

Table S1 EPMA analysis results of quartz from Shihu and Rushan gold deposit (wt%)

No	CL Response	Deposit	Sample no.	Na <sub>2</sub> O	Al <sub>2</sub> O <sub>3</sub>	MgO	GeO <sub>2</sub>	Ga <sub>2</sub> O <sub>3</sub>	K <sub>2</sub> O	CaO	Ag <sub>2</sub> O	FeO	SiO <sub>2</sub>	Au <sub>2</sub> O	TiO <sub>2</sub>	P <sub>2</sub> O <sub>5</sub>	Total
1	dark	Rushan	635-01-7-1-1	0.008	0.094	0.001		0.008	0.004	0.019			99.148		0.001		99.282
2	dark		635-01-7-1-2		0.069	0.003	0.021	0.014	0.002				98.907		0.011	0.008	99.024
3	bright		635-01-7-1-3		0.231				0.013		0.015		99.338		0.002		99.597
4	bright		635-01-7-1-4		0.19	0.009			0.011	0.024		0.001	98.877				99.112
5	dark		635-01-7-1-5	0.014	0.057				0.001		0.009	0.032	99.983	0.009	0.001	0.016	100.121
6	dark		635-01-7-1-6		0.123	0.005		0.018	0.007			0.015	99.28			0.004	99.452
7	dark		635-01-7-1-7	0.003	0.064	0.008		0.012	0.002		0.006		99.328	0.032		0.003	99.458
8	bright		635-01-7-1-8	0.016	0.841	0.006		0.004	0.045	0.015	0.019	0.017	99.257			0.001	100.221
9	dark		635-01-7-1-9	0.009	0.122			0.02	0.017	0.012		0.013	99.121	0.026			99.34
10	dark		635-01-7-1-10	0.014	0.185	0.001		0.004	0.004	0.001		0.018	99.097				99.324
11	bright		635-01-7-1-11	0.005	0.759		0.004	0.002	0.037	0.004	0.039		98.828	0.035			99.713
12	dark		635-01-7-1-12		0.061				0.004	0.026	0.009		99.814		0.002	0.013	99.927
13	dark		635-01-7-1-13	0.017	0.258	0.006	0.006			0.034		0.005	98.94	0.038		0.02	99.324
14	dark		635-01-7-1-14	0.011	0.094	0.004	0.01	0.024		0.015		0.033	99.887	0.041			100.119
15	bright		635-01-7-1-15	0.027	0.302				0.029	0.021	0.011	0.004	98.917	0.009	0.004	0.009	99.329
16	bright		635-01-7-1-16	0.008	0.209			0.063	0.011	0.004			98.848				99.143
17	dark		635-01-7-1-17	0.013	0.078	0.018	0.004	0.002	0.002		0.004		99.624				99.745
18	bright		635-01-7-1-18	0.004	0.148	0.008		0.027		0.027		0.001	98.996	0.029			99.24
19	dark		635-01-7-1-19		0.062	0.005	0.009				0.02		99.166				99.262
20	bright		635-01-7-1-20	0.002	0.374			0.008	0.015	0.016			98.778	0.012			99.205
21	dark		635-01-7-1-21	0.008	0.243		0.036	0.008		0.012		0.011	99.172			0.003	99.493
22	dark		635-01-7-1-22	0.02	0.155				0.008	0.029		0.01	99.391	0.009		0.017	99.639
23	dark		635-01-7-1-23	0.009	0.172	0.018		0.018		0.004			98.767			0.003	98.991
24	dark		635-01-7-1-24	0.016	0.082		0.034		0.001	0.009	0.024	0.009	99.174	0.003	0.005	0.003	99.355
25	dark		635-01-7-1-25	0.028				0.024	0.009	0.008			99.065	0.009	0.004		99.143
26	dark		635-01-7-1-26		0.022			0.018	0.009	0.007		0.018	99.129	0.012			99.215
27	dark		635-01-7-1-27		0.036				0.004	0.008	0.028		99.442				99.518
28	bright		635-01-7-2-1	0.023	0.164	0.013	0.01	0.002	0.010	0.015	0.02		99.273			0.011	99.541

