Table S1. Average compositions of pentlandite from CCI by EPMA in wt.% (n≥50)

Sample GNFW 80-125	**S**	**Co**	**Ni**	**Fe**	**Cu**	**Zn**	**As**	**Total**
Average	33.47	1.29	35.33	29.90	0.01	0.04	0.02	100.06
Std.Dev.	0.07	0.52	0.70	0.68	0.03	0.05	0.01	0.27
Sample ANFW 80-125								
Average	33.83	1.31	35.37	29.47	0.01	0.04	0.02	100.04
Std.Dev.	0.13	0.40	0.81	0.70	0.01	0.05	0.01	0.38
Sample OLFW 125-180								
Average	33.69	1.31	31.48	32.99	0.02	0.04	0.02	99.54
Std.Dev.	0.06	0.51	1.63	1.47	0.11	0.04	0.01	0.29
Sample PXFW 80-125								
Average	33.45	1.06	35.24	29.95	0.01	0.04	0.01	99.76
Std.Dev.	0.08	0.57	1.83	1.70	0.03	0.05	0.01	0.27
Sample FEMC 80-125								
Average	33.63	0.87	35.46	29.43	0.01	0.03	0.02	99.46
Std.Dev.	0.27	0.61	0.82	0.92	0.03	0.05	0.01	0.32
Sample FWMC 80-125								
Average	33.68	1.17	35.15	29.56	0.02	0.07	0.02	99.66
Std.Dev.	0.09	0.34	1.11	1.07	0.03	0.18	0.01	0.27

Table S2. Average compositions of pyrrhotite from CCI by EPMA in wt.% (n≥50)

Sample GNFW 80-125	**S**	**Co**	**Ni**	**Fe**	**Cu**	**Zn**	**As**	**Total**
Average	39.08	ND	0.49	59.32	0.03	0.04	0.01	98.97
Std.Dev.	0.30	0.01	0.11	0.43	0.04	0.05	0.01	0.39
Sample ANFW 80-125								
Average	38.78	ND	0.36	59.44	0.03	0.05	0.02	98.68
Std.Dev.	1.06	0.01	0.19	1.19	0.04	0.05	0.01	0.62
Sample OLFW 125-180								
Average	38.31	ND	0.17	59.84	0.04	0.05	0.02	98.42
Std.Dev.	0.83	ND	0.17	1.04	0.04	0.07	0.01	0.44
Sample PXFW 80-125								
Average	38.63	ND	0.28	59.59	0.04	0.03	0.01	98.59
Std.Dev.	0.37	ND	0.11	0.38	0.04	0.04	0.01	0.31
Sample FEMC 80-125								
Average	39.07	ND	0.55	58.67	0.03	0.04	0.01	98.38
Std.Dev.	0.21	ND	0.21	0.81	0.05	0.05	0.01	0.69
Sample FWMC 80-125								
Average	38.76	ND	0.37	59.39	0.03	0.04	0.01	98.60
Std.Dev.	0.61	ND	0.16	0.87	0.03	0.05	0.01	0.47

Table S3. Average compositions of pyrite from CCI by EPMA in wt.% (n≥50)

Sample GNFW 80-125	**S**	**Co**	**Ni**	**Fe**	**Cu**	**Zn**	**As**	**Total**
Average	53.49	0.31	0.20	46.25	0.03	0.03	0.01	100.32
Std.Dev.	0.22	0.64	0.38	0.74	0.04	0.04	0.01	0.43
Sample ANFW 80-125								
Average	53.94	0.10	0.14	45.79	0.04	0.04	0.01	100.05
Std.Dev.	0.46	0.29	0.30	0.65	0.04	0.05	0.01	0.82
Sample OLFW 125-180								
Average	53.00	0.18	0.25	46.21	0.04	0.03	0.01	99.71
Std.Dev.	0.41	0.62	0.20	0.67	0.05	0.04	0.01	0.53
Sample PXFW 80-125								
Average	53.50	0.56	0.10	45.87	0.13	0.05	0.01	100.22
Std.Dev.	0.47	0.58	0.18	0.61	0.76	0.06	0.01	0.51
Sample FEMC 80-125								
Average	53.46	0.40	0.08	46.13	0.03	0.03	0.02	100.14
Std.Dev.	0.17	0.37	0.14	0.43	0.03	0.05	0.02	0.35
Sample FWMC 80-125								
Average	53.62	0.29	0.19	45.47	0.04	0.04	0.01	99.67
Std.Dev.	0.53	0.47	0.32	0.68	0.04	0.07	0.01	1.00

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Table 4. Selected LA-ICP-MS sulfide analyses on day by day basis by CCI

day	**sample**	**Cp**	**Po**	**Ptl**	**Py**	**Totals**
1	FEMC		35	35	20	90
2	FEMC				17	17
2	FWMC	8	35		35	78
3	OLFW	1	10		8	19
3	ANFW	5	10		10	25
3	GNFW		10	10	10	30
3	FWMC			15		15
4	FWMC			21		21
4	OLFW			10		10
4	ANFW			10		10
4	FEMC	11				11
Totals	by mineral	25	100	101	100	326
	FEMC	**FWMC**	**OLFW**	**ANFW**	**GNFW**	
by sample	118	114	29	35	30	326

Table S5. Quality control data using standard po727 (ppm) from CCI data

Run number		Ru 99	Ru 101	Rh 103	Pd 105	Pd 106	Pd 108	Pt 194	Pt 195	Au 197
no03e03	03	40.6	41.5	43.2	41.1	41.2	41.1	33.8	32.5	42.6
no03c03	03	42.1	41.3	45.6	46.6	45.6	46.2	36.7	37.2	48.4
no03d03	03	42.6	41.1	44.3	42.4	43.1	43.0	34.3	34.7	42.6
no03b03	03	41.3	42.6	43.9	45.2	46.3	45.2	34.3	34.9	39.9
no03f03	03	44.4	43.7	46.1	42.8	43.2	43.0	34.7	35.5	43.8
no03a03	03	41.1	41.4	43.2	42.9	43.2	42.8	35.1	34.7	43.8
no04a03	03	40.9	42.0	42.7	41.9	42.5	41.8	34.4	34.0	45.6
no04c03	03	38.0	37.1	42.4	40.6	41.7	41.6	34.1	32.8	37.1
no04b03	03	41.0	40.4	47.5	48.2	48.0	48.2	38.5	38.3	45.0
no04d03	03	39.7	40.2	47.6	45.0	45.9	45.7	37.5	36.8	48.5
no04f03	03	41.9	45.7	43.2	45.3	47.0	48.1	39.9	39.0	56.3
no04e03	03	42.9	39.5	48.2	47.2	47.1	47.4	37.7	37.7	41.9
no05a03	03	46.4	44.5	49.0	43.8	43.8	44.4	35.5	35.9	42.5
no05c03	03	42.3	41.3	45.4	45.2	47.0	46.1	36.4	37.1	49.2
no05d03	03	42.6	41.0	44.6	44.7	46.1	45.3	35.2	35.9	42.2
no05e03	03	42.7	42.3	45.3	41.7	43.0	43.1	35.1	35.6	40.9
no05f03	03	42.7	42.1	44.8	40.4	41.8	40.1	32.0	32.8	38.2
no05g03	03	45.1	42.8	46.7	41.9	43.2	42.1	34.5	34.3	44.1
no06a03	03	40.1	41.6	43.6	39.3	40.6	39.2	32.4	32.8	42.1
no06b03	03	42.3	42.6	47.3	42.8	44.4	43.1	34.7	35.2	42.8
no06c03	03	43.4	42.3	46.4	40.6	42.2	40.7	34.8	35.6	42.4
no06d03	03	42.7	43.9	46.1	37.5	39.4	39.4	32.3	31.9	42.7
no06d14	14	35.3	36.8	38.8	34.3	34.3	34.6	28.6	28.5	34.8
no06e03	03	42.6	42.4	45.7	41.6	40.5	42.0	33.7	33.7	44.6
no06e18	18	43.4	42.7	46.2	40.0	41.9	41.6	34.4	33.9	42.8
no06f05	06	46.5	47.5	49.2	41.1	42.3	42.2	34.6	34.3	43.2
Average		42.10	41.90	45.30	42.50	43.30	43.00	34.80	34.80	43.40
Std dev		2.3	2.2	2.3	3.0	2.9	3.0	2.2	2.2	4.1
Rsd		5.5%	5.2%	5.0%	7.0%	6.7%	7.0%	6.3%	6.4%	9.4%
po727 B2 SRM		**36.39**	**36.26**	**41.62**	**43.05**	**43.82**	**43.82**	**35.55**	**35.37**	**45.79**
Std dev po727		**0.32**	**0.35**	**0.34**	**0.44**	**0.21**	**0.24**	**0.93**	**0.75**	**2.35**
Rsd po 727		**1%**	**1%**	**1%**	**1%**	**0%**	**1%**	**3%**	**2%**	**5%**
727/average		86%	87%	92%	101%	101%	102%	102%	102%	106%

Table S6. Daily levels of detection for the trace elements (ppm) on standards from CCI data

