	<dl	30	<dl	<dl	0.05	<dl
	JLS-24-A1-1	168	23	5.7	11	<dl	32	62	<dl	<dl	<dl	16	<dl	\	7.4	<dl
	JLS-24-A1-2	304	22	3.2	<dl	<dl	30	60	<dl	<dl	<dl	<dl	<dl	\	0.49	<dl
	JLS-24-A1-3	45	27	5.9	<dl	<dl	30	391	<dl	<dl	<dl	10	<dl	\	<dl	<dl
	JLS-24-A1-4	25	3.0	3.5	<dl	<dl	26	338	<dl	<dl	<dl	<dl	<dl	\	<dl	<dl
	JLS-18-A3-1	26	<dl	14	209	<dl	1667	<dl	3.6	<dl	2.5	183	<dl	\	66	56
	JLS-18-A3-2	30	<dl	32	269	<dl	1333	<dl	<dl	<dl	3.7	208	<dl	\	89	98
	JLS-18-A3-3	719	5.5	<dl	<dl	2.7	995	8.1	<dl	<dl	<dl	23	<dl	\	1.3	<dl
	JLS-18-A3-4	712	3.6	<dl	<dl	1.7	1347	12	<dl	<dl	<dl	15	<dl	\	<dl	<dl
	JL122-1-A2-1	34	13	317990*	11508*	5.0	26	399	372	215	11	7.4	<dl	0.23	1.6	62
	JL122-1-A2-2	84	81	233139*	17565*	6.1	41	345	181	306	30	9.1	<dl	0.22	1.6	76
	JL122-1-A2-3	51	44	216303*	3418*	5.1	26	344	356	63	12	8.9	0.20	0.26	1.1	83
Py3	JL122-1-A2-4	80	66	249953*	12598*	5.4	96	314	745	224	40	9.2	0.30	0.37	2.8	179
(n=15)	JL109-A1-1	83	274	3805*	5049*	5.1	<dl	541	88	59	0.76	5.1	0.58	<dl	1.1	36
	JL109-A1-2	143	81	6800*	2327*	5.7	767	371	161	40	104	4.4	0.80	34	5.8	45
	JL109-A3-1	434	212	13738*	4799*	4.9	-	613	402	51	114	<dl	0.67	23	21	164
	JL109-A3-2	194	110	4353*	2625*	5.6	567	403	229	34	57	3.3	0.52	28	5.1	44

	JL109-A3-3	96	111	4081*	2728*	5.3	159	390	239	37	40	4.5	0.40	30	1.0	15
	JL83-A1-1	652	39	95655*	1686*	5.2	517	266	198	26	93	7.4	0.11	0.62	2.4	33
	JL83-A1-2	432	30	89220*	1883*	5.3	865	219	245	29	122	4.6	<dl	1.2	0.53	52
	JL83-A1-3	284	30	310683*	2619*	5.8	372	278	116	29	21	3.8	<dl	0.79	1.0	18
	JL83-A1-4	399	28	1825*	1650*	5.7	311	274	264	26	72	4.7	<dl	1.5	3.8	115
	JL83-A2-1	353	28	546735*	6418*	<dl	34	201	942	81	41	<dl	<dl	0.81	12	99
	JL83-A2-2	404	91	499127*	1167*	<dl	77	212	944	17	57	<dl	0.55	0.76	9.1	109
Py4 (n=21)	JL5-A1-1	96	9.3	5437*	259	5.3	2336	246	12	5.0	468	16	1.5	17	3.2	377
	JL5-A1-2	<dl	7.7	31	4.8	4.9	3004	107	5.9	2.1	31	6.1	0.12	0.65	4.6	83
	JL5-A1-3	216	15	723	90	5.3	579	388	6.3	1.3	368	6.4	0.64	4.5	1.1	188
	JL39-A9-1	<dl	1.3	139	11289*	4.9	161	<dl	3.6	70	4.6	7.1	0.08	0.02	<dl	299
	JL39-A9-2	<dl	1.9	36	<dl	4.7	258	0.20	66	1.3	36	9.1	145	0.08	<dl	9429*
	JL39-A9-3	<dl	1.9	<dl	<dl	4.7	109	<dl	0.10	<dl	<dl	4.4	<dl	<dl	<dl	2.4
	JL39-A9-4	<dl	<dl	1.9	<dl	4.3	447	<dl	<dl	<dl	0.69	3.2	<dl	0.01	<dl	12
	JL122-2-A5-1	5.7	<dl	35639*	26	4.8	243	47	550*	<dl	3.3	390*	21*	0.13	21	8.6
	JL122-2-A5-2	<dl	<dl	667	17	4.6	491	87	117	<dl	1.4	111	4.6	<dl	14	8.3
	JL104-A5-1	965	3199*	1625*	1410*	6.1	1988	321	4.8	15	1.1	54	0.77	0.02	56	161
	JL104-A5-2	39	164	3525*	1567*	6.3	3031	120	115	25	56	86	3.3	0.31	0.99	116
	JL104-A5-3	27	26	82	119	6.6	1008	<dl	19	4.0	29	31	4.8	15	0.14	233
	JL104-A6-2-1	3.2	26	830	27	9.7	1419	<dl	120	<dl	144	118	7.6	107	1.3	4022*
	JL104-A6-2-2	4.9	6.6	338	34	4.9	608	<dl	102	2.9	365	124	2.9	230	0.24	6472*
	JL104-A6-2-3	3.8	<dl	468	4.8	6.9	804	<dl	91	<dl	177	90	3.7	60	0.14	2291*
	JL104-A6-2-4	5.6	<dl	514	29	7.7	639	<dl	89	1.7	128	110	3.2	52	0.38	7058*
	JL104-A6-3-1	<dl	<dl	37	<dl	5.7	2729	<dl	2.3	<dl	0.68	333	0.52	0.06	<dl	16
	JL104-A6-3-2	1.7	1.5	99	<dl	5.9	2091	<dl	21	<dl	32	325	23	22	0.08	299
	JL104-A6-3-3	22	11	576	101	6.6	1987	<dl	61	2.4	140	265	1.5	27	0.07	618

JL104-A6-3-4	<dl	<dl	20	<dl	5.7	1142	<dl	7.4	<dl	1.6	494	0.88	0.02	<dl	29
JL104-A6-3-5	<dl	<dl	32	<dl	6.7	2055	<dl	16	<dl	6.4	355	1.3	2.0	<dl	150

Note: <dl, below detection limit; *, affected by mineral inclusions; \, undetected. Data affected by the mineral inclusions are not involved in the plots (e.g., Figures 8, 9, 11, 12, 14). Because Py1 is framboidal pyrite and the grains are very fine, it is difficult to exclude all data which are affected by inclusions, so we show all data of Py1*.