

WLFEMPA

Sample Mount	283-478	283-478	283-478	283-478	283-478	283-478	283-478	283-478	283-478	283-478
Row	WOLF1	WOLF1	WOLF1	WOLF1	WOLF1	WOLF1	WOLF1	WOLF1	WOLF1	WOLF1
Grain	2	2	2	2	2	2	2	2	2	2
Comment	1	1	2	3	3	4	4	5	5	6
Analyses	1	2	3	4	5	6	7	8	9	10
wt.%										
WO3	76.01	75.90	76.35	76.56	76.41	76.08	76.14	76.00	76.07	76.12
CrO3	0.01	0.01	0.00	0.00	0.00	0.02	0.00	0.01	0.00	0.00
Ta2O5	0.08	0.08	0.06	0.07	0.08	0.07	0.08	0.07	0.08	0.09
Nb2O5	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.05	0.04	0.00
TiO2	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Fe2O3	0.11	0.10	0.00	0.00	0.00	0.00	0.00	0.93	1.09	0.00
V2O3	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.00
Al2O3	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01
FeO	16.75	16.05	19.39	21.25	21.57	21.07	20.99	11.61	10.85	16.79
MnO	6.69	7.36	3.99	2.04	1.67	2.34	2.29	11.41	12.09	6.68
Total	99.68	99.53	99.80	99.93	99.73	99.61	99.50	100.08	100.24	99.69
apfu										
Group T										
W6+	0.997	0.997	1.002	1.004	1.004	1.000	1.002	0.989	0.988	0.999
Cr6+	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000
Ta5+	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Nb5+	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.000
Ti4+	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Fe3+	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008	0.010	0.000
Total	1.000	1.000	1.003	1.005	1.005	1.002	1.003	1.000	1.000	1.001
Group M										
Fe3+	0.004	0.004	0.000	0.000	0.000	0.000	0.000	0.027	0.031	0.000
V3+	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Al3+	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.001
Fe2+	0.709	0.680	0.821	0.899	0.914	0.894	0.891	0.488	0.455	0.711
Mn2+	0.287	0.316	0.171	0.087	0.072	0.101	0.098	0.485	0.513	0.287
Total	1.000	1.000	0.992	0.986	0.986	0.995	0.990	1.000	1.000	0.999
Endmember Decomposition										
Ferberite	70.9	68.0	82.1	89.9	91.4	89.4	89.1	48.8	45.5	71.1
Hubnerite	28.7	31.6	17.1	8.7	7.2	10.1	9.8	48.5	51.3	28.7
Total	99.6	99.6	99.2	98.6	98.6	99.4	99.0	97.3	96.8	99.8

WLFEMPA

Sample Mount	283-478	283-478	283-478	283-478	283-478	283-478	283-478	283-478	295-424	295-424
Row	WOLF1	WOLF1	WOLF1	WOLF1	WOLF1	WOLF1	WOLF1	WOLF1	WOLF1	WOLF1
Grain	2	2	2	2	2	2	2	2	2	2
Comment	6	7	7	8	9	9	10	10	11	11
Analyses	11	12	13	14	15	16	17	18	core 19	rim 20
wt.%										
WO3	76.40	76.35	76.22	76.34	75.63	76.45	76.45	75.76	76.31	76.33
CrO3	0.01	0.00	0.00	0.01	0.02	0.00	0.02	0.00	0.00	0.03
Ta2O5	0.08	0.07	0.08	0.10	0.09	0.05	0.07	0.05	0.09	0.07
Nb2O5	0.01	0.03	0.00	0.01	0.00	0.01	0.02	0.04	0.05	0.02
TiO2	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
Fe2O3	0.00	0.00	0.07	0.00	0.36	0.00	0.00	0.29	0.00	0.00
V2O3	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01
Al2O3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	18.00	15.08	14.64	16.99	13.07	13.04	16.12	16.24	19.30	16.93
MnO	5.27	8.43	8.84	6.37	10.11	10.38	7.31	7.04	3.99	6.43
Total	99.79	99.98	99.86	99.83	99.29	99.95	99.99	99.42	99.75	99.81
apfu										
Group T										
W6+	1.002	0.999	0.998	1.001	0.995	1.001	1.000	0.996	1.002	1.001
Cr6+	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.000	0.000	0.001
Ta5+	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Nb5+	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.001
Ti4+	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Fe3+	0.000	0.000	0.001	0.000	0.003	0.000	0.000	0.002	0.000	0.000
Total	1.004	1.001	1.000	1.003	1.000	1.002	1.002	1.000	1.004	1.003
Group M										
Fe3+	0.000	0.000	0.002	0.000	0.011	0.000	0.000	0.009	0.000	0.000
V3+	0.001	0.000	0.001	0.000	0.000	0.001	0.000	0.000	0.001	0.000
Al3+	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Fe2+	0.762	0.637	0.619	0.719	0.555	0.551	0.681	0.689	0.817	0.716
Mn2+	0.226	0.361	0.378	0.273	0.434	0.444	0.313	0.302	0.171	0.275
Total	0.988	0.997	1.000	0.992	1.000	0.995	0.994	1.000	0.989	0.992
Endmember 										
Ferberite	76.2	63.7	61.9	71.9	55.4	55.1	68.1	68.9	81.7	71.6
Hubnerite	22.6	36.1	37.8	27.3	43.4	44.4	31.3	30.2	17.1	27.5
Total	98.8	99.7	99.7	99.2	98.9	99.5	99.3	99.1	98.9	99.2