	Ru 99	Ru 101	Rh 103	Pd 105	Pd 106	Pd 108	Pt 194	Pt 195	Au 197
Run LOD	0.030	0.020	0.008	0.030	0.165	0.096	0.005	0.005	0.005
Run LOD	0.038	0.025	0.008	0.027	0.127	0.073	0.004	0.003	0.004
Run LOD	0.034	0.023	0.009	0.032	0.171	0.100	0.005	0.004	0.004
Run LOD	0.024	0.014	0.005	0.018	0.078	0.045	0.003	0.002	0.002
Run LOD	0.038	0.022	0.009	0.032	0.166	0.096	0.006	0.004	0.004
Run LOD	0.041	0.023	0.008	0.032	0.153	0.090	0.005	0.003	0.004
Run LOD	0.015	0.004	0.003	0.011	0.050	0.031	0.000	0.002	0.002
Run LOD	0.013	0.010	0.003	0.012	0.053	0.031	0.002	0.002	0.002
AVG Nov-03	**0.029**	**0.018**	**0.007**	**0.024**	**0.120**	**0.070**	**0.004**	**0.003**	**0.004**
Run LOD	0.052	0.031	0.010	0.034	0.132	0.078	0.005	0.005	0.005
Run LOD	0.049	0.029	0.010	0.031	0.125	0.072	0.004	0.004	0.005
Run LOD	0.029	0.015	0.005	0.014	0.054	0.032	0.002	0.002	0.003
Run LOD	0.029	0.015	0.005	0.014	0.056	0.033	0.003	0.003	0.003
Run LOD	0.028	0.017	0.006	0.018	0.065	0.038	0.003	0.002	0.003
Run LOD	0.037	0.028	0.008	0.022	0.078	0.044	0.004	0.005	0.004
AVG Nov-04	**0.037**	**0.022**	**0.007**	**0.022**	**0.085**	**0.050**	**0.004**	**0.003**	**0.004**
Run LOD	0.020	0.012	0.003	0.010	0.054	0.032	0.003	0.002	0.003
Run LOD	0.018	0.009	0.002	0.006	0.037	0.021	0.003	0.002	0.002
Run LOD	0.030	0.017	0.005	0.017	0.072	0.041	0.004	0.004	0.005
Run LOD	0.027	0.016	0.004	0.013	0.059	0.033	0.004	0.003	0.004
Run LOD	0.031	0.014	0.005	0.016	0.063	0.035	0.004	0.004	0.004
Run LOD	0.034	0.018	0.005	0.017	0.065	0.037	0.003	0.003	0.004
Run LOD	0.044	0.023	0.008	0.027	0.090	0.052	0.005	0.004	0.006
AVG Nov-05	**0.029**	**0.015**	**0.005**	**0.015**	**0.063**	**0.036**	**0.004**	**0.003**	**0.004**
Run LOD	0.022	0.017	0.004	0.018	0.049	0.030	0.003	0.003	0.003
Run LOD	0.022	0.017	0.004	0.017	0.053	0.029	0.003	0.003	0.003
Run LOD	0.028	0.016	0.005	0.021	0.061	0.036	0.005	0.003	0.003
Run LOD	0.031	0.014	0.005	0.017	0.055	0.032	0.003	0.003	0.004
Run LOD	0.029	0.012	0.006	0.019	0.049	0.031	0.003	0.002	0.003
Run LOD	0.017	0.011	0.003	0.009	0.027	0.017	0.001	0.001	0.001
AVG Nov-06	**0.025**	**0.015**	**0.004**	**0.017**	**0.049**	**0.029**	**0.003**	**0.003**	**0.003**

Table S7. LA-ICP-MS analyses for sample FWMC (ppm)							
Run number		**Ru avg.**	**Rh**	**Pd avg.**	**Pt avg.**	**Au**	**Comments**
no04b04	04	0.39	0.46	0.27	0.03	0.04	1=3po
no04b05	05	0.28	0.04	0.28	0.01	0.01	2=5po
no04b06	06	0.32	0.04	0.06	0.01	ND	3=4po
no04b07	07	0.13	0.86	0.05	0.02	0.01	4=2po
no04b08	08	1.05	7.72	0.06	0.03	0.03	5=6po
no04b09	09	0.23	0.98	0.06	0.04	0.02	6=7po
no04b10	10	0.21	1.09	0.03	ND	0.05	7=8po
no04b11	11	0.60	0.18	ND	0.03	0.04	8po new
no04b12	12	0.26	1.17	0.04	ND	0.01	9po
no04b13	13	0.27	1.14	0.05	0.01	0.03	10po
no04b14	14	0.32	0.04	0.16	0.02	0.02	11=30po
no04b15	15	0.13	1.80	ND	0.01	0.02	12=16po
no04b16	16	0.34	1.02	0.05	0.01	0.02	13po
no04b17	17	1.58	9.76	0.23	0.01	ND	14po
no04b18	18	0.42	5.07	ND	0.01	0.02	15po
no04c04	04	0.45	0.08	0.08	0.03	ND	16=17po
no04c05	05	1.46	0.06	0.05	0.02	0.05	17=18po sml
no04c06	06	1.09	1.27	0.24	0.21	ND	18 new po
no04c07	07	1.11	ND	0.29	0.02	0.01	19po
no04c08	08	0.33	4.71	0.06	0.03	0.01	20po
no04c09	09	1.83	2.25	0.10	0.02	0.03	21po
no04c10	10	0.53	1.96	0.01	0.01	ND	22po
no04c11	11	1.23	1.65	0.19	ND	0.03	23po
no04c12	12	0.37	2.54	0.01	0.01	0.03	24po
no04c13	13	0.23	0.83	ND	0.02	0.04	25po
no04c14	14	0.43	3.01	0.06	0.01	ND	26po
no04c15	15	0.34	1.15	ND	ND	0.08	27po
no04c16	16	0.30	1.20	ND	0.01	0.02	28po
no04c17	17	1.09	0.32	0.03	0.02	0.05	29po
no04c18	18	0.53	0.36	0.16	0.01	0.05	30=31po
no04d04	04	0.35	0.08	0.04	0.02	0.02	31=32po
no04d05	05	1.26	3.21	0.03	0.15	0.01	32 new po
no04d06	06	0.77	1.87	0.02	ND	0.02	33po
no04d07	07	0.39	2.25	ND	ND	ND	34po
no04d08	08	0.77	2.44	ND	0.01	0.05	35=44po
Averages po n=35		**0.61**	**1.79**	**0.08**	**0.02**	**0.02**	
Std Dev		**0.45**	**2.16**	**0.09**	**0.04**	**0.02**	
Max		**1.83**	**9.76**	**0.29**	**0.21**	**0.08**	
Min		**0.13**	**ND**	**ND**	**ND**	**ND**	
Run number		**Ru avg.**	**Rh**	**Pd avg.**	**Pt avg.**	**Au**	**Comments**

no04d09	09	ND	0.03	0.02	0.01	0.05	1py
no04d10	10	1.52	21.14	0.02	0.23	0.06	2py
no04d11	11	0.02	0.02	0.05	0.01	0.05	3py
no04d12	12	0.07	0.19	0.32	0.01	0.03	4py
no04d13	13	0.46	3.91	20.10	10.16	0.06	5py
no04d14	14	0.01	0.02	0.05	0.02	0.04	6py
no04d15	15	0.03	0.02	0.02	0.01	0.03	7py sml
no04d16	16	0.37	0.25	0.49	0.02	0.07	8=9py
no04d17	17	0.08	ND	0.93	0.02	0.03	9=8py
no04d18	18	0.02	ND	0.01	0.01	0.03	10py
no04e04	04	0.02	ND	ND	0.01	ND	11py
no04e05	05	0.01	0.05	26.13	0.01	0.04	12py
no04e06	06	0.01	0.02	0.35	0.06	0.05	13py
no04e07	07	0.05	ND	0.19	0.19	0.05	14py
no04e08	08	ND	0.02	0.05	ND	0.04	15py
no04e09	09	0.02	0.07	0.04	0.02	0.02	16py sml
no04e10	10	0.06	0.04	0.09	0.01	0.03	17py
no04e11	11	0.37	0.21	0.04	0.02	0.03	18py
no04e12	12	ND	ND	0.06	0.01	0.03	19py
no04e13	13	0.24	0.58	0.12	0.01	0.02	20py
no04e14	14	0.53	ND	0.17	0.03	0.04	21py
no04e15	15	0.28	0.01	0.16	0.01	0.05	22py
no04e16	16	0.15	ND	0.07	0.01	0.02	23py
no04e17	17	1.39	1.84	0.83	0.02	0.05	24py
no04f04	04	0.04	0.06	0.05	0.02	0.06	26=27py
no04f05	05	0.77	5.29	0.13	0.02	0.05	27=28py
no04f07	07	0.89	3.80	0.05	0.01	0.04	29=30py
no04f08	08	0.38	0.19	2.16	0.07	0.04	30=31py
no04f09	09	1.04	1.93	0.22	0.02	0.12	31=32py
no04f10	10	2.93	74.65	0.03	0.08	0.04	32=37py
no04f11	11	0.06	0.12	1.40	0.02	0.02	33=38py
no04f12	12	0.30	0.03	0.09	0.01	0.04	34=39py
no04e18	18	10.43	191.80	0.07	0.23	0.02	25py
no04f06	06	1.16	93.50	0.05	0.66	0.01	28=29py
no04f13	13	4.67	197.25	0.03	0.12	0.01	35=40py
no06f03	04	21.79	359.29	0.47	0.98	0.04	25py repeat
no06f04	05	1.65	141.46	0.13	0.43	0.03	29py repeat
no06f02	03	17.16	392.52	0.34	0.19	0.06	40py repeat
Averages py n=38		**1.82**	**39.22**	**1.46**	**0.36**	**0.04**	
Std Dev		**4.64**	**95.19**	**5.24**	**1.65**	**0.02**	
Max		**21.79**	**392.52**	**26.13**	**10.16**	**0.12**	
Min		**ND**	**ND**	**ND**	**ND**	**ND**	
Run number		**Ru avg.**	**Rh**	**Pd avg.**	**Pt avg.**	**Au**	**Comments**