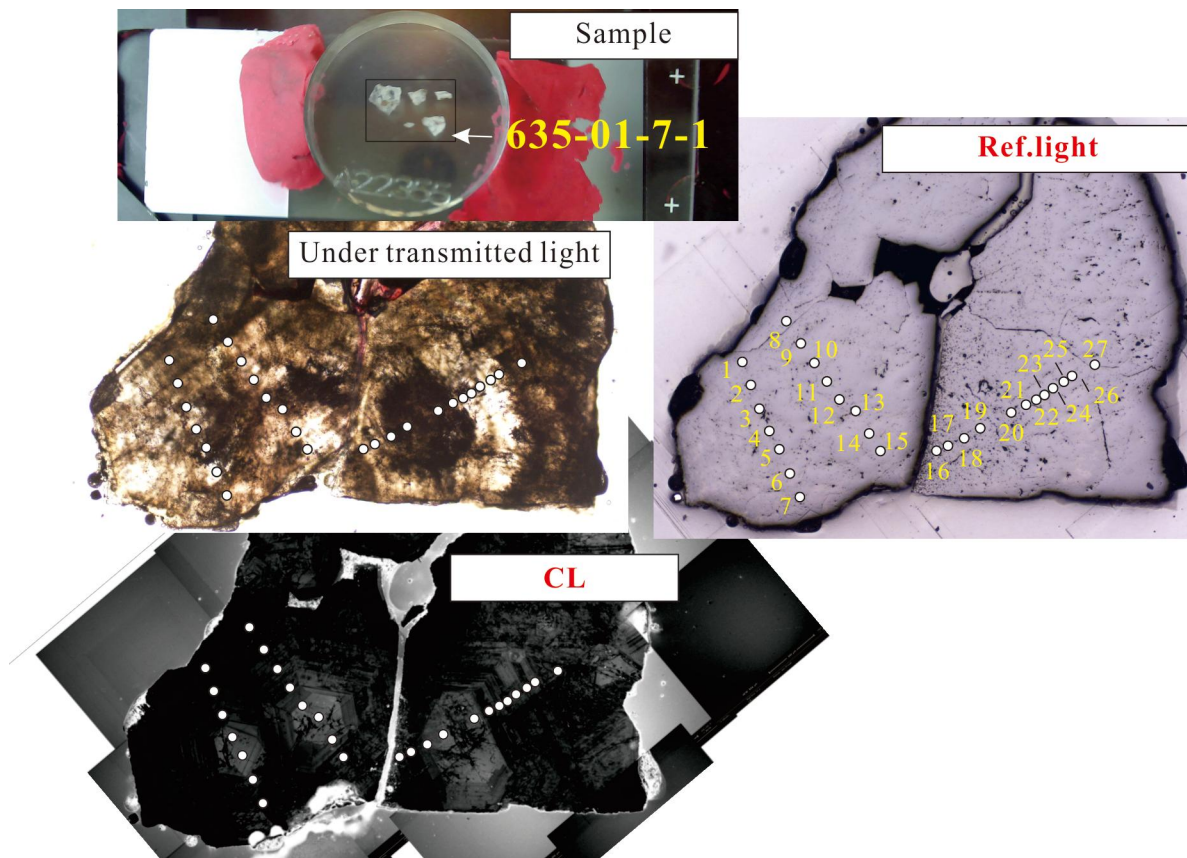
29	bright	635-01-7-2-2	0.028	0.743	0.024		0.033	0.034	0.027			98.462	0.021		0.009	99.381
30	bright	635-01-7-2-3		0.073	0.008							99.823	0.065	0.002		99.969
31	dark	635-01-7-2-4	0.009	0.103		0.021	0.018		0.011			99.69	0.077			99.929
32	dark	635-01-7-2-5	0.02	0.044		0.003		0.005		0.017		99.892	0.05			100.031
33	dark	635-01-7-2-6	0.018	0.08	0.002	0.017		0.006	0.023	0.009		98.961			0.003	99.119
34	dark	635-01-7-2-7	0.002	0.017	0.005	0.012	0.002				0.021	99.346	0.047	0.001	0.011	99.463
35	dark	635-01-7-3-1		0.095			0.032	0.007	0.007		0.017	99.765	0.021		0.017	99.961
36	dark	635-01-7-3-2	0.021	0.249	0.014		0.02	0.022	0.029	0.011	0.024	99.336	0.047		0.019	99.792
37	bright	635-01-7-3-3	0.009	0.162		0.015		0.011		0.046		99.522	0.035			99.8
38	dark	635-01-7-3-4		0.045		0.006	0.01		0.016	0.007	0.004	99.874				99.962
39	bright	635-01-7-3-5	0.024	0.252		0.029	0.026	0.013				99.841	0.027	0.002	0.009	100.221
40	bright	635-01-7-3-6	0.007	0.231	0.001			0.015			0.004	99.352		0.014	0.019	99.629
41	bright	635-01-7-3-7		0.115			0.014		0.028			99.506				99.663
42	bright	635-01-7-3-8	0.006	0.175	0.007			0.013		0.015	0.01	99.412		0.005		99.638
43	dark	635-01-7-3-9	0.021					0.01		0.022		99.947	0.021	0.001		100.021
44	dark	635-01-7-3-10	0.003	0.09	0.016		0.028	0.004		0.028		99.883			0.013	100.065
45	dark	635-01-7-3-11	0.018	0.109	0.001	0.017	0.024	0.003				99.085			0.004	99.261
46	bright	635-01-7-4-1	0.001	0.273		0.054	0.065	0.014	0.01	0.011		98.842			0.017	99.287
47	bright	635-01-7-4-2		0.294			0.024	0.015			0.005	99.185			0.022	99.545
48	bright	635-01-7-4-3		0.262	0.005	0.033		0.02	0.013	0.039	0.001	98.927		0.008	0.019	99.319
49	bright	635-01-7-4-4	0.023	0.144					0.014		0.002	98.863	0.053		0.013	99.112
50	dark	635-01-7-4-5	0.011	0.008		0.009	0.004	0.002	0.022			100.02 7		0.002		100.083
51	bright	635-01-7-4-6	0.015	0.849	0.019	0.021		0.068		0.068	0.001	99.139				100.18
52	bright	635-01-7-4-7	0.036	0.248	0.014		0.004	0.031	0.026			98.546	0.03			98.935
53	bright	635-01-7-4-8	0.001	0.723	0.001	0.015	0.016	0.038	0.022			98.924	0.006		0.006	99.752
54	dark	635-01-7-4-9	0.015	0.109	0.004	0.024	0.034	0.009				99.028				99.223
55	dark	635-01-7-4-10	0.056	0.039	0.003		0.018	0.009	0.019			98.852	0.065			99.061
56	dark	635-01-7-4-11	0.011	0.001	0.002			0.004				99.333	0.003		0.014	99.368
57	dark	635-01-7-4-12	0.004	0.111		0.003	0.01	0.01		0.04	0.003	98.89		0.006	0.004	99.075
58	dark	635-01-7-4-13	0.009	0.105	0.015			0.007	0.006	0.011	0.006	98.737				98.896
59	dark	635-01-7-4-14	0.007	0.11			0.036	0.007	0.01	0.037		99.947				100.154