WLFEMPA

Sample Mount	295-424	295-424	295-424	283-506	283-506	283-506	283-506	283-506	283-506	283-506
Row	2	2	2	3	3	3	3	3	3	3
Grain	13	13	14	1	2	2	3	3	4	4
Comment	core	rim	rim				core	rim	core	rim
Analyses	21	22	24	1	2	3	4	5	6	7
wt.%										
WO3	76.64	76.23	76.10	77.10	76.80	76.60	76.41	76.68	76.64	76.56
CrO3	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
Ta2O5	0.05	0.09	0.08	0.07	0.06	0.08	0.08	0.07	0.06	0.07
Nb2O5	0.01	0.01	0.01	0.02	0.01	0.02	0.02	0.03	0.05	0.06
TiO2	0.01	0.00	0.02	0.00	0.03	0.01	0.00	0.00	0.00	0.03
Fe2O3	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00
V2O3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Al2O3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	16.38	16.80	14.45	17.78	17.57	17.21	15.17	14.94	15.81	16.37
MnO	6.69	6.35	8.66	5.64	6.03	6.04	8.35	8.65	7.85	7.01
Total	99.78	99.49	99.32	100.60	100.50	99.96	100.20	100.38	100.40	100.12
apfu										
Group T										
W6+	1.006	1.003	1.003	1.003	1.000	1.003	0.997	0.999	0.999	1.000
Cr6+	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ta5+	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Nb5+	0.000	0.000	0.000	0.001	0.000	0.001	0.001	0.001	0.001	0.001
Ti4+	0.000	0.000	0.001	0.000	0.001	0.001	0.000	0.000	0.000	0.001
Fe3+	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000
Total	1.007	1.005	1.005	1.005	1.002	1.005	1.000	1.001	1.001	1.004
Group M										
Fe3+	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000
V3+	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001
Al3+	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Fe2+	0.693	0.713	0.614	0.747	0.738	0.727	0.639	0.628	0.665	0.690
Mn2+	0.287	0.273	0.373	0.240	0.257	0.259	0.356	0.369	0.334	0.299
Total	0.980	0.986	0.987	0.986	0.995	0.986	1.000	0.997	0.999	0.990
Endmember 										
Ferberite	69.3	71.3	61.4	74.7	73.8	72.7	63.9	62.8	66.5	69.0
Hubnerite	28.7	27.3	37.3	24.0	25.7	25.9	35.6	36.9	33.4	29.9
Total	98.0	98.6	98.7	98.6	99.5	98.6	99.5	99.7	99.9	99.0