no04f14	14	0.23			ND	0.01	1cp
no04f15	15	0.28			ND	0.01	2cp
no04f16	16	0.26			0.02	0.04	3cp
no04f17	17	0.27			ND	0.02	4cp
no04f18	18	0.25			0.01	ND	5cp
no04g02	04	0.25			ND	0.04	6cp
no04g03	05	0.30			0.01	0.01	7cp
no04g04	06	0.48			0.01	0.05	8cp
Averages cp n=8		**0.29**			**0.01**	**0.02**	
Std Dev		**0.08**			**0.01**	**0.02**	
Max		**0.48**			**0.02**	**0.05**	
Min		**0.23**			**ND**	**ND**	
Run number		**Ru avg.**	**Rh**	**Pd avg.**	**Pt avg.**	**Au**	**Comments**
no05g04	04	1.45	4.83	708.94	ND	0.03	1pn
no05g05	05	0.81	ND	544.87	0.03	0.01	2=3pn
no05g06	06	1.23	1.40	123.26	0.72	ND	3=4pn
no05g07	07	1.00	1.17	377.80	2.35	0.01	4=6pn
no05g08	08	1.29	ND	462.94	0.04	0.01	5=8pn
no05g09	09	0.86	ND	43.11	0.01	0.01	6=10pn
no05g10	10	1.28	ND	584.27	0.33	ND	7=12pn
no05g11	11	0.92	0.55	768.45	0.01	0.01	8=13pn
no05g12	12	1.10	ND	94.25	0.02	0.02	9=15pn
no05g13	13	0.95	0.05	967.86	ND	0.02	10=17pn
no05g14	14	1.20	7.36	88.31	ND	0.01	11=19pn
no05g15	15	1.13	0.73	425.53	2.12	0.04	12=52pn
no05g16	16	0.91	0.03	1176.01	ND	0.01	13=49pn
no05g17	17	0.96	ND	427.92	0.01	0.01	14=48pn
no05g18	18	1.07	ND	139.62	0.02	0.02	15=47pn
no06a04	04	2.19	33.57	273.60	0.01	0.02	16=50pn
no06a05	05	1.04	ND	365.41	0.02	ND	17=51pn
no06a06	06	0.81	1.90	370.47	0.01	0.01	18=44pn
no06a07	07	1.10	1.55	158.10	0.02	0.01	19=46pn
no06a08	08	1.33	1.07	606.08	0.01	0.01	20=43pn sml
no06a09	09	1.08	0.61	110.37	0.44	ND	21=42pn sml
no06a10	10	1.33	1.90	385.61	0.01	0.03	22=41pn
no06a11	11	0.98	ND	85.46	0.01	0.01	23=35pn sml
no06a12	12	1.14	0.04	847.71	0.02	ND	24=34pn sml
no06a13	13	1.25	0.19	43.21	0.01	ND	25=36pn
no06a14	14	1.66	4.79	98.78	0.01	0.01	26=40pn sml
no06a15	15	1.40	3.46	139.16	0.02	ND	27=39pn
no06a16	16	1.22	0.02	210.63	0.17	ND	28=38pn
no06a17	17	2.17	21.87	470.07	ND	0.01	29pn new
no06a18	18	0.93	0.04	59.16	0.04	0.03	30=37pn

no06b04	04	2.14	25.10	542.16	0.02	0.01	31=30pn sml
no06b05	05	1.07	0.22	212.40	0.01	0.01	32=28pn
no06b06	06	1.18	ND	782.57	2.73	0.04	33=29pn
no06b07	07	1.14	0.98	74.17	ND	0.07	34=25pn
no06b08	08	1.37	28.73	142.46	0.01	0.11	35=23pn sml
no06b09	09	1.56	1.35	862.11	0.02	0.01	36=22pn sml
Averages pn n=36		**1.23**	**3.99**	**382.58**	**0.26**	**0.02**	
Std Dev		**0.35**	**8.65**	**302.44**	**0.67**	**0.02**	
Max		**2.19**	**33.57**	**1176.01**	**2.73**	**0.11**	
Min		**0.81**	**ND**	**43.11**	**ND**	**ND**	

*All analyses shown as ND (for not detected), were given the arbitrary value of ND2 ppm to calculate averages, and standard deviations.

Table S8. LA-ICP-MS analyses for sample FEMC (ppm) from CCI

Run number		Ru avg.	Rh	Pd avg.	Pt avg.	Au	Comments
no03a04	04	0.93	ND*	177.64	ND	ND	1pn
no03a05	05	1.10	ND	72.65	0.01	0.01	2pn
no03a06	06	0.92	ND	69.27	ND	0.01	3pn
no03a07	07	1.10	ND	1166.19	0.82	ND	4pn
no03a08	08	1.10	ND	131.40	0.02	0.01	5pn
no03a09	09	1.09	5.91	592.69	8.90	ND	6pn
no03a10	10	1.02	ND	167.98	0.01	ND	7pn
no03a11	11	0.87	ND	673.45	0.01	ND	8=9pn
no03a12	12	1.09	ND	115.31	ND	ND	9=10pn
no03a13	13	1.26	ND	326.76	0.06	ND	10=11pn
no03a14	14	1.44	ND	407.93	ND	ND	11=12pn
no03a15	15	1.11	0.44	70.71	0.14	ND	12=13pn
no03a16	16	0.98	ND	222.48	0.24	ND	13=14pn
no03a17	17	1.31	ND	211.34	0.07	ND	14=15pn
no03a18	18	1.28	ND	144.43	ND	ND	15=16pn
no03b04	04	1.30	ND	25.44	ND	ND	16=17pn
no03b05	05	1.11	ND	121.39	ND	ND	17=18pn
no03b06	06	1.26	ND	91.55	0.01	0.02	18=19pn
no03b07	07	1.11	4.12	261.24	0.01	ND	19=20pn
no03b08	08	1.22	ND	79.42	0.01	0.01	20=21pn
no03b09	09	1.20	ND	106.06	ND	ND	21=22pn
no03b10	10	1.10	ND	464.66	0.03	ND	22=23pn
no03b11	11	1.03	0.49	99.83	0.92	ND	23=24pn
no03b12	12	1.23	ND	45.22	ND	ND	24=25pn
no03b13	13	1.47	ND	611.53	0.01	ND	25=26pn
no03b14	14	1.05	0.56	182.32	0.54	ND	26=27pn
no03b15	15	1.23	ND	73.18	0.10	ND	27=28pn
no03b16	16	1.70	3.03	100.54	0.01	0.01	28=30pn
no03b17	17	0.82	ND	186.41	ND	0.01	29=31pn
no03b18	18	1.08	ND	123.69	2.06	ND	30=32pn
no03c04	04	0.91	ND	320.05	ND	0.02	31=33pn
no03c05	05	0.90	ND	94.33	ND	0.01	32=34pn
no03c06	06	0.90	ND	152.89	0.69	0.03	33=35pn
no03c07	07	0.98	0.78	77.42	ND	0.02	34=36pn
no03c08	08	1.04	1.51	280.66	0.95	ND	35=38pn
Averages pn n=35		**1.12**	**0.48**	**229.94**	**0.45**	**0.01**	
Std Dev		**0.19**	**1.29**	**232.48**	**1.53**	**0.01**	
Max		**1.70**	**5.91**	**1166.19**	**8.90**	**0.03**	
Min		**0.82**	**ND**	**25.44**	**ND**	**ND**	
Run number		**Ru avg.**	**Rh**	**Pd avg.**	**Pt avg.**	**Au**	**Comments**
no03c09	09	0.92	0.11	0.07	0.01	ND	1po
no03c10	10	0.01	ND	0.10	0.01	ND	2po
no03c11	11	0.01	0.01	0.04	ND	ND	3po
no03c12	12	0.16	0.66	0.02	0.02	0.01	4po
no03c13	13	0.06	0.01	0.48	ND	ND	5po
no03c14	14	0.03	ND	0.19	ND	ND	6po
no03c15	15	0.57	1.83	0.12	0.01	0.05	7ponew
no03c16	16	0.46	0.65	0.13	0.05	ND	8=9po
no03c17	17	0.04	ND	0.13	0.01	ND	9=10po
no03c18	18	ND	ND	0.13	ND	ND	10=11po
no03d04	04	0.33	0.07	ND	ND	ND	11=12po
no03d05	05	0.52	2.16	0.14	ND	0.01	12=13po
no03d06	06	0.10	0.19	0.15	ND	ND	13=15po
no03d07	07	0.15	0.01	0.20	0.01	0.01	14=16po