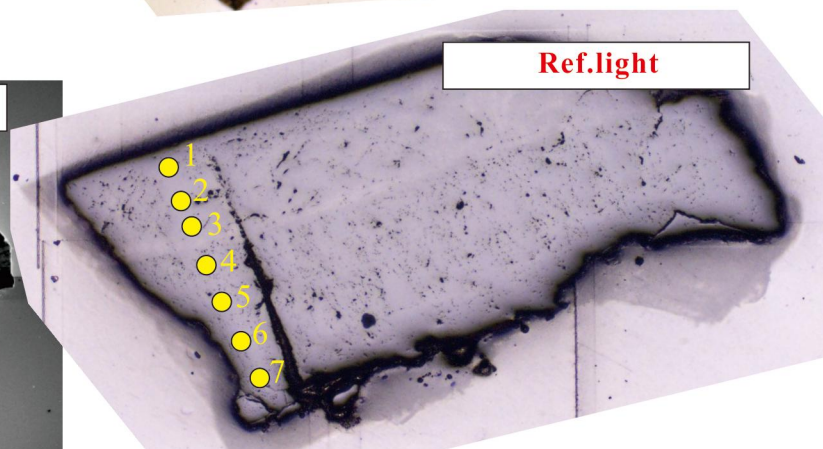
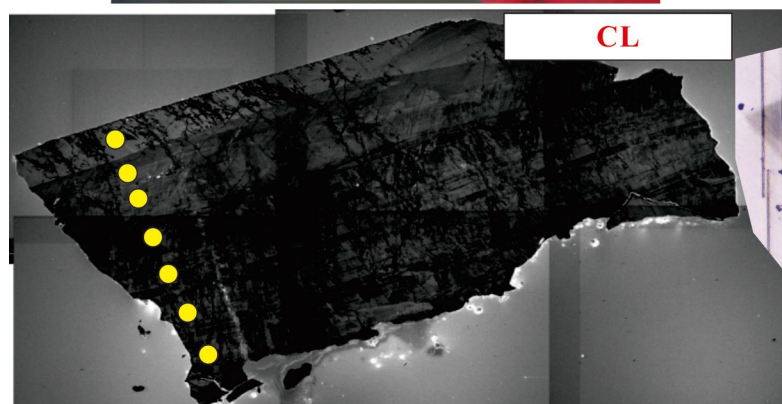
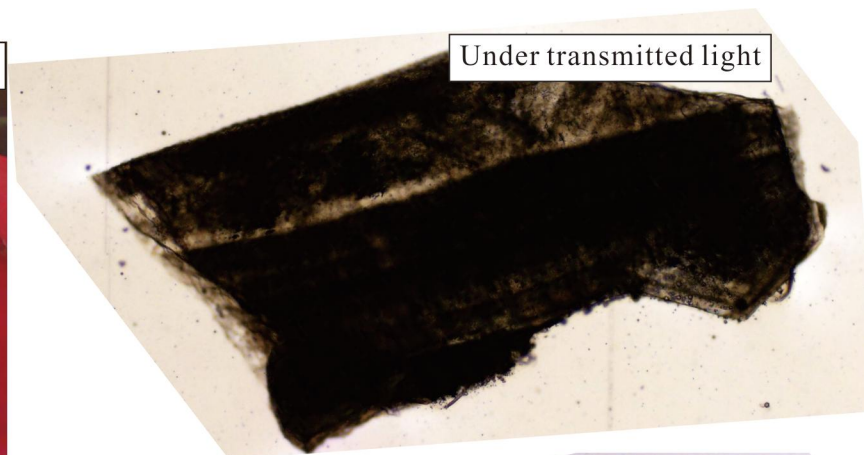
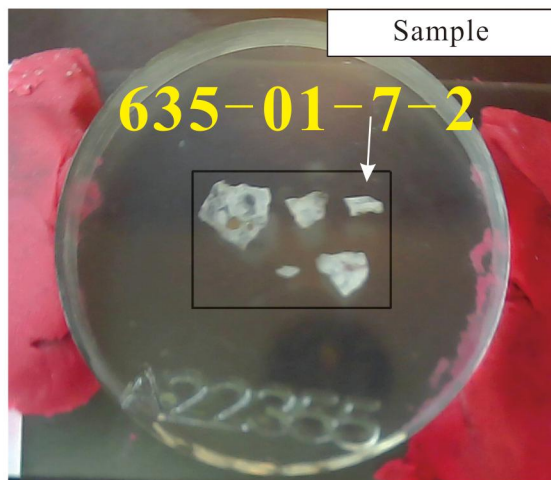
60	dark		635-01-7-5-1	0.016	0.026	0.008			0.008				99.495	0.053			99.606
61	dark		635-01-7-5-2	0.042	0.046			0.03	0.01	0.018	0.031		99.008		0.001		99.185
62	dark		635-01-7-5-3		0.063		0.009		0.009	0.007		0.011	99.747		0.004	0.001	99.847
63	bright		635-01-7-5-4		0.279		0.05	0.006	0.035	0.029	0.035	0.005	99.664	0.027			100.13
64	bright		635-01-7-5-5		0.226			0.002	0.031	0.004	0.009	0.013	99.696	0.053			100.034
65	bright		635-01-7-5-6	0.01	0.278			0.052	0.03				99.14		0.002		99.51
66	dark		635-01-7-5-7	0.008	0.027		0.017		0.007	0.007	0.004	0.018	99.833	0.006			99.927
67	bright	Shihu	300-302-1a-1	0.019	0.169	0.008	0.023		0.015	0.009			99.467	0.009			99.719
68	bright		300-302-1a-2		0.17			0.026	0.016			0.005	99.406				99.623
69	bright		300-302-1a-3	0.016	0.305				0.028	0.003	0.026	0.026	99.365		0.014	0.012	99.781
70	bright		300-302-1a-4	0.009	0.096	0.004	0.011	0.056	0.015	0.005	0.011		99.493			0.013	99.713
71	bright		300-302-1a-5		0.136		0.003	0.03	0.01		0.004		99.868			0.01	100.061
72	bright		300-302-1a-6	0.019	0.168				0.019	0.025		0.015	98.777		0.002		99.023
73	dark		300-302-1a-10	0.016	0.714	0.019			0.011	0.003		0.006	99.213				99.982
74	dark		300-302-1a-11	0.015	0.64	0.009	0.009	0.042	0.01	0.003			99.055		0.007		99.783
75	dark		300-302-1a-15	0.001	0.932	0.005	0.008	0.018	0.012	0.011	0.062		98.679			0.004	99.732
76	bright		300-302-1a-16	0.027	0.292						0.022	0.019	99.042	0.039	0.003		99.441
77	bright		300-302-1a-19		0.214	0.008			0.016	0.011		0.023	98.979	0.006			99.257
78	bright		300-302-1a-18		0.159		0.011		0.009	0.002	0.009		99.642				99.832
79	bright		300-302-1a-22	0.008	0.149	0.003	0.03		0.008		0.031		98.838	0.009		0.012	99.088
80	bright		300-302-1a-17	0.004	0.11		0.009	0.004	0.01	0.01			99.106			0.014	99.267
81	dark		300-302-1a-20	0.023	0.727	0.001			0.002	0.015	0.007	0.016	99.775	0.009	0.008	0.001	100.576
82	dark		300-302-1a-21	0.013	0.41	0.007			0.006				99.681	0.054		0.019	100.19
83	bright		300-302-1-01	0.004	0.673	0.011	0	0	0.011	0.028	0	0.01	99.922	0.019	0	0	100.678
84	bright		300-302-1-02	0.022	0.56	0	0.016	0	0.014	0.008	0.036	0	99.123	0	0.075	0	99.779
85	bright		300-302-1-03	0.063	0.252	0.024	0.014	0.027	0.023	0.032	0	0.239	100.10	0.019	0	0	100.793
86	bright		300-302-1-04	0.032	0.321	0	0	0.023	0.012	0.01	0	0.101	99.018	0	0	0	99.517
87	bright		300-302-1-05	0.008	0.283	0	0	0.023	0.013	0	0.007	0.01	98.592	0	0.012	0.017	98.953
88	bright		300-302-1-06	0.024	0.189	0.009	0	0	0.009	0.003	0	0.295	99.534	0.028	0	0	100.091
89	bright		300-302-1-07	0.001	0.415	0	0.04	0	0.007	0.014	0	0.054	99.699	0.003	0.025	0.007	100.24
90	bright		300-302-1-08	0.022	0.117	0.006	0.016	0	0.005	0.016	0	0.013	99.512	0	0	0	99.707
91	bright		300-302-1-09	0.003	0.02	0	0.03	0.02	0.004	0	0.014	0	99.05	0	0	0	99.141