WLFEMPA

Sample Mount	283-506 WOLF1	283-506 WOLF1	283-506 WOLF1	283-506 WOLF1	283-506 WOLF1	283-506 WOLF1	283-506 WOLF1	283-506 WOLF1	295-73 WOLF1	295-73 WOLF1
Row	3	3	3	3	3	3	3	3	3	3
Grain	5	5	6	7	7	9	10	10	12	12
Comment	core	rim		core	rim		core	rim	core	rim
Analyses	8	9	10	11	12	15	16	17	18	19
wt.%										
WO3	76.45	76.30	76.41	75.95	75.91	76.31	76.16	76.37	75.91	75.85
CrO3	0.04	0.08	0.04	0.00	0.00	0.05	0.00	0.00	0.04	0.04
Ta2O5	0.09	0.09	0.07	0.06	0.07	0.08	0.06	0.07	0.04	0.07
Nb2O5	0.03	0.03	0.05	0.01	0.00	0.00	0.00	0.00	0.01	0.01
TiO2	0.01	0.00	0.02	0.00	0.00	0.01	0.02	0.00	0.00	0.01
Fe2O3	0.00	0.00	0.00	0.27	0.41	0.00	0.00	0.00	0.17	0.46
V2O3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
Al2O3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	17.39	17.51	15.92	17.30	16.51	18.01	18.41	18.34	16.54	16.20
MnO	6.15	6.00	7.43	6.05	6.75	5.21	4.95	5.00	6.86	7.05
Total	100.16	100.00	99.93	99.64	99.66	99.67	99.60	99.79	99.58	99.69
apfu										
Group T										
W6+	0.999	0.998	1.000	0.997	0.995	1.002	1.001	1.002	0.996	0.993
Cr6+	0.001	0.002	0.001	0.000	0.000	0.002	0.000	0.000	0.001	0.001
Ta5+	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Nb5+	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ti4+	0.000	0.000	0.001	0.000	0.000	0.000	0.001	0.000	0.000	0.000
Fe3+	0.000	0.000	0.000	0.002	0.004	0.000	0.000	0.000	0.001	0.004
Total	1.002	1.002	1.004	1.000	1.000	1.005	1.003	1.003	1.000	1.000
Group M										
Fe3+	0.000	0.000	0.000	0.008	0.012	0.000	0.000	0.000	0.005	0.014
V3+	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Al3+	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Fe2+	0.733	0.739	0.672	0.732	0.699	0.763	0.781	0.777	0.701	0.685
Mn2+	0.263	0.256	0.318	0.260	0.289	0.224	0.213	0.214	0.294	0.302
Total	0.995	0.995	0.990	1.000	1.000	0.987	0.993	0.991	1.000	1.000
Endmember 										
Ferberite	73.3	73.9	67.2	73.2	69.9	76.3	78.1	77.7	70.1	68.5
Hubnerite	26.3	25.6	31.8	25.9	28.9	22.4	21.3	21.4	29.4	30.2
Total	99.5	99.5	99.0	99.2	98.8	98.7	99.3	99.1	99.5	98.6

WLFEMPA

Sample Mount	295-73 WOLF1	295-73 WOLF1	295-83 WOLF1	295-83 WOLF1	295-83 WOLF1	295-83 WOLF1	295-83 WOLF1	295-83 WOLF1	295-83 WOLF1	295-83 WOLF1	295-83 WOLF1	295-83 WOLF1
Row	3	3	4	4	4	4	4	4	4	4	4	4
Grain	13	13	2	2	3	4	5	6	6	8	8	9
Comment	core	rim						core	rim			core
Analyses	20	21	1	2	3	4	5	6	7	9	10	11
wt.%												
WO3	75.84	75.94	76.39	76.36	77.01	76.99	77.13	77.01	76.98	76.72	76.59	76.71
CrO3	0.04	0.01	0.00	0.00	0.03	0.00	0.04	0.01	0.00	0.00	0.00	0.01
Ta2O5	0.08	0.08	0.08	0.06	0.07	0.06	0.06	0.08	0.08	0.07	0.07	0.07
Nb2O5	0.00	0.00	0.02	0.02	0.03	0.00	0.01	0.03	0.01	0.02	0.02	0.01
TiO2	0.02	0.00	0.01	0.00	0.02	0.00	0.00	0.07	0.09	0.01	0.00	0.04
Fe2O3	0.77	0.14	0.00	0.00	0.37	0.00	0.00	0.00	0.02	0.00	0.00	0.00
V2O3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Al2O3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	15.26	20.63	16.58	16.63	16.64	17.74	16.28	16.02	15.84	17.70	17.64	19.31
MnO	7.85	2.83	6.79	6.77	7.00	5.67	7.37	7.76	7.92	5.84	5.88	3.96
Total	99.85	99.61	99.86	99.82	101.16	100.46	100.89	100.99	100.94	100.37	100.19	100.11
apfu												
Group T												
W6+	0.990	0.998	1.001	1.001	0.994	1.004	1.000	0.997	0.997	1.001	1.001	1.003
Cr6+	0.001	0.000	0.000	0.000	0.001	0.000	0.001	0.000	0.000	0.000	0.000	0.000
Ta5+	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Nb5+	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.001	0.000	0.001	0.000	0.000
Ti4+	0.001	0.000	0.000	0.000	0.001	0.000	0.000	0.003	0.004	0.001	0.000	0.002
Fe3+	0.007	0.001	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	1.000	1.000	1.003	1.002	1.000	1.004	1.002	1.002	1.002	1.003	1.002	1.006
Group M												
Fe3+	0.023	0.004	0.000	0.000	0.011	0.000	0.000	0.000	0.001	0.000	0.000	0.000
V3+	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Al3+	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Fe2+	0.643	0.874	0.701	0.704	0.693	0.746	0.681	0.669	0.662	0.745	0.744	0.815
Mn2+	0.335	0.121	0.291	0.290	0.296	0.241	0.312	0.328	0.335	0.249	0.251	0.169
Total	1.000	1.000	0.992	0.993	1.000	0.987	0.993	0.998	0.998	0.994	0.995	0.984
Endmember 												
Ferberite	64.3	87.4	70.1	70.4	69.3	74.6	68.1	66.9	66.2	74.5	74.4	81.5
Hubnerite	33.5	12.1	29.1	29.0	29.6	24.1	31.2	32.8	33.5	24.9	25.1	16.9
Total	97.8	99.6	99.2	99.3	98.9	98.7	99.3	99.7	99.7	99.4	99.4	98.4