no03d08	08	0.05	0.01	0.22	ND	ND	15=18po
no03d09	09	0.19	0.85	ND	0.01	ND	16=19po
no03d10	10	0.01	ND	0.05	ND	ND	17=20po
no03d11	11	0.13	0.96	0.01	ND	ND	18=21po
no03d12	12	0.51	1.32	ND	0.01	ND	19=25po
no03d13	13	0.04	0.34	0.02	ND	ND	20=27po
no03d14	14	0.29	1.01	0.05	ND	ND	21=28po
no03d15	15	0.08	ND	ND	ND	ND	22=34po
no03d16	16	0.51	1.77	0.06	0.01	0.01	23=33po
no03d17	17	0.01	ND	0.05	ND	ND	24=32po
no03d18	18	0.17	1.18	0.06	0.01	0.01	25=30po
no03e04	04	0.28	0.02	0.02	ND	0.02	26=43po
no03e05	05	0.07	ND	0.02	0.02	ND	27=42po
no03e06	06	0.01	ND	0.04	0.01	ND	28=46po
no03e07	07	0.03	ND	0.04	ND	0.01	29=47po
no03e08	08	0.06	0.01	0.24	0.01	0.03	30=41po
no03e09	09	0.36	0.57	0.65	0.01	0.01	31=36po
no03e10	10	0.01	0.03	0.07	ND	ND	32=37po
no03e11	11	0.48	0.72	0.04	0.01	0.02	33=39po
no03e12	12	0.15	0.20	0.03	ND	0.03	34=40po
no03e13	13	0.21	1.54	ND	ND	ND	35=49po
Averages po n=35		**0.20**	**0.46**	**0.10**	**0.01**	**0.01**	
Std Dev		**0.22**	**0.63**	**0.14**	**0.01**	**0.01**	
Max		**0.92**	**2.16**	**0.65**	**0.05**	**0.05**	
Min		**ND**	**ND**	**ND**	**ND**	**ND**	
Run number		**Ru avg.**	**Rh**	**Pd avg.**	**Pt avg.**	**Au**	**Comments**
no03e14	14	0.03	ND	0.10	0.01	0.01	1py
no03e15	15	0.26	0.12	0.12	1.05	0.02	2py
no03e16	16	0.41	ND	0.10	0.25	0.02	3py
no03e17	17	0.37	0.27	0.04	1.12	ND	4py
no03e18	18	14.36	93.16	0.02	0.02	0.02	5py
no03f04	04	1.04	0.06	ND	1.09	0.04	6py
no03f05	05	0.99	2.74	0.37	0.28	0.02	7py
no03f06	06	0.04	0.04	0.06	ND	0.01	8py
no03f07	07	0.90	1.38	0.08	0.16	ND	9py
no03f08	08	0.15	0.32	0.12	0.99	0.02	10py
no03f09	09	5.53	58.42	0.46	0.05	0.02	11py
no03f10	10	0.27	ND	0.08	1.29	0.03	12py
no03f11	11	1.43	0.30	0.08	0.06	0.01	13=16py
no03f12	12	0.40	0.04	0.22	0.13	ND	14=13py
no03f13	13	1.95	0.07	0.04	0.58	ND	15=14py
no03f14	14	0.71	13.89	0.53	0.50	0.06	16=15py
no03f15	15	0.25	0.20	0.06	0.27	0.03	17py
no03f16	16	0.03	0.01	0.40	ND	ND	18py
no03f17	17	0.44	0.44	0.27	2.39	ND	19py
no03f18	18	0.45	0.27	0.26	0.95	0.01	20py
no04a04	04	ND	0.02	0.02	0.01	0.03	19=33py
no04a05	05	0.14	ND	0.14	0.02	0.02	20=32py
no04a06	06	0.62	5.13	0.06	0.04	ND	21=31py
no04a07	07	0.48	1.11	0.09	0.22	0.01	22=30py
no04a08	08	0.46	0.01	0.03	ND	0.01	23=29py
no04a09	09	0.44	11.14	0.13	0.25	0.02	24=28py
no04a10	10	0.01	0.02	0.12	ND	5.24	25=27py
no04a11	11	0.06	ND	0.07	0.02	0.01	26py
no04a12	12	0.06	ND	0.04	0.04	0.01	27=25py
no04a13	13	0.18	ND	2.31	1.19	0.04	28=24py

no04a14	14	3.27	33.63	0.09	0.59	0.02	29=23py
no04a15	15	0.23	0.07	0.14	0.58	0.06	30=21py
no04a16	16	0.40	0.09	0.07	1.14	0.04	31=22py
no04a17	17	0.29	0.23	0.02	1.26	0.01	32=40py
no04a18	18	0.21	0.11	1.61	ND	0.05	33=39py
no04a21	03	33.52	24.84	0.37	0.09	ND	34py
no04a22	04	0.01	ND	0.06	0.01	0.02	35py
Averages py n=37		**2.00**	**6.71**	**0.25**	**0.45**	**0.16**	
Std Dev		**6.05**	**18.66**	**0.46**	**0.56**	**0.86**	
Max		**33.52**	**93.16**	**2.31**	**2.39**	**5.24**	
Min		**ND**	**ND**	**ND**	**ND**	**ND**	
Run number		**Ru avg.**	**Rh**	**Pd avg.**	**Pt avg.**	**Au**	**Comments**
no06e07	07	0.30		ND	0.01	0.01	1cp
no06e08	08	0.36		0.45	ND	0.02	2cp
no06e09	09	0.23		0.68	0.01	ND	3cp
no06e10	10	0.31		ND	0.01	0.04	4cp
no06e11	11	0.29		ND	0.01	0.01	5cp sml
no06e12	12	0.69		ND	0.01	0.01	6cp
no06e13	13	0.32		0.18	0.01	ND	7cp sml
no06e14	14	0.27		ND	0.01	0.01	8cp
no06e15	15	0.34		ND	0.01	0.02	9cp sml
no06e16	16	0.47		0.27	0.01	0.02	10cp
no06e17	17	0.27		ND	0.02	0.01	3cp 2nd spot
Averages cp n=11		**0.35**		**0.14**	**0.01**	**0.01**	
Std Dev		**0.13**		**0.23**	**ND**	**0.01**	
Max		**0.69**		**0.68**	**0.02**	**0.04**	
Min		**0.23**	**ND**	**ND**	**ND**	**ND**	

*All analyses shown as ND (for not detected), were given the arbitrary value of ND2 ppm to calculate averages, and standard deviations.

Table S9. LA-ICP-MS analyses for sample OLFW (ppm) from CCI							
Run number		**Ru avg.**	**Rh**	**Pd avg.**	**Pt avg.**	**Au**	**Comments**
no05a04	04	0.70	0.01	0.12	ND*	0.01	1=24po
no05a05	05	0.38	0.04	0.01	0.01	0.04	2=23po
no05a06	06	0.70	0.07	ND	0.02	0.01	3=26po
no05a07	07	0.37	0.07	0.03	0.02	0.01	4=19po
no05a08	08	1.18	0.10	ND	ND	0.01	5=18po
no05a09	09	0.62	ND	ND	ND	0.01	6=12po
no05a10	10	0.54	0.01	0.01	0.01	0.01	7=11po
no05a11	11	0.21	0.02	0.04	ND	0.01	8=14po
no05a12	12	0.42	0.05	ND	ND	ND	9=36po
no05a13	13	0.17	0.06	0.05	0.01	0.02	10=35po
Averages po n=10		**0.53**	**0.05**	**0.03**	**0.01**	**0.01**	
Std Dev		**0.30**	**0.03**	**0.04**	**0.01**	**0.01**	
Max		**1.18**	**0.10**	**0.12**	**0.02**	**0.04**	
Min		**0.17**	**ND**	**ND**	**ND**	**ND**	
Run number		**Ru avg.**	**Rh**	**Pd avg.**	**Pt avg.**	**Au**	**Comments**
no05a14	14	0.28	0.78	0.02	ND	ND	1py
no05a15	15	0.25	0.65	ND	ND	ND	2py-1
no05a16	16	0.28	0.67	0.03	ND	0.04	3=2py-2
no05a17	17	0.15	0.42	0.03	0.01	0.01	4=3py
no05a18	18	2.87	0.60	0.53	0.23	0.24	5=4py
no05b03	03	2.69	0.43	0.64	0.46	0.47	6=4py-2
no05b04	04	0.39	0.23	0.01	0.01	0.01	7=5py-1
no05b05	05	0.39	0.23	0.03	ND	ND	8=5py-2
Averages py n=8		**0.91**	**0.50**	**0.16**	**0.09**	**0.10**	
Std Dev		**1.16**	**0.21**	**0.26**	**0.17**	**0.17**	
Max		**2.87**	**0.78**	**0.64**	**0.46**	**0.47**	
Min		**0.15**	**0.23**	**ND**	**ND**	**ND**	
Run number		**Ru avg.**	**Rh**	**Pd avg.**	**Pt avg.**	**Au**	**Comments**
no06c04	04	0.93	0.91	151.79	0.01	0.07	1pn
no06c05	05	0.93	0.03	241.03	0.01	0.03	2=3pn
no06c06	06	1.07	4.27	228.33	0.01	0.01	3=6pn
no06c07	07	1.46	ND	179.36	0.01	ND	4=7pn
no06c08	08	1.40	10.38	393.38	0.02	0.02	5=17pn
no06c09	09	1.21	12.10	326.23	0.02	0.05	6=16pn
no06c10	10	1.01	0.40	107.76	0.05	0.07	7=11pn
no06c11	11	1.15	0.17	0.71	ND	ND	8=12pn
no06c12	12	1.97	5.66	312.96	1.35	ND	9=34pn
no06c13	13	1.05	2.70	345.32	1.26	0.01	10=41pn
Averages pn n=10		**1.22**	**3.66**	**228.69**	**0.27**	**0.03**	
Std Dev		**0.32**	**4.46**	**121.31**	**0.54**	**0.03**	
Max		**1.97**	**12.10**	**393.38**	**1.35**	**0.07**	
Min		**0.93**	**ND**	**0.71**	**ND**	**ND**	
Run		**Ru avg.**	**Rh**	**Pd**	**Pt**	**Au**	**Comments**
no05b08	06	1.03	ND	ND	0.15	0.01	cp next to 4py

*All analyses shown as ND (for not detected), were given the arbitrary value of ND2 ppm to calculate averages, and standard deviations.