92	bright	300-302-1-10	0.027	0.028	0.01	0	0	0.018	0.007	0.029	0.067	98.979	0.006	0.062	0	99.171
93	bright	300-302-1-11	0.037	0.231	0.002	0	0	0.023	0.017	0.048	0.131	99.427	0	0	0.003	99.919
94	bright	300-302-1-12	0	0.217	0.013	0	0	0.011	0.034	0	0.01	99.224	0	0	0	99.509
95	bright	300-302-1-13	0.051	0.072	0.024	0.005	0	0.044	0.002	0	0.08	99.033	0.019	0.049	0.007	99.337
96	bright	300-302-1-14	0.011	0.41	0	0.002	0.027	0.07	0.041	0.007	0.07	98.898	0.053	0	0	99.589
97	bright	300-302-1-15	0.011	0.39	0	0.005	0.029	0.003	0.02	0.014	0	99.733	0	0.037	0	100.205
98	dark	300-302-1-16	0	0.572	0.009	0.014	0.037	0	0	0.02	0	99.74	0	0.074	0	100.392
99	dark	300-302-1-17	0.008	0.561	0	0.026	0	0.006	0.013	0	0.017	99.176	0.003	0.025	0	99.81
100	dark	300-302-1-18	0.03	0.457	0.007	0.003	0	0.014	0.016	0.023	0	99.744	0.102	0.025	0	100.396
101	dark	300-302-1-19	0	0.405	0.006	0	0.006	0	0.001	0	0.017	99.56	0.012	0	0	100.007
102	dark	300-302-1-20	0.005	0.261	0.013	0.022	0	0.001	0.004	0	0.084	99.388	0	0	0.01	99.788
103	dark	300-302-1-21	0.016	0.484	0.009	0.012	0.02	0	0.014	0	0	98.503	0.043	0	0	99.101
104	dark	300-302-1-22	0.019	0.277	0.013	0	0	0.016	0.01	0.014	0.03	98.913	0.009	0.049	0.031	99.332
105	dark	300-302-1-23	0.025	0.482	0	0	0	0.017	0.006	0.007	0.047	99.124	0	0	0.035	99.743
106	dark	300-302-1-24	0.018	0.522	0	0.019	0.018	0	0.022	0.018	0.087	99.748	0.025	0	0	100.477
107	dark	300-302-1-25	0.012	0.401	0.005	0.045	0	0.026	0.021	0	0.127	98.858	0	0	0.028	99.523
108	dark	300-302-1-26	0.025	0.505	0.004	0	0.027	0.028	0.067	0.025	0.214	98.872	0	0	0.003	99.77
109	dark	300-302-1-27	0.019	0.542	0.014	0	0	0.006	0.037	0	0.09	98.951	0.022	0.074	0.003	99.684
110	dark	300-302-1-28	0.033	0.221	0.002	0.002	0.061	0.006	0.013	0	0.094	99.148	0.056	0	0.017	99.653
111	dark	300-302-1-29	0.005	0.289	0	0.006	0.024	0	0.015	0.032	0.03	99.23	0	0	0.003	99.634
112	dark	300-302-1-30	0.012	0.497	0.003	0	0.008	0.006	0.026	0	0.137	99.112	0.009	0.012	0.021	99.831
113	dark	300-302-1-31	0	0.255	0.004	0.037	0	0.023	0.023	0.02	0.127	99.634	0.012	0	0.017	100.152
114	dark	300-302-1-32	0.033	0.406	0	0.012	0.035	0.017	0	0.036	0.047	98.713	0	0	0.003	99.302
115	dark	300-302-1-33	0.028	0.528	0.006	0.045	0	0.006	0.015	0.036	0.144	99.119	0	0.086	0	99.927
116	dark	300-302-1-34	0.004	0.522	0	0	0	0.019	0.044	0.002	0.067	99.45	0	0	0	100.108
117	dark	300-302-1-35	0.02	0.229	0.004	0	0.049	0.016	0.017	0.009	0.248	100.83	0	0.037	0	101.422
118	dark	300-302-1-36	0.028	0.07	0	0	0.002	0.004	0.003	0	0	98.871	0.043	0	0.01	99.031
119	dark	300-302-1-37	0.026	0.441	0.012	0.008	0.002	0.011	0.014	0.016	0	99.33	0	0	0.024	99.884
120	bright	300-302-1-38	0.006	0.232	0.004	0	0	0.001	0.013	0.043	0	98.981	0	0.049	0	99.28
121	bright	300-302-1-39	0	0.569	0	0	0.016	0.02	0.003	0.009	0	99.224	0	0.037	0	99.841
122	bright	300-302-1-40	0.015	0.526	0.003	0	0.018	0.018	0.033	0	0.291	101.76	0	0	0	102.664
123	dark	300-302-1-2-1	0	0.116	0.011	0.014	0.008	0.033	0.026	0.014	0.1	99.535	0.043	0.062	0	99.9