WLFEMPA

Sample Mount	295-83 WOLF1	295-83 WOLF1	295-83 WOLF1	295-61 WOLF1	295-61 WOLF1	295-490 WOLF1	295-490 WOLF1	295-490 WOLF1	295-490 WOLF1	295-490 WOLF1	283-510 WOLF1
Row	4	4	4	4	4	4	4	4	4	4	5
Grain	9	10	10	12	13	16	17	18	19	20	1
Comment	rim										
Analyses	12	13	14	17	18	19	20	21	22	23	1
wt.%											
WO3	76.72	77.10	77.24	76.06	76.76	75.96	76.74	76.06	76.15	76.46	74.65
CrO3	0.00	0.07	0.00	0.14	0.00	0.03	0.00	0.00	0.00	0.00	0.00
Ta2O5	0.07	0.06	0.06	0.08	0.06	0.07	0.08	0.07	0.07	0.08	0.09
Nb2O5	0.01	0.00	0.04	0.02	0.02	0.07	0.05	0.03	0.03	0.02	0.06
TiO2	0.05	0.00	0.01	0.04	0.02	0.00	0.00	0.03	0.00	0.00	0.14
Fe2O3	0.00	0.00	0.00	0.00	0.00	0.64	0.66	0.02	0.00	0.00	1.59
V2O3	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.01
Al2O3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	19.36	18.15	15.86	17.92	16.02	14.82	8.63	15.75	17.26	17.08	9.96
MnO	3.81	5.67	7.66	5.27	7.45	8.38	14.69	7.73	6.02	6.42	12.33
Total	100.02	101.05	100.86	99.53	100.34	99.98	100.84	99.68	99.53	100.08	98.82
apfu											
Group T											
W6+	1.004	0.998	1.002	0.998	1.001	0.991	0.992	0.998	1.002	1.000	0.980
Cr6+	0.000	0.002	0.000	0.004	0.000	0.001	0.000	0.000	0.000	0.000	0.000
Ta5+	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Nb5+	0.000	0.000	0.001	0.000	0.001	0.002	0.001	0.001	0.001	0.001	0.001
Ti4+	0.002	0.000	0.000	0.002	0.001	0.000	0.000	0.001	0.000	0.000	0.005
Fe3+	0.000	0.000	0.000	0.000	0.000	0.006	0.006	0.000	0.000	0.000	0.012
Total	1.007	1.001	1.004	1.006	1.003	1.000	1.000	1.001	1.003	1.002	1.000
Group M											
Fe3+	0.000	0.000	0.000	0.000	0.000	0.019	0.019	0.001	0.000	0.000	0.049
V3+	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Al3+	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Fe2+	0.818	0.758	0.664	0.759	0.674	0.624	0.360	0.667	0.733	0.721	0.422
Mn2+	0.163	0.240	0.325	0.226	0.318	0.357	0.621	0.332	0.259	0.274	0.529
Total	0.981	0.998	0.989	0.985	0.992	1.000	1.000	0.999	0.992	0.996	1.000
Endmember 											
Ferberite	81.8	75.8	66.4	75.9	67.4	62.4	36.0	66.6	73.2	72.1	42.2
Hubnerite	16.3	24.0	32.5	22.6	31.8	35.7	62.1	33.2	25.9	27.4	52.9
Total	98.1	99.8	98.9	98.5	99.2	98.1	98.1	99.8	99.1	99.5	95.1