Table S10. LA-ICP-MS analyses for sample ANFW (ppm) from CCI							
Run number		**Ru avg.**	**Rh**	**Pd avg.**	**Pt avg.**	**Au**	**Comments**
no05c04	04	0.26	0.34	0.05	ND*	0.01	1po
no05c05	05	0.29	0.16	0.06	0.01	ND	2po
no05c06	06	0.26	0.03	0.06	ND	0.03	3po sml
no05c07	07	0.32	0.16	0.14	0.01	0.02	4=5po
no05c08	08	0.47	0.02	0.02	0.01	ND	5=6po
no05c09	09	0.25	0.05	0.07	ND	0.02	6=13po
no05c10	10	0.25	1.03	ND	ND	0.01	7=11po
no05c11	11	0.05	ND	0.03	0.01	0.02	8=10po
no05c12	12	0.25	0.02	ND	ND	0.01	9po sml
no05c13	13	0.21	ND	ND	0.01	ND	10=15po
Averages po n=10		**0.26**	**0.18**	**0.04**	**0.01**	**0.01**	
Std Dev		**0.10**	**0.32**	**0.04**	**ND**	**0.01**	
Max		**0.47**	**1.03**	**0.14**	**0.01**	**0.03**	
Min		**0.05**	**ND**	**ND**	**ND**	**ND**	
Run number		**Ru avg.**	**Rh**	**Pd avg.**	**Pt avg.**	**Au**	**Comments**
no05c14	14	0.08	0.09	0.48	0.24	ND	1py
no05c15	15	0.02	0.09	0.04	ND	0.04	2py
no05c16	16	0.06	0.01	0.04	0.01	0.01	3py
no05c17	17	0.13	0.05	0.04	ND	0.01	4=5py
no05c18	18	0.09	0.01	0.05	0.01	0.05	5=8py
no05d04	04	0.08	0.01	0.04	0.02	0.06	6=14py
no05d05	05	0.02	ND	0.18	0.02	0.05	7=15py sml
no05d06	06	0.02	0.03	0.02	0.01	0.06	8=16py
no05d07	07	0.09	ND	0.02	0.01	0.01	9=23py
no05d08	08	0.84	1.67	3.47	0.02	0.08	10=24py
Averages py n=10		**0.14**	**0.20**	**0.44**	**0.04**	**0.04**	
Std Dev		**0.25**	**0.52**	**1.08**	**0.07**	**0.03**	
Max		**0.84**	**1.67**	**3.47**	**0.24**	**0.08**	
Min		**0.02**	**ND**	**0.02**	**ND**	**ND**	
Run number		**Ru avg.**	**Rh**	**Pd avg.**	**Pt avg.**	**Au**	**Comments**
no06d04	04	1.63	8.13	304.02	0.03	0.04	1pn
no06d05	05	1.18	0.07	258.85	0.01	0.04	2=13pn
no06d06	06	1.36	ND	366.09	0.01	0.01	3=11pn
no06d07	07	1.49	0.20	265.65	ND	0.03	4=19pn
no06d08	08	1.16	0.91	425.00	0.01	0.01	5=14pn
no06d09	09	1.37	24.70	322.01	1.46	0.05	6=16pn
no06d10	10	1.21	14.10	340.09	0.01	0.04	7=17pn
no06d11	11	0.98	0.16	98.65	0.01	0.03	8=18pn
no06d12	12	1.17	1.11	461.08	ND	0.04	9=37pn
no06d13	13	1.26	0.66	656.46	4.53	0.08	10=38pn

Averages pn n=10	**1.28**	**5.00**	**349.79**	**0.61**	**0.04**	
Std Dev	**0.19**	**8.35**	**146.72**	**1.45**	**0.02**	
Max	**1.63**	**24.70**	**656.46**	**4.53**	**0.08**	
Min	**0.98**	**ND**	**98.65**	**ND**	**0.01**	
Run number	**Ru avg.**	**Rh**	**Pd avg.**	**Pt avg.**	**Au**	**Comments**
no05d09 09	0.27		0.10	ND	ND	1cp
no05d10 10	0.38		2.42	0.02	0.06	2cp
no05d11 11	0.25		ND	ND	ND	3cp
no05d12 12	0.38		ND	0.03	0.01	4cp
no05d13 13	0.39		0.24	ND	0.02	5cp
Averages cp n=5	**0.33**		**0.55**	**0.01**	**0.02**	
Std Dev	**0.07**		**1.05**	**0.01**	**0.02**	
Max	**0.39**		**2.42**	**0.03**	**0.06**	
Min	**0.25**		**ND**	**ND**	**ND**	

*All analyses shown as ND (for not detected), were given the arbitrary value of ND2 ppm to calculate averages, and standard deviations.

Table S11. LA-ICP-MS analyses for sample GNFW (ppm) from CCI

Run number		Ru avg.	Rh	Pd avg.	Pt avg.	Au	Comments
no05e04	04	0.42	0.18	0.06	0.01	0.02	1po
no05e05	05	0.22	1.73	0.04	ND*	ND	2po
no05e06	06	0.35	0.13	0.06	0.01	0.01	3po
no05e07	07	0.34	0.55	0.01	0.01	0.02	4po
no05e08	08	0.23	0.05	0.08	0.01	0.02	5po
no05e09	09	0.19	0.07	0.06	ND	ND	6po
no05e10	10	0.02	0.21	0.05	0.01	0.02	7po
no05e11	11	0.38	0.07	ND	0.01	ND	8po
no05e12	12	0.42	0.01	0.08	ND	ND	9po
no05e13	13	0.20	0.15	0.05	0.01	ND	10=14po
Averages po n=10		**0.28**	**0.31**	**0.05**	**0.01**	**0.01**	
Std Dev		**0.13**	**0.52**	**0.03**		**0.01**	
Max		**0.42**	**1.73**	**0.08**	**0.01**	**0.02**	
Min		**0.02**	**0.01**	**ND**	**ND**	**ND**	
Run number		**Ru avg.**	**Rh**	**Pd avg.**	**Pt avg.**	**Au**	**Comments**
no05e14	14	0.04	0.06	0.11	0.01	0.05	1py
no05e15	15	0.09	0.01	0.76	ND	0.02	2=3py
no05e16	16	0.02	ND	0.01	0.02	0.04	3=4py
no05e17	17	0.04	0.02	0.05	ND	0.03	4=5py
no05e18	18	0.02	0.04	0.04	0.01	0.05	5=6py
no05f04	04	ND	0.01	0.03	0.01	0.03	6=10py
no05f05	05	0.01	0.01	0.06	0.01	0.02	7=11py
no05f06	06	1.29	15.93	0.09	0.02	0.01	8=18py
no05f07	07	1.16	55.75	0.02	0.06	0.04	9=17py
no05f08	08	2.53	250.57	0.02	0.03	ND	10=22py
Averages py n=10		**0.52**	**32.24**	**0.12**	**0.02**	**0.03**	
Std Dev		**0.86**	**78.71**	**0.23**	**0.02**	**0.02**	
Max		**2.53**	**250.57**	**0.76**	**0.06**	**0.05**	
Min		**ND**	**ND**	**0.01**	**ND**	**ND**	
Run number		**Ru avg.**	**Rh**	**Pd avg.**	**Pt avg.**	**Au**	**Comments**
no05f09	09	1.16	2.01	381.98	0.01	ND	1=33pn
no05f10	10	1.41	3.60	329.73	ND	ND	2=35pn
no05f11	11	1.27	1.69	144.85	ND	0.04	3=34pn
no05f12	12	0.90	7.52	251.46	ND	0.01	4=37pn
no05f13	13	1.31	0.20	64.93	0.01	ND	5=45pn
no05f14	14	0.85	0.08	592.44	2.63	0.01	6=24pn
no05f15	15	1.21	0.03	291.70	0.01	0.01	7=44pn
no05f16	16	1.07	6.94	1108.54	0.01	0.02	8=43pn
no05f17	17	1.05	ND	325.12	0.01	ND	9=42pn

no05f18 18		1.22	0.39	247.37	ND	ND	10=41pn
Averages pn n=10		**1.14**	**2.25**	**373.81**	**0.27**	**0.01**	
Std Dev		**0.18**	**2.87**	**293.93**	**0.83**	**0.01**	
Max		**1.41**	**7.52**	**1108.54**	**2.63**	**0.04**	
Min		**0.85**	**ND**	**64.93**	**ND**	**ND**	

*All analyses shown as ND (for not detected), were given the arbitrary value of ND2 ppm to calculate averages, and standard deviations.