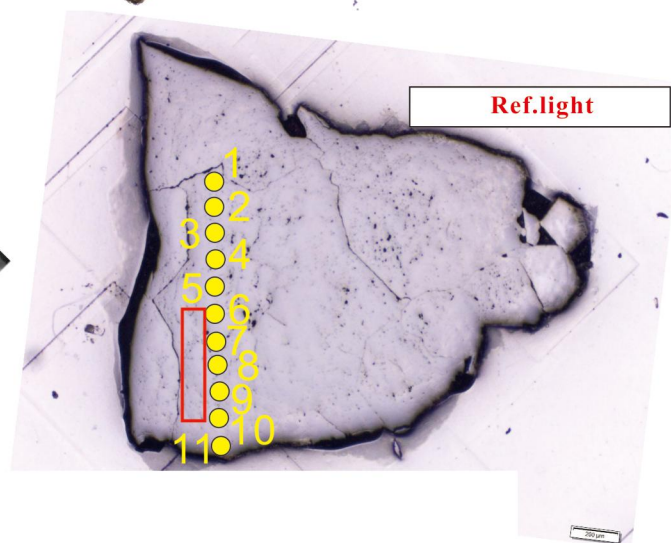
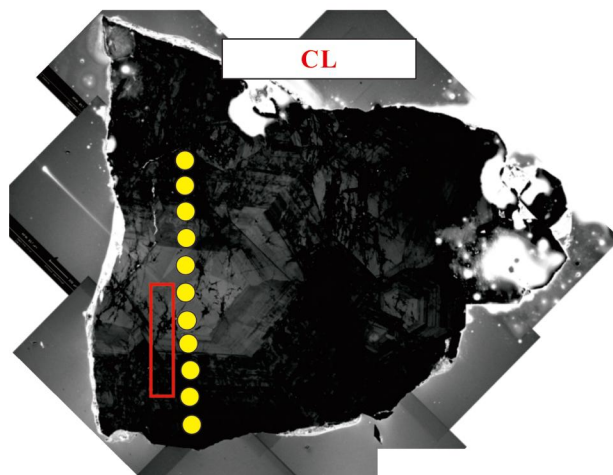
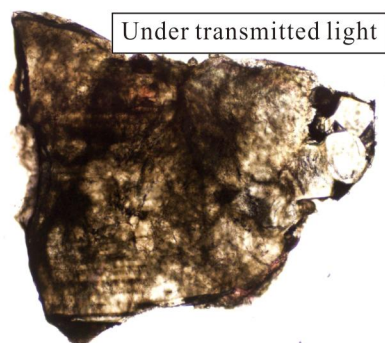
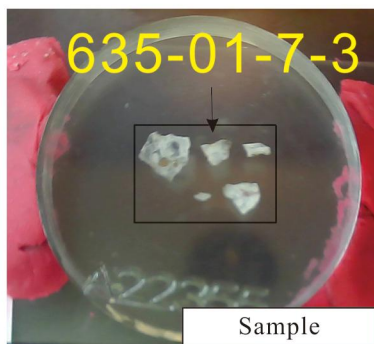
124	dark		300-302-1-2-2	0.038	0.069	0	0	0.047	0.034	0.01	0.038	0.054	99.149	0.012	0	0	99.451
125	dark		300-302-1-2-3	0.024	0.043	0	0.009	0	0.046	0.015	0	0.057	98.871	0.034	0.037	0	99.099
126	dark		300-302-1-2-4	0.03	0.066	0	0.036	0	0.026	0	0.011	0	99.286	0	0.025	0	99.455
127	dark		300-302-1-2-5	0	0.034	0	0	0.014	0.01	0	0	0.03	99.283	0.031	0.012	0.007	99.409
128	bright		300-302-1-2-6	0.025	0.56	0	0	0.016	0.037	0.029	0.018	0.023	98.853	0.015	0	0.028	99.604
129	bright		300-302-1-2-7	0	0.066	0	0.005	0	0.016	0.033	0	0.08	99.619	0.003	0.086	0	99.822
130	bright		300-302-1-2-8	0.005	0.108	0.003	0.012	0	0.007	0.015	0	0.05	99.161	0.031	0	0	99.392
131	bright		300-302-1-2-9	0.008	0.224	0.009	0.02	0.002	0.011	0.023	0	0.097	99.804	0.062	0	0.007	100.267
132	bright		300-302-1-2-10	0.064	0.059	0.026	0.002	0	0.045	0.07	0	0.488	99.185	0	0.037	0	99.939
133	dark		300-302-1-2-11	0.004	0.037	0.003	0	0.039	0.001	0	0	0.01	99.636	0	0.012	0.007	99.737
134	dark		300-302-1-2-12	0.001	0.093	0	0	0.035	0.006	0	0	0.033	99.098	0.046	0.012	0	99.312
135	dark		300-302-1-2-13	0.012	1.076	0.008	0.002	0	0.009	0.037	0	0	99.244	0	0.025	0.01	100.398
136	dark		300-302-1-2-14	0.02	0.115	0	0	0	0.01	0.02	0.016	0.067	99.88	0.031	0	0	100.159
137	dark		300-302-1-2-15	0.015	0.08	0	0	0	0	0.008	0.016	0.023	98.87	0.037	0.062	0	99.049
138	dark		300-302-1-2-16	0.016	0.077	0.01	0	0.039	0.015	0.01	0	0.094	99.023	0.006	0	0	99.29
139	bright		300-302-1-2-17	0	0.706	0.004	0	0	0.009	0	0.036	0.1	99.436	0.031	0	0.003	100.325
140	bright		300-302-1-2-18	0.027	0.476	0.006	0.014	0.092	0.016	0.026	0.023	0.003	99.355	0.019	0	0.014	100.071
141	bright		300-302-1-2-19	0.001	0.76	0.009	0	0	0.023	0	0	0.01	99.088	0.025	0.037	0	99.916
142	bright		300-302-1-2-20	0.019	0.085	0.002	0.002	0.004	0.009	0.042	0.025	0.087	99.589	0	0.037	0.017	99.881
143	bright		300-302-1-41	0.014	0.381	0.02	0.003	0.037	0.018	0.013	0.066	0.064	99.042	0	0	0.014	99.672
144	bright		300-302-1-42	0.025	0.612	0.001	0.002	0	0.009	0.031	0	0.057	99.311	0	0.037	0	100.048
145	bright		300-302-1-43	0.022	0.703	0.012	0.033	0	0.011	0.018	0	0.258	98.797	0.046	0	0.038	99.938
146	bright		300-302-1-44	0.03	0.471	0.001	0	0.02	0.018	0	0	0.047	99.168	0	0	0.038	99.793
147	bright		300-302-1-45	0.017	0.226	0.011	0.005	0.008	0	0	0	0.02	99.486	0.022	0.037	0.003	99.798

Analysis location of quartz from Rushan gold deposit:

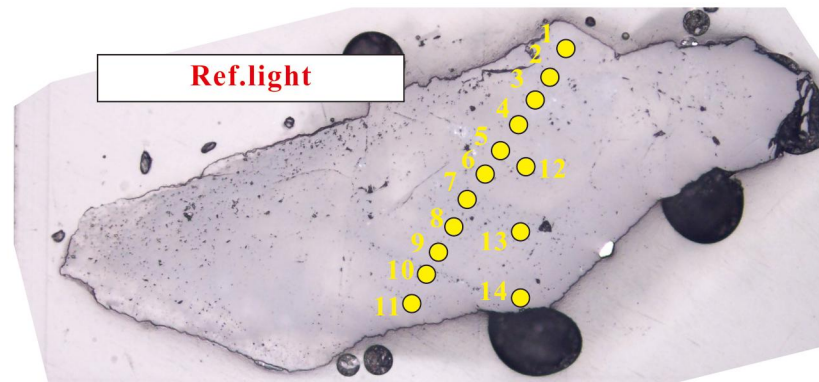
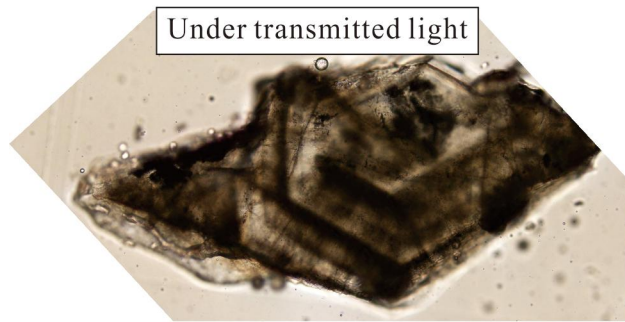
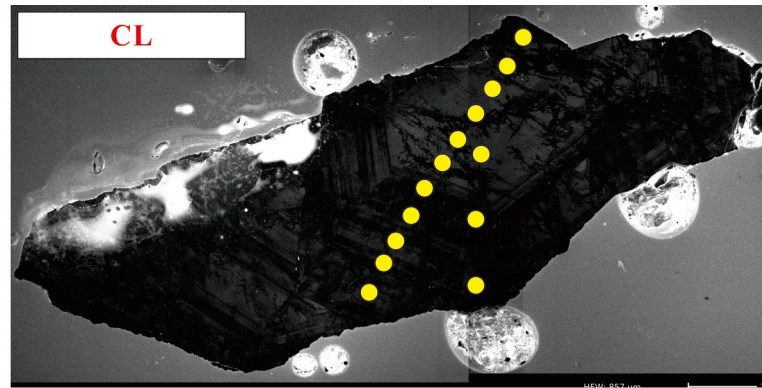
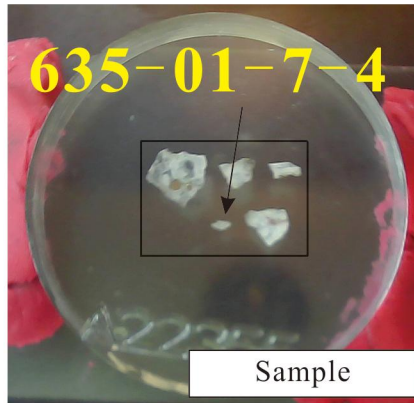