WLFEMPA

Sample Mount	283-510 WOLF1	283-510 WOLF1	283-510 WOLF1	283-510 WOLF1	283-510 WOLF1	283-510 WOLF1	283-510 WOLF1	283-510 WOLF1	283-510 WOLF1	283-510 WOLF1
Row	5	5	5	5	5	5	5	5	5	5
Grain	2	2	3	3	4	5	6	7	8	9
Comment Analyses	2	3	4	5	6	7	8	9	10	11
wt.%										
WO3	76.09	76.28	76.84	77.18	76.88	77.31	76.94	76.66	76.61	76.74
CrO3	0.01	0.00	0.00	0.03	0.05	0.03	0.00	0.08	0.00	0.00
Ta2O5	0.07	0.05	0.07	0.06	0.06	0.08	0.07	0.07	0.07	0.08
Nb2O5	0.02	0.05	0.00	0.03	0.03	0.02	0.03	0.05	0.04	0.02
TiO2	0.01	0.00	0.03	0.02	0.00	0.00	0.03	0.00	0.00	0.00
Fe2O3	1.02	0.04	0.00	0.20	0.00	0.00	0.00	0.10	0.17	0.00
V2O3	0.00	0.00	0.00	0.01	0.00	0.00	0.02	0.00	0.00	0.00
Al2O3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	12.89	14.00	15.80	11.78	15.98	10.78	15.00	11.10	11.30	13.97
MnO	10.13	9.52	7.84	11.93	7.72	12.95	8.68	12.53	12.23	9.70
Total	100.25	99.94	100.57	101.22	100.73	101.16	100.76	100.57	100.42	100.51
apfu										
Group T										
W6+	0.989	0.998	1.000	0.996	0.998	0.999	0.999	0.995	0.997	0.999
Cr6+	0.000	0.000	0.000	0.001	0.002	0.001	0.000	0.002	0.000	0.000
Ta5+	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Nb5+	0.001	0.001	0.000	0.001	0.001	0.000	0.001	0.001	0.001	0.001
Ti4+	0.000	0.000	0.001	0.001	0.000	0.000	0.001	0.000	0.000	0.000
Fe3+	0.009	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.001	0.000
Total	1.000	1.000	1.002	1.000	1.001	1.002	1.002	1.000	1.000	1.001
Group M										
Fe3+	0.029	0.002	0.000	0.006	0.000	0.000	0.000	0.003	0.005	0.000
V3+	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000
Al3+	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Fe2+	0.541	0.591	0.663	0.490	0.670	0.449	0.628	0.465	0.474	0.587
Mn2+	0.430	0.407	0.333	0.503	0.328	0.547	0.368	0.532	0.520	0.412
Total	1.000	1.000	0.996	1.000	0.997	0.997	0.997	1.000	1.000	0.999
Endmember 										
Ferberite	54.1	59.1	66.3	49.0	66.9	44.9	62.8	46.4	47.4	58.6
Hubnerite	43.0	40.7	33.3	50.3	32.8	54.7	36.8	53.2	52.0	41.2
Total	97.1	99.8	99.6	99.4	99.7	99.6	99.6	99.5	99.5	99.9