Table S12. Compositions of pentlandite by EPMA in wt.%

Sample number	S	Co	Ni	Fe	Cu	Pd	Total
Fedorova West							
P-80/69.5	30.95	1.21	35.86	32.25	ND*	0.19	100.46
P-80/91.8	33.14	0.85	35.17	30.39	0.07	ND	99.62
P-80/101	31.99	0.84	34.83	32.45	0.29	ND	100.40
P-80/106.8	32.51	1.02	35.83	29.90	ND	ND	99.26
P-82/244	31.74	1.90	35.08	32.04	ND	ND	100.76
P-82/160	32.53	1.55	34.97	29.93	0.16	0.12	99.26
P-95/88.4	32.09	1.23	34.00	31.99	0.11	0.08	99.50
P-95/103.2	31.89	1.62	34.60	32.42	ND	ND	100.53
P-95/106.4	32.19	1.51	35.62	31.40	ND	ND	100.72
P-95/106.4	31.80	1.49	35.18	31.01	0.04	ND	99.52
P-95/106.4	32.24	1.38	35.57	30.61	0.01	ND	99.81
BG-F-206/181.8	32.44	0.97	34.36	32.43	ND	ND	100.20
BG-F-206a/233.4	33.14	1.01	34.12	32.78	ND	0.09	101.14
BG-F-208/137.5	32.13	0.57	34.91	32.76	ND	ND	100.37
BG-F-208/200.2-2	32.40	0.55	34.37	32.72	ND	ND	100.04
BG-F-209/250-2	32.27	ND	32.28	32.91	ND	ND	97.46
BG-F-212/250.9-2	31.82	1.13	35.42	31.46	ND	ND	99.83
BG-F-213/116.2-5	32.48	2.37	32.32	32.91	ND	ND	100.08
BG-F-214/167.9	32.32	1.58	33.83	32.19	ND	0.11	100.03
BG-F-215/259.5	32.46	1.78	34.36	32.34	0.04	ND	100.98
BG-F-215/259.5	32.27	1.31	34.50	33.10	ND	0.12	101.30
BG-F-215/259.5	32.25	1.25	35.04	32.47	0.06	0.10	101.17
BG-F-215/259.5	32.60	1.30	34.75	32.80	ND	0.09	101.54
BG-F-215/310.7	31.59	1.52	31.54	36.59	ND	0.07	101.31
BG-F-215/310.7	29.81	ND	35.10	35.72	ND	ND	100.63
BG-F-216/222.0	32.75	1.45	33.21	32.10	0.07	0.12	99.70
BG-F-423/324.5	32.19	0.93	33.76	32.90	ND	0.12	99.90
BG-F-423/324.6	32.47	0.77	31.95	34.68	ND	ND	99.87
BG-F-425/259.3-2	31.17	1.26	36.53	31.47	0.12	0.07	100.62
BG-F-441/106.4-1	31.58	0.45	35.09	32.54	ND	ND	99.66
BG-F-441/180.1	32.54	1.27	33.39	32.74	0.20	ND	100.14
BG-F-441/180.1	32.91	1.57	33.27	33.09	ND	ND	100.84
BG-F-441/274.2	32.53	0.82	34.12	32.62	ND	ND	100.09
BG-F-504/186.3	32.06	0.86	34.39	32.45	0.22	0.09	100.07
BG-F-504/210.3	32.24	1.24	34.48	31.48		0.23	99.67
Averages n=35**	32.16	1.16	34.39	32.39	0.05	0.06	100.19
Std Dev	0.62	0.49	1.14	1.35	0.07	0.05	0.77
Max	33.14	2.37	36.53	36.59	0.29	0.23	101.54
Min	29.81	ND	31.54	29.90	ND	ND	97.46
Fedorova East							
BG-F-227/316.8	32.20	1.71	34.28	31.64	ND	ND	99.83
BG-F-336/58.8	32.40	1.83	34.86	30.94	ND	ND	100.03
BG-F-480/59.1	32.31	2.89	34.11	30.57	0.07	ND	99.95
BG-F-480/193.8-5	33.48	0.70	34.00	31.37	0.04	ND	99.59
BG-F-481/14.7-1	32.54	1.72	34.37	31.23	ND	ND	99.86
BG-F-486/110.5	32.23	0.95	34.30	31.00	0.05	0.17	98.70

BG-F-486/127.0	33.16	0.89	34.61	31.08	ND	ND	99.74
BG-F-486/290.9	32.85	0.92	34.42	31.27	ND	ND	99.46
BG-F-487/50.5	32.19	1.07	35.15	31.19	ND	0.14	99.74
BG-F-488/118.5	32.58	1.38	34.99	30.95	ND	ND	99.90
BG-F-494/38.4	32.59	0.99	34.68	31.07	ND	ND	99.33
BG-F-495/42.0	32.37	2.13	35.46	30.88	ND	ND	100.84
BG-F-511/136.0-2	32.53	1.60	34.38	31.01	ND	ND	99.52
BG-F-614/62.2	32.73	0.61	34.16	32.03	0.06	ND	99.59
BG-F-614/86.0	32.50	1.34	34.32	30.90	ND	ND	99.06
BG-F-618/195.7	32.59	1.27	34.99	30.66	ND	ND	99.51
BG-F-622/57.5	32.06	0.79	35.18	31.00	0.04	0.09	99.16
BG-F-624/85.8	32.84	1.29	34.87	30.58	0.09	ND	99.67
BG-F-624/85.8	32.69	1.20	34.61	30.84	0.05	0.19	99.58
Averages n=19	32.57	1.33	34.62	31.06	0.03	0.05	99.63
Std Dev	0.35	0.56	0.41	0.35	0.03	0.05	0.44
Max	33.48	2.89	35.46	32.03	0.09	0.19	100.84
Min	32.06	0.61	34.00	30.57	ND	ND	98.70
Kievey							
3/93.4	32.10	0.55	36.06	31.22	ND	ND	99.93
14/65.6-2	31.88	0.69	35.44	31.28	ND	0.66	99.95
18/194.6-2	31.81	0.80	35.64	31.66	ND	ND	99.91
19/154.1-2	31.70	0.34	37.86	30.46	ND	0.29	100.65
21/197.0-2	32.47	0.72	40.61	26.63	0.06	0.18	100.67
23/114.15	31.80	0.36	35.26	32.23	0.06	0.17	99.88
26/188.8-3	32.14	0.26	36.71	30.63	ND	ND	99.74
26/189.4-2	31.41	0.17	37.69	31.21	0.06	0.15	100.69
28/281.3	31.99	0.35	36.66	30.96	0.08	ND	100.04
31/255.4	31.84	0.45	38.67	28.81	ND	0.24	100.01
33/177.3-2	32.09	0.24	35.76	30.89	0.04	0.20	99.22
34/267.5	32.16	0.30	36.43	31.06	ND	ND	99.95
39/113.3	32.27	0.61	35.88	30.17	ND	0.57	99.50
52/164.2-1	31.71	0.47	36.89	30.75	ND	0.28	100.10
52/164.5	32.50	0.50	36.34	31.19	ND	ND	100.53
56/236.9-1	31.86	0.44	38.27	28.97	ND	0.22	99.76
71/94.7	32.83	0.63	36.47	29.40	0.07	0.21	99.61
75/46.1	31.39	0.42	37.46	30.96	ND	ND	100.23
86/134.5	32.38	0.75	37.05	29.56	0.05	ND	99.79
115/119.7	32.20	0.81	38.54	28.59	ND	0.57	100.71
BG-10/38.6	32.31	0.31	36.68	29.56	ND	0.24	99.10
BG-16/55.0	31.83	0.42	35.00	32.66	ND	0.29	100.20
BG-18/48.0	32.61	ND	38.01	29.35	ND	ND	99.97
BG-21/107.0	32.45	0.57	34.42	32.36	ND	0.26	100.06
P-3/34.4	32.36	0.45	35.92	30.90	ND	ND	99.63
Averages n=25	32.08	0.46	36.79	30.46	0.02	0.19	99.99
Std Dev	0.36	0.20	1.37	1.35	0.02	0.19	0.43
Max	32.83	0.81	40.61	32.66	0.08	0.66	100.71
Min	31.39	ND	34.42	26.63	ND	ND	99.10
Eastern Chuarvy							
407/253.6	32.36	3.73	35.61	28.23	ND	ND	99.93
438/113.0	33.73	1.37	35.43	28.09	0.11	1.00	99.73

428/38.3	32.55	2.70	36.64	28.03	ND	0.18	100.10
430/28.2	33.03	1.43	36.52	29.12	ND	0.42	100.52
343/118.4	32.57	0.93	35.48	30.96	ND	0.26	100.20
391/78.8b	34.84	1.34	35.78	28.50	ND	0.34	100.80
425/14.9	33.43	1.26	36.24	29.03	ND	0.54	100.50
386/63.1	34.11	0.99	35.96	29.22	ND	0.21	100.49
381/90.5	33.07	0.93	35.30	28.90	0.08	1.64	99.92
381/90.5	32.67	0.49	35.82	29.90	0.61	0.54	100.03
401/207.6	33.95	0.65	34.65	30.68	ND	0.23	100.16
Averages n=11	33.30	1.44	35.77	29.15	0.08	0.49	100.22
Std Dev	0.78	0.96	0.57	1.00	0.18	0.46	0.32
Max	34.84	3.73	36.64	30.96	0.61	1.64	100.8
Min	32.36	0.49	34.65	28.03	ND	ND	99.73
Southern Kievey							
23921-4	32.25	0.62	42.62	23.26	1.33	0.14	100.22
23921-4	32.13	0.98	44.32	22.84	0.07	0.19	100.53
23961	33.23	0.62	33.53	32.35	ND	ND	99.73
23919-1	32.22	0.66	34.90	32.02	ND	ND	99.80
23919-1	32.61	0.61	34.50	32.33	ND	ND	100.05
Averages n=5	32.49	0.70	37.97	28.56	0.29	0.08	100.07
Std Dev	0.45	0.16	5.08	5.03	0.58	0.08	0.33
Max	33.23	0.98	44.32	32.35	1.33	0.19	100.53
Min	32.13	0.61	33.53	22.84	ND	ND	99.73

*ND = Cu ≤ 0.02, Co ≤ 0.02, Pd ≤ 0.05.