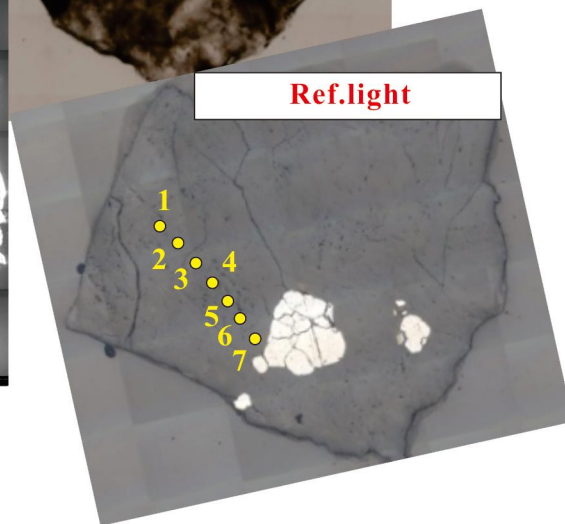
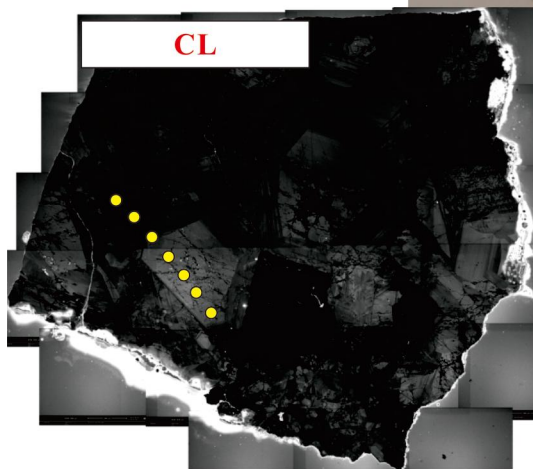
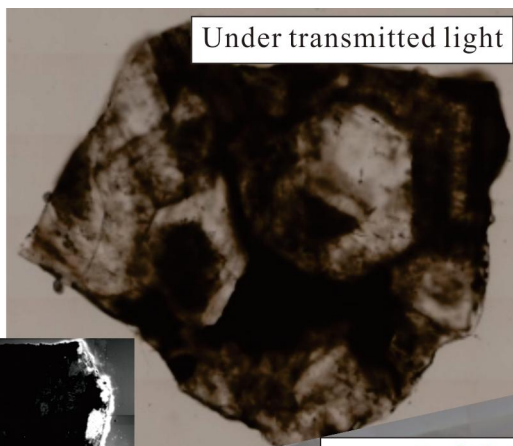
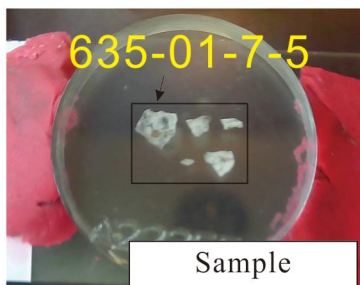