WLFEMPA

Sample Mount	295-449	295-449	295-449	295-510	295-510	283-493	283-493	283-493	283-493	283-493
Row	WOLF1	WOLF1	WOLF1	WOLF1	WOLF1	WOLF1	WOLF1	WOLF1	WOLF1	WOLF1
Grain	5	5	5	5	5	6	6	6	6	6
Comment	10	10	11	16	17	2	3	3	4	5
Analyses	12	13	14	18	19	2	3	4	5	6
wt.%										
WO3	76.12	76.26	76.72	76.58	76.07	76.07	75.97	75.99	75.02	76.21
CrO3	0.01	0.00	0.05	0.01	0.00	0.08	0.08	0.00	0.09	0.00
Ta2O5	0.08	0.08	0.07	0.09	0.07	0.10	0.08	0.08	0.08	0.08
Nb2O5	0.36	0.41	0.03	0.13	0.11	0.01	0.02	0.01	0.00	0.02
TiO2	0.03	0.02	0.01	0.04	0.00	0.02	0.01	0.00	0.00	0.00
Fe2O3	0.00	0.00	0.00	1.08	0.00	0.00	0.28	0.39	2.58	0.42
V2O3	0.00	0.01	0.00	0.01	0.02	0.00	0.00	0.02	0.00	0.01
Al2O3	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.13	0.00
FeO	21.37	21.40	19.67	10.06	21.41	16.07	15.16	15.31	14.77	14.80
MnO	1.92	1.91	3.95	13.02	1.78	7.38	8.22	7.97	7.22	8.54
Total	99.90	100.08	100.51	101.09	99.46	99.72	99.82	99.77	99.89	100.07
apfu										
Group T										
W6+	0.996	0.996	0.999	0.985	1.001	0.997	0.994	0.995	0.970	0.995
Cr6+	0.000	0.000	0.002	0.000	0.000	0.002	0.002	0.000	0.003	0.000
Ta5+	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Nb5+	0.008	0.009	0.001	0.003	0.003	0.000	0.000	0.000	0.000	0.001
Ti4+	0.001	0.001	0.000	0.002	0.000	0.001	0.000	0.000	0.000	0.000
Fe3+	0.000	0.000	0.000	0.009	0.000	0.000	0.002	0.004	0.026	0.004
Total	1.007	1.008	1.002	1.000	1.005	1.002	1.000	1.000	1.000	1.000
Group M										
Fe3+	0.000	0.000	0.000	0.031	0.000	0.000	0.008	0.011	0.071	0.012
V3+	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.001	0.000	0.001
Al3+	0.000	0.000	0.000	0.004	0.000	0.000	0.000	0.000	0.007	0.000
Fe2+	0.903	0.902	0.826	0.418	0.909	0.680	0.640	0.647	0.617	0.623
Mn2+	0.082	0.081	0.168	0.547	0.077	0.316	0.352	0.341	0.305	0.364
Total	0.985	0.984	0.994	1.000	0.987	0.996	1.000	1.000	1.000	1.000
Endmember 										
Ferberite	90.3	90.2	82.6	41.8	90.9	68.0	64.0	64.7	61.6	62.3
Hubnerite	8.2	8.1	16.8	54.7	7.7	31.6	35.2	34.1	30.5	36.4
Total	98.5	98.3	99.4	96.5	98.6	99.6	99.2	98.8	92.1	98.7