**For analyses where the concentrations are below the detection threshold, the average and standard deviations were calculated based on the content equal to ½ the detection threshold: Pd = 0.025; Cu and Co = 0.01, wt.%.

Table S13. Precious metals mineralogy of the Fedorova West and Fedorova East PGM mineralization

Minerals	**Relative abundance vol.%**		**Maximum size (μm)**
	Fedorova West	**Fedorova East**	
Gold (Au,Ag,Pd)	4.6	0.2	80×160
Platinum (Pt,Cu,Pd)	single grains	-	<2
Isoferroplatinum $(Pt,Pd)_3Fe$	single grains	-	5×10
Palladium (Pd,Hg)	single grains	-	<2
Silver (Ag,Au,Pd)	single grains	-	10×15
Niggliite PtSn	-	single grains	<5
Rustenburgite Pt_3Sn	single grains	single grains	10×15
Paolovite $(Pd,Au)_2Sn$	single grains	0.3	30×40
Atokite $(Pd,Pt,Au)_3Sn$	-	single grains	5×10
Palarstanide $Pd_5(Sn,As)_2$	single grains	-	30×40
Palladogermanide Pd_2Ge	single grains	-	<5
Braggite (Pt,Pd,Ni)S	14.8	9.5	150×750
Vysotskite (Pd,Pt,Ni)S	5.8	20.5	140×190
Coldwellite Pd_3Ag_2S	single grains	-	10×15
Thalhammerite $Pd_9Ag_2Bi_2S_4$	-	single grains	<5
Irarsite (Ir,Ru,Rh,Pt)AsS	single grains	single grains	5×10
Hollingworthite (Rh,Pt,Pd)AsS	single grains	single grains	5×10
Sperrylite $PtAs_2$	1.2	8.0	80×200
Stillwaterite Pd_8As_3	4.7	single grains	140×180
Palladoarsenide Pd_2As	single grains	-	20×30
Menshikovite $Pd_3Ni_2As_3$	single grains	single grains	30×100
Vincentite $(Pd,Pt)_3(As,Sb,Te)$	single grains	single grains	<5
Atheneite $(Pd,Hg)_3As$	single grains	single grains	<5
Mertieite $Pd_{11}(Sb,As)_4$	single grains	single grains	10×15
Moncheite $(Pt,Pd)(Te,Bi)_2$	7.9	1.8	100×100
Kotulskite Pd(Te,Bi)	45.6	31.2	120×320
Merenskyite $(Pd,Pt)(Te,Bi)_2$	10.0	19.1	80×400
Sobolevskite PdBi	4.6	9.0	150×270
Froodite $PdBi_2$	-	single grains	<5
Michenerite (Pd,Pt)BiTe	Single grains	single grains	20×30
Temagamite Pd_3HgTe_3	single grains	single grains	<5
Sopcheite $Ag_4Pd_3Te_4$	single grains	single grains	30×50
No name $(Pd,Au)_{2+x}(As,Sn)$?	-	single grains	<5
Number of diagnosed grains	**925**	**660**	**<2 to 150x750**

Table S14. Modal wt. % data for the sulfide minerals

	FWMC	FEMC	GNFW	ANFW	OLFW
Total % sulfide	1.06	1.75	1.14	0.49	0.52
Relative wt. % sulfides					
chalcopyrite	25.5%	15.4%	20.2%	4.1%	26.9%
pentlandite	15.1%	12.0%	12.3%	18.4%	26.9%
pyrite	8.5%	12.6%	11.4%	24.5%	3.8%
pyrrhotite	50.9%	60.0%	55.3%	51.0%	42.3%
sphalerite	0.0%	0.0%	0.9%	2.0%	0.0%
	100.0%	100.0%	100.0%	100.0%	100.0%

FIG. S1. Comparison of relative abundance precious metal minerals found in HS concentrates between sample FEMC (n=191) and FWMC (n=132), in area percent.

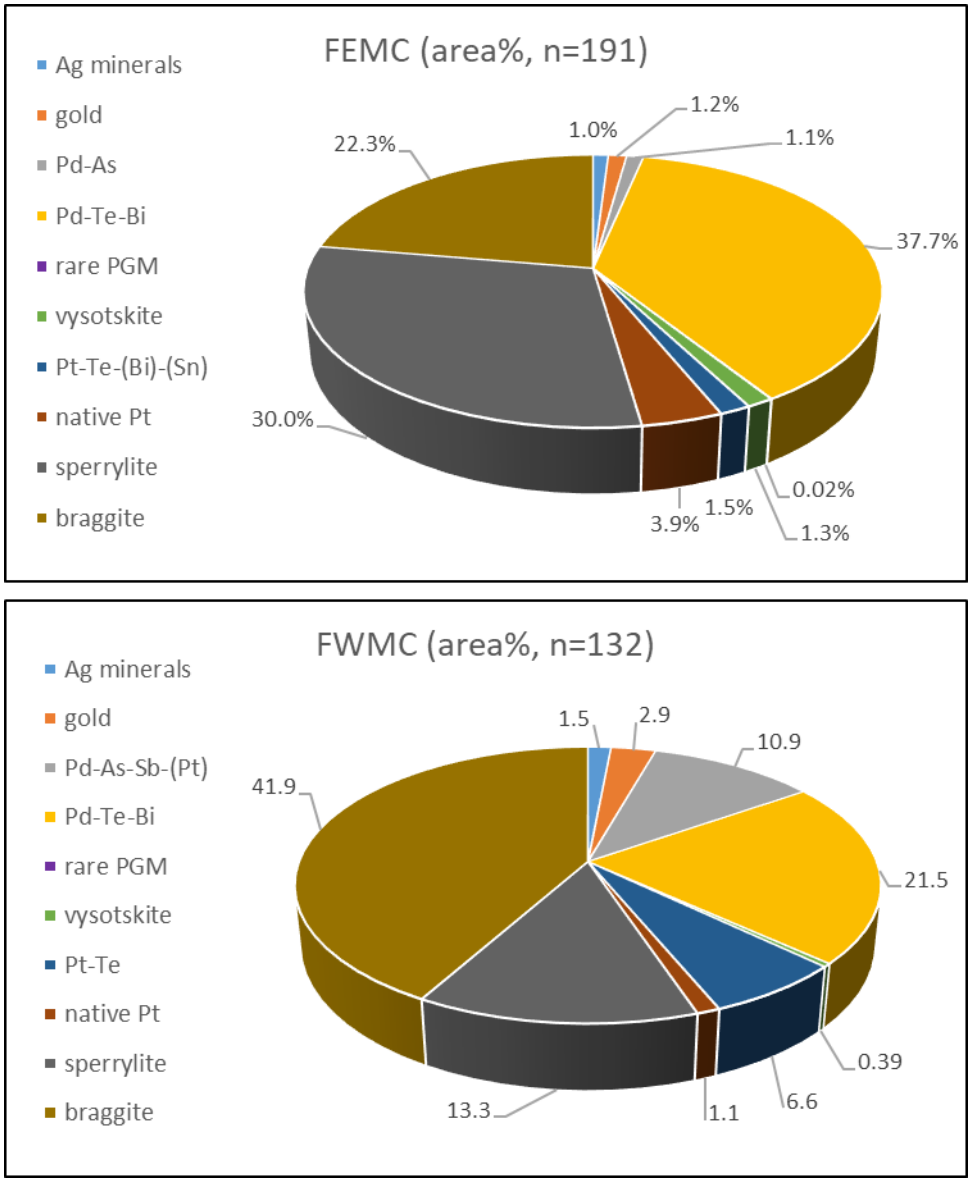

FIG. S2. (a) Back-scattered electron (EPMA) image of sulfides (yellow numbers are pyrite; red are pentlandite, and orange are pyrrhotite) for EPMA sample FWMC (80-125 μm). (b) Back-scattered electron SEM image showing laser pits in pre-selected sulfides sample GNFW (80-125 μm). Both images are mono-layer polished sections of HS concentrates.