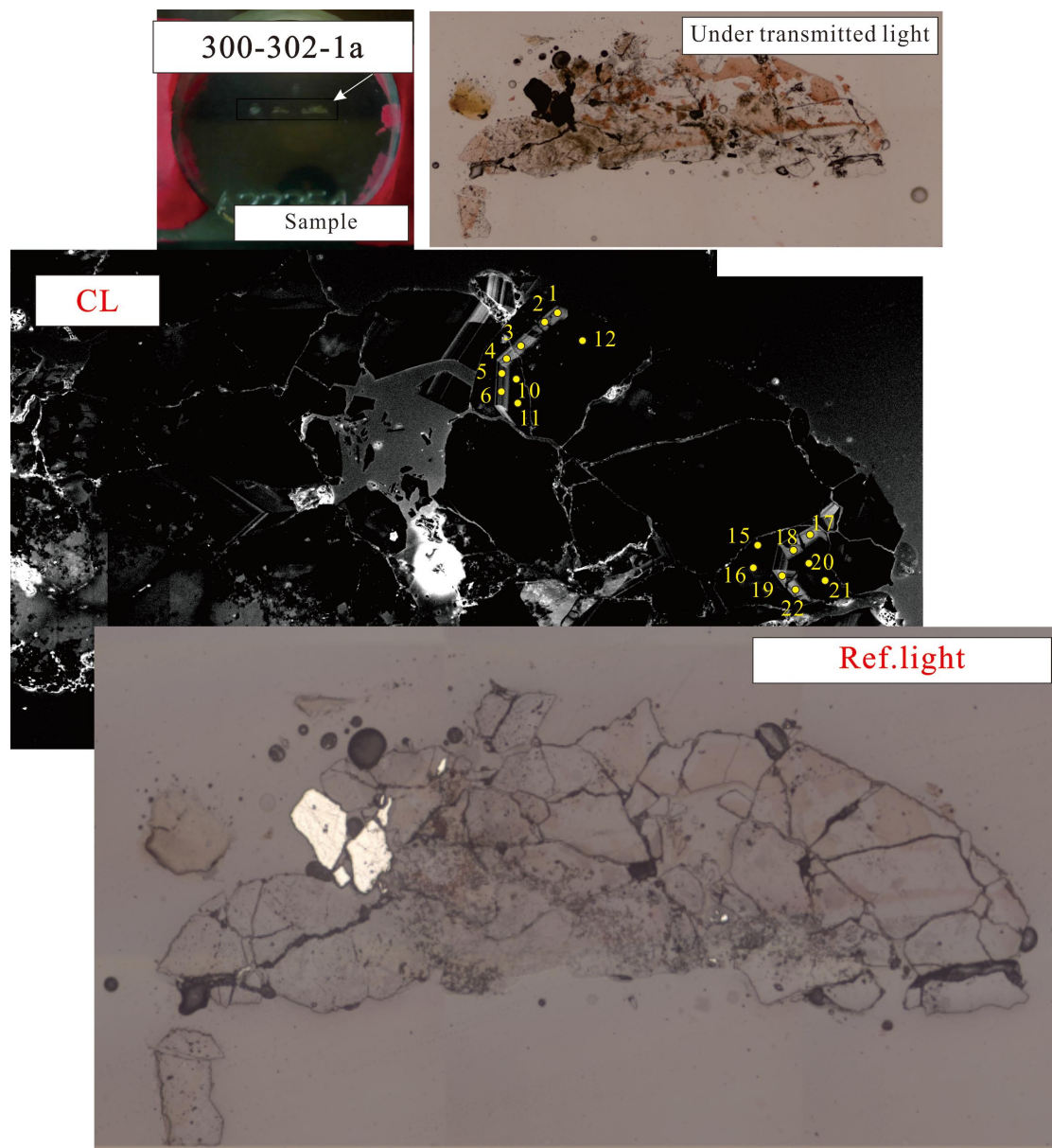






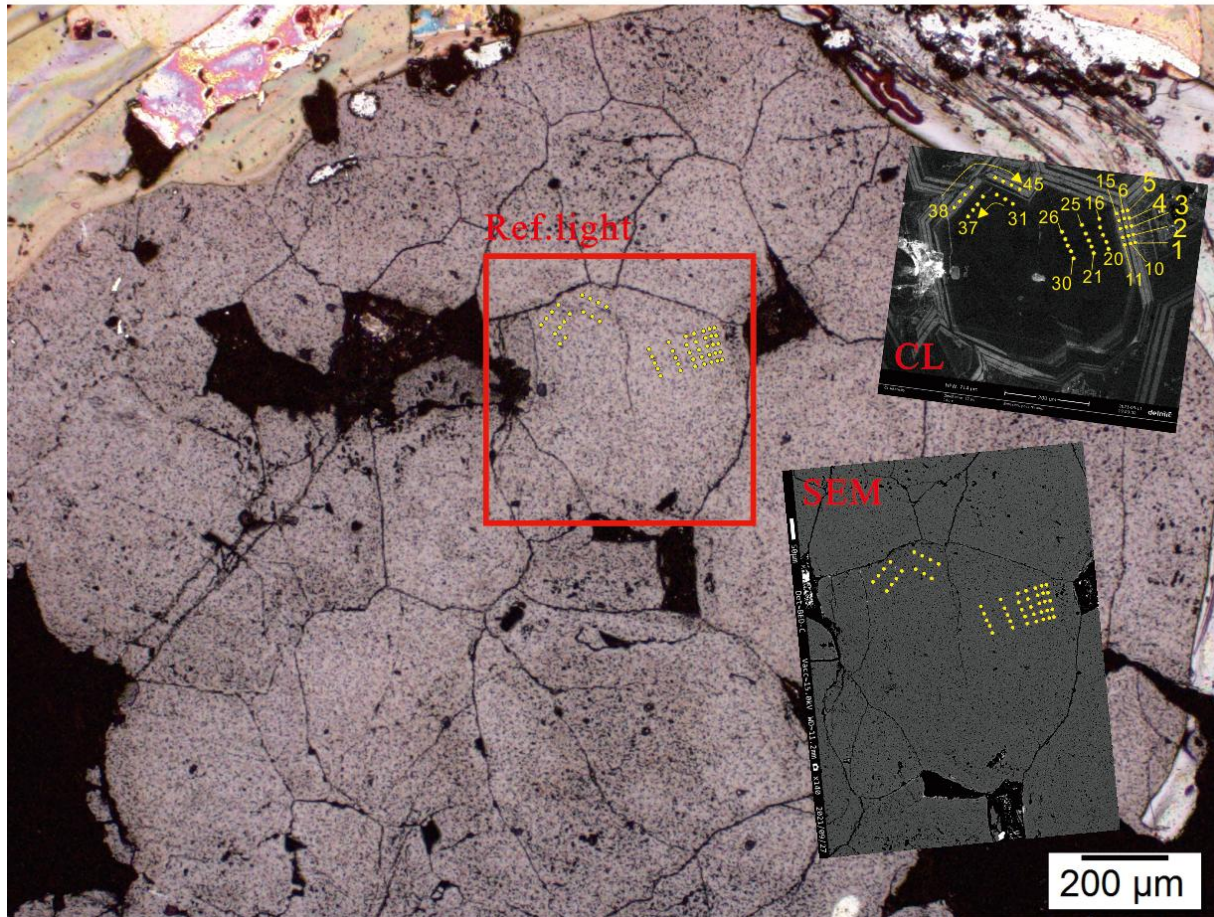


Analysis location of quartz from Shihu gold deposit:

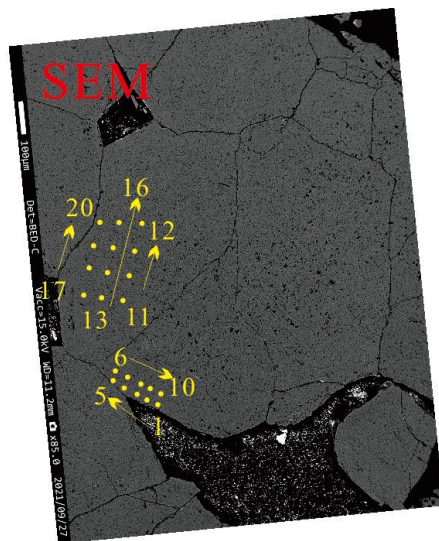




# 300-302-1







300-302-1-2

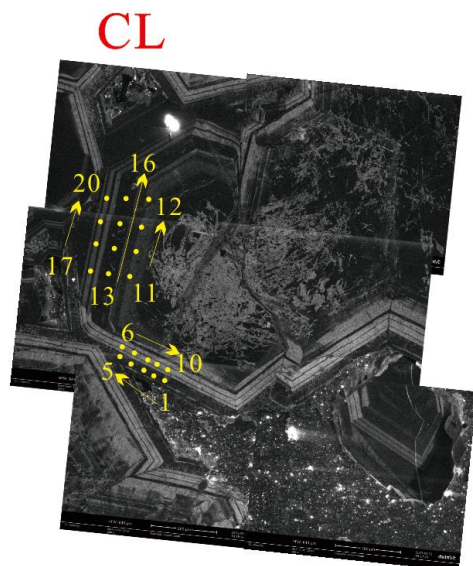
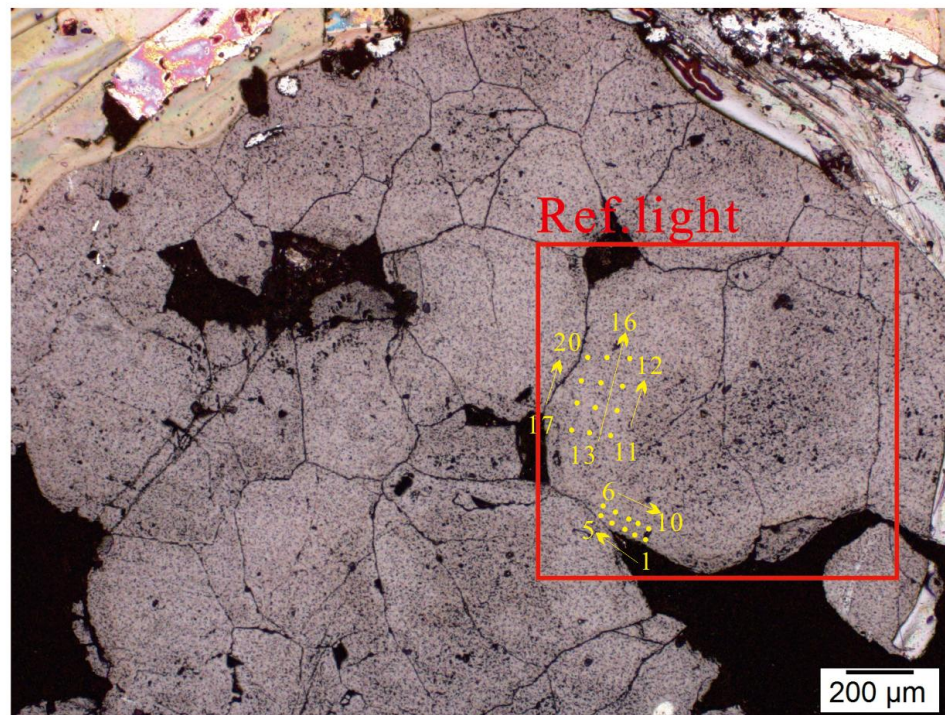