WLFEMPA

Sample Mount	283-493	283-493	283-493	283-493	283-493	295-85	295-85	295-85	295-85	295-85	295-85
Row	WOLF1	WOLF1	WOLF1	WOLF1	WOLF1	WOLF1	WOLF1	WOLF1	WOLF1	WOLF1	WOLF1
Grain	6	6	6	6	6	6	6	6	6	6	6
Comment						core	rim	core	rim		
Analyses	7	8	9	10	11	12	13	14	15	16	17
wt.%											
WO3	76.07	75.85	75.64	75.70	75.58	75.64	75.52	75.94	75.78	75.60	75.62
CrO3	0.00	0.06	0.00	0.03	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Ta2O5	0.08	0.08	0.07	0.06	0.07	0.09	0.08	0.09	0.09	0.07	0.08
Nb2O5	0.00	0.00	0.02	0.01	0.03	0.05	0.06	0.04	0.04	0.05	0.00
TiO2	0.02	0.01	0.00	0.00	0.00	0.04	0.06	0.03	0.00	0.00	0.07
Fe2O3	0.43	0.00	0.94	0.66	0.85	0.33	0.69	0.28	1.00	0.90	0.45
V2O3	0.01	0.01	0.00	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00
Al2O3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	13.78	18.40	12.41	13.86	15.24	19.13	19.08	15.56	14.78	14.85	21.30
MnO	9.49	5.07	10.49	9.21	7.72	4.12	3.98	7.78	8.18	8.10	1.92
Total	99.87	99.48	99.56	99.54	99.50	99.42	99.47	99.72	99.87	99.57	99.43
apfu											
Group T											
W6+	0.995	0.997	0.990	0.992	0.991	0.994	0.991	0.995	0.989	0.990	0.994
Cr6+	0.000	0.002	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ta5+	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Nb5+	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.000
Ti4+	0.001	0.000	0.000	0.000	0.000	0.002	0.002	0.001	0.000	0.000	0.003
Fe3+	0.004	0.000	0.009	0.006	0.008	0.002	0.005	0.002	0.009	0.008	0.003
Total	1.000	1.001	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Group M											
Fe3+	0.013	0.000	0.027	0.019	0.024	0.011	0.021	0.009	0.029	0.026	0.014
V3+	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.000	0.000	0.000	0.000
Al3+	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Fe2+	0.582	0.781	0.524	0.586	0.645	0.812	0.808	0.658	0.622	0.627	0.903
Mn2+	0.406	0.218	0.449	0.395	0.331	0.177	0.171	0.333	0.349	0.347	0.083
Total	1.000	0.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Endmember 											
Ferberite	58.2	77.9	52.4	58.6	64.4	81.2	80.8	65.8	62.2	62.7	90.3
Hubnerite	40.5	21.8	44.9	39.5	33.0	17.7	17.1	33.3	34.9	34.7	8.2
Total	98.7	99.7	97.3	98.1	97.5	98.9	97.8	99.1	97.1	97.4	98.6

WLFEMPA

Sample Mount	295-85 WOLF1	295-85 WOLF1	295-463 WOLF1	295-463 WOLF1	295-463 WOLF1	295-463 WOLF1	295-463 WOLF1	295-463 WOLF1	295-463 WOLF1
Row	6	6	7	7	7	7	7	7	7
Grain	16	17	1	2	3	3	4	4	5
Comment							core	rim	
Analyses	18	19	1	2	4	5	6	7	8
wt.%									
WO3	75.42	76.00	77.13	77.00	77.13	77.24	76.56	76.60	76.80
CrO3	0.04	0.02	0.02	0.10	0.01	0.04	0.00	0.06	0.00
Ta2O5	0.09	0.08	0.07	0.06	0.07	0.06	0.07	0.07	0.06
Nb2O5	0.05	0.03	0.00	0.10	0.03	0.06	0.14	0.12	0.02
TiO2	0.01	0.00	0.00	0.00	0.06	0.00	0.13	0.11	0.04
Fe2O3	0.46	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00
V2O3	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.01	0.00
Al2O3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	20.38	13.81	21.94	21.51	20.89	21.00	21.53	21.37	20.73
MnO	2.80	9.48	1.45	1.98	2.51	2.51	1.89	2.05	2.78
Total	99.26	99.81	100.61	100.74	100.71	100.90	100.32	100.37	100.42
apfu									
Group T									
W6+	0.992	0.994	1.004	0.999	1.003	1.002	0.998	0.997	1.001
Cr6+	0.001	0.001	0.001	0.003	0.000	0.001	0.000	0.002	0.000
Ta5+	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Nb5+	0.001	0.001	0.000	0.002	0.001	0.001	0.003	0.003	0.000
Ti4+	0.000	0.000	0.000	0.000	0.002	0.000	0.005	0.004	0.002
Fe3+	0.004	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	1.000	1.000	1.006	1.006	1.007	1.005	1.007	1.007	1.004
Group M									
Fe3+	0.014	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000
V3+	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Al3+	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Fe2+	0.866	0.583	0.922	0.901	0.876	0.879	0.906	0.898	0.872
Mn2+	0.121	0.406	0.062	0.084	0.107	0.106	0.081	0.087	0.119
Total	1.000	1.000	0.984	0.985	0.983	0.985	0.986	0.985	0.990
Endmember 									
Ferberite	86.5	58.3	92.2	90.1	87.6	87.9	90.6	89.8	87.2
Hubnerite	12.0	40.6	6.2	8.4	10.7	10.6	8.1	8.7	11.8
Total	98.6	98.9	98.4	98.5	98.3	98.5	98.6	98.5	99.0