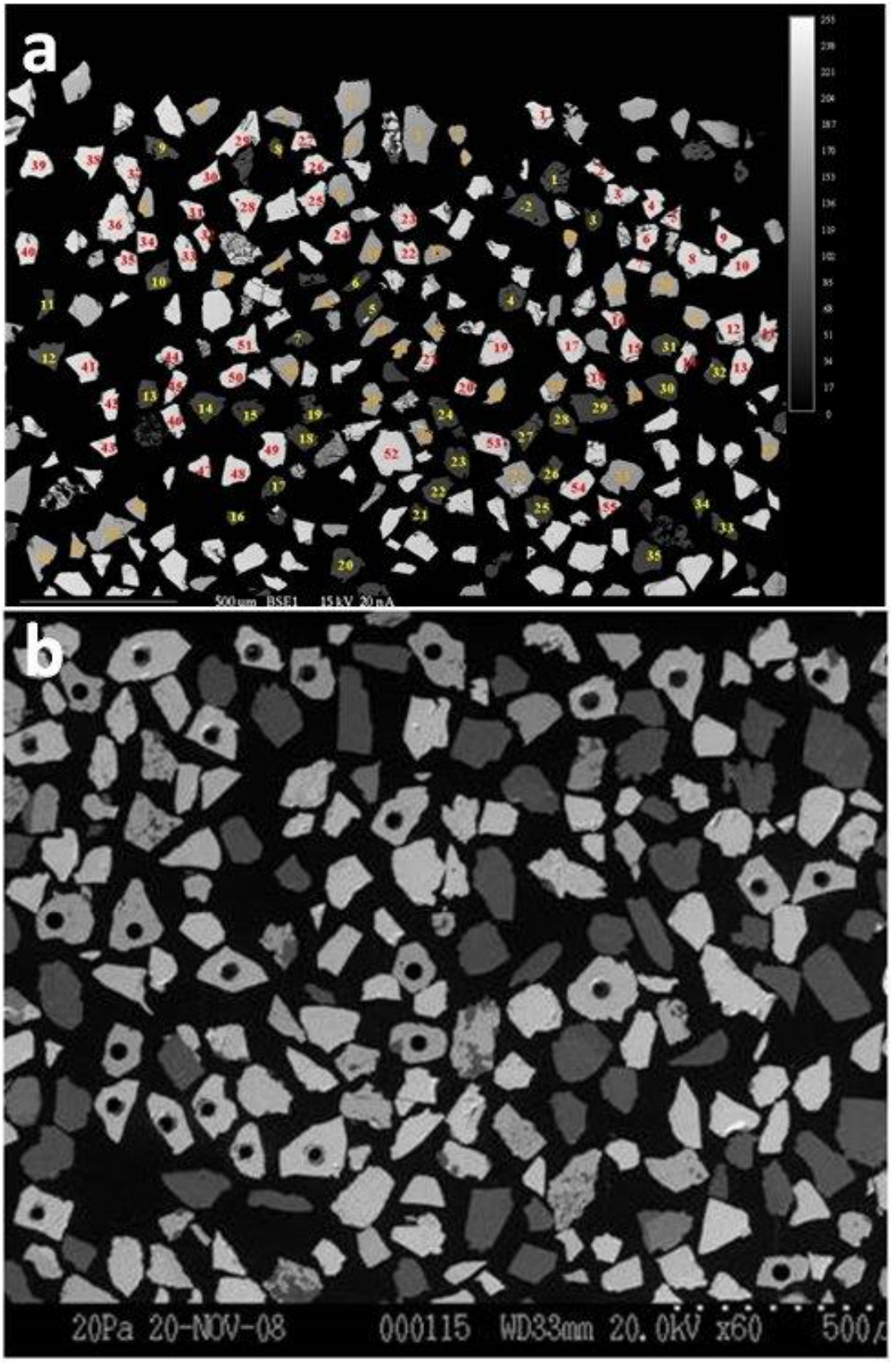

FIG. S3. Concentrations of Co and Ni in pentlandite in the two composite and four lithology samples by EPMA.

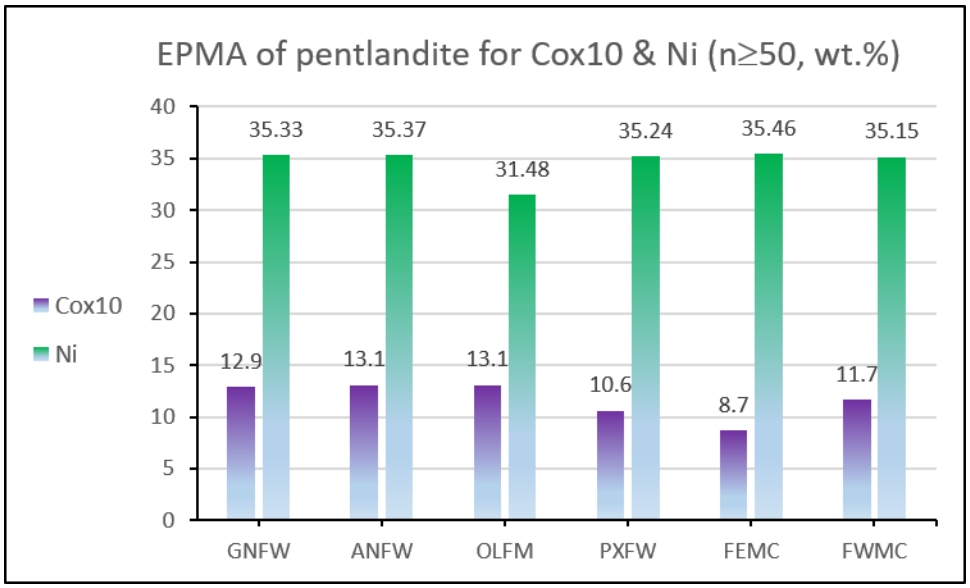

FIG. S4. Concentrations of Ni in pyrrhotite in the two composite and four lithology samples by EPMA.

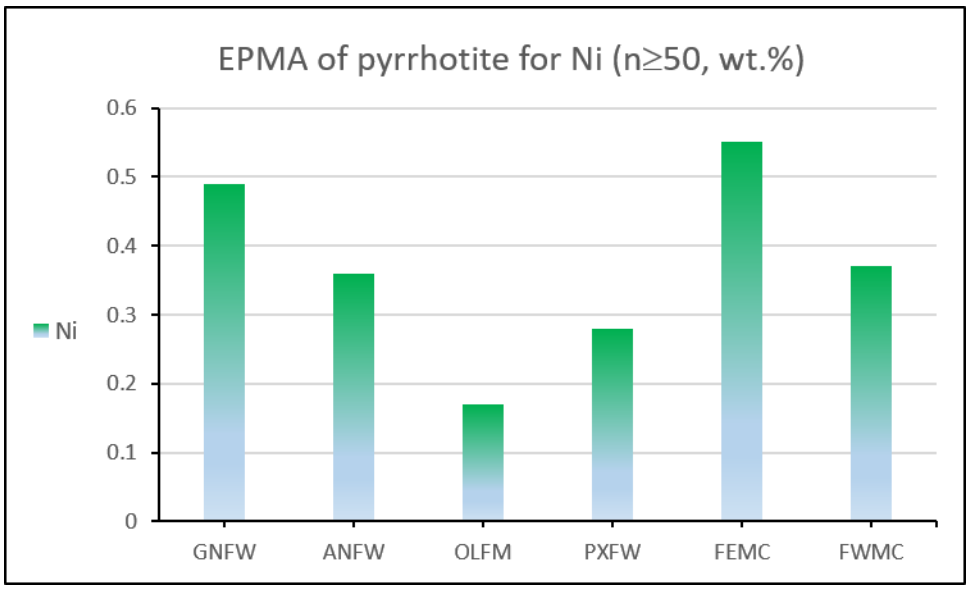

FIG. S5. Concentrations of Co and Ni in pyrite in the two composite and four lithology samples by EPMA.

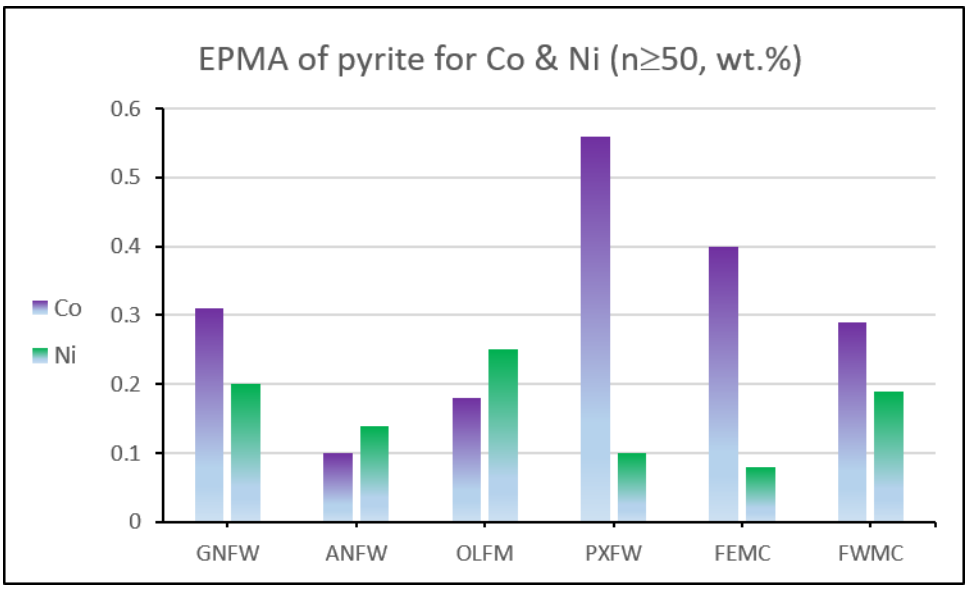

FIG. S6. Plot of concentrations of Pd (>0.05 wt. %) and Co wt. % by EPMA from the Kievey and Eastern Chuarvy deposits.