Table S2 List of runs (angles in degrees, time in seconds) of X-ray single crystal diffraction (XRD) analyses

Sample No.	#	Type <sup>[1]</sup>	Start	End	Width	Time	Omega or /w	Detector	Kappa	Phi	Frames
No.1	1	\w	10.00	48.00	0.50	1.00	--	0.70	77.00	120.00	76
	2	\w	-44.00	24.00	0.50	1.00	--	-1.10	-19.00	30.00	136
	3	\w	-44.00	27.00	0.50	1.00	--	-1.10	-77.00	-60.00	142
	4	\w	-36.00	0.00	0.50	1.00	--	-1.10	-82.00	-150.00	72
	5	\w	-90.00	-47.00	0.50	1.00	--	-1.10	-19.00	30.00	86
No.2	1	\w	-87.00	-31.00	0.50	0.50	--	0.70	-57.00	-180.00	112
	2	\w	-13.00	34.00	0.50	0.50	--	0.70	-82.00	0.00	94
	3	\w	-26.00	25.00	0.50	0.50	--	0.70	-57.00	-180.00	102
	4	\w	7.00	32.00	0.50	0.50	--	-1.30	-82.00	120.00	50
	5	\w	-46.00	26.00	0.50	0.50	--	-1.30	-77.00	-90.00	144
No.3	1	\w	-11.00	56.00	0.50	0.50	--	0.70	57.00	-150.00	134
	2	\w	-37.00	33.00	0.50	0.50	--	0.70	-82.00	90.00	140
	3	\w	-75.00	-34.00	0.50	0.50	--	0.70	-19.00	0.00	82
	4	\w	-5.00	27.00	0.50	0.50	--	0.70	-19.00	0.00	64
	5	\w	-40.00	14.00	0.50	0.50	--	-1.30	-82.00	30.00	108
No.4	1	\w	-32.00	30.00	0.50	4.04	--	-1.10	-82.00	30.00	124
	2	\w	-34.00	-8.00	0.50	4.04	--	-1.10	-82.00	90.00	52
	3	\w	-2.00	31.00	0.50	4.04	--	-1.10	-82.00	90.00	66
	4	\w	-19.00	16.00	0.50	4.04	--	-1.10	-77.00	150.00	70
	5	\w	-25.00	72.00	0.50	4.04	--	-1.10	57.00	-150.00	194
No.5	1	o	7.00	90.00	0.50	1.00	--	0.70	57.00	150.00	166
	2	o	-16.00	19.00	0.50	1.00	--	-1.30	-82.00	90.00	70
	3	o	-24.00	46.00	0.50	1.00	--	-1.30	57.00	-120.00	140
	4	o	-36.00	32.00	0.50	1.00	--	-1.30	-82.00	30.00	136
No.6	1	\w	-21.00	5.00	0.50	5.00	--	0.90	77.00	120.00	52
	2	\w	9.00	38.00	0.50	5.00	--	0.90	77.00	120.00	58

	3	\w	-25.00	30.00	0.50	5.00	--	0.90	-82.00	0.00	110
	4	\w	-19.00	21.00	0.50	5.00	--	0.90	38.00	90.00	80
	5	\w	49.00	87.00	0.50	5.00	--	0.90	38.00	90.00	76
	6	\w	-31.00	28.00	0.50	5.00	--	-1.30	-82.00	-60.00	118
No.7	1	\w	-39.00	34.00	0.50	0.50	--	0.70	-82.00	90.00	146
	2	\w	-23.00	29.00	0.50	0.50	--	-1.30	-82.00	-60.00	104
	3	\w	-40.00	25.00	0.50	0.50	--	-1.30	-82.00	-120.00	130
	4	\w	-16.00	42.00	0.50	0.50	--	-1.30	38.00	90.00	116
No.8	1	\w	-20.00	25.00	0.50	0.79	--	-1.10	-82.00	150.00	90
	2	\w	-35.00	31.00	0.50	0.79	--	-1.10	-82.00	-30.00	132
	3	\w	-85.00	-46.00	0.50	0.79	--	-1.10	-38.00	-30.00	78
	4	\w	-15.00	19.00	0.50	0.79	--	-1.10	-38.00	-30.00	68
	5	\w	-19.00	48.00	0.50	0.79	--	-1.10	-38.00	-30.00	134
No.9	1	\w	3.00	48.00	0.50	2.00	--	0.70	77.00	-60.00	90
	2	\w	-37.00	-8.00	0.50	2.00	--	-1.10	-82.00	-180.00	58
	3	\w	-4.00	28.00	0.50	2.00	--	-1.10	-82.00	-180.00	64
	4	\w	-28.00	6.00	0.50	2.00	--	-1.10	19.00	-60.00	68
	5	\w	15.00	57.00	0.50	2.00	--	-1.10	19.00	-60.00	84
	6	\w	-46.00	17.00	0.50	2.00	--	-1.10	-77.00	120.00	126
No.10	1	\w	33.00	89.00	0.50	2.00	--	0.70	19.00	-150.00	112
	2	\w	-21.00	6.00	0.50	2.00	--	0.70	19.00	-150.00	54
	3	\w	10.00	48.00	0.50	2.00	--	0.70	77.00	-150.00	76
	4	\w	-13.00	44.00	0.50	2.00	--	0.70	77.00	0.00	114
	5	\w	-38.00	30.00	0.50	2.00	--	-1.30	-82.00	60.00	136
No.11	1	\w	-49.00	28.00	0.50	2.00	--	0.70	-19.00	-180.00	154
	2	\w	1.00	42.00	0.50	2.00	--	0.70	77.00	-30.00	82
	3	\w	-39.00	20.00	0.50	2.00	--	-1.30	-82.00	-150.00	118
	4	\w	-33.00	31.00	0.50	2.00	--	-1.30	77.00	30.00	128

Note: [1]: measurement method; --: undetected



Table S3 Cell parameters of different quartz CL zones

Sample no.	Deposit	CL Response	Cell lengths(Å)			Cell angles(°)			Cell volumes(Å <sup>3</sup> )
			a <sub>0</sub>	b <sub>0</sub>	c <sub>0</sub>	$\alpha$	$\beta$	$\gamma$	
No.1	Rushan Au deposit	dark	4.8974	4.8974	5.3949	90	90	120	112.059
No.2		dark	4.9060	4.9060	5.3962	90	90	120	112.480
No.3		dark	4.9080	4.9080	5.3982	90	90	120	112.613
No.4		bright	4.9118	4.9118	5.4121	90	90	120	113.078
No.5		bright	4.9481	4.9481	5.4372	90	90	120	115.288
No.6	Shihu Au deposit	bright	4.9025	4.9025	5.3899	90	90	120	112.188
No.7		bright	4.9056	4.9056	5.4012	90	90	120	112.565
No.8		bright	4.9061	4.9061	5.3955	90	90	120	112.470
No.9		dark	4.9073	4.9073	5.3970	90	90	120	112.556
No.10		dark	4.9076	4.9076	5.3988	90	90	120	112.607
No.11		dark	4.9087	4.9087	5.4010	90	90	120	112.704