Supplementary Figures and Tables for the article "Tetrataenite in Terrestrial Rock" authored by B. Nayak and F. M. Meyer

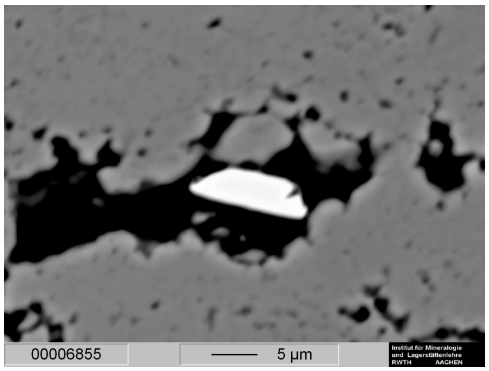

FIGURE 1. Back scattered electron image of tetrataenite crystal (white) occurring in a cavity (partly filled by Fe-chlorite; black); the surrounding mineral is magnetite (grey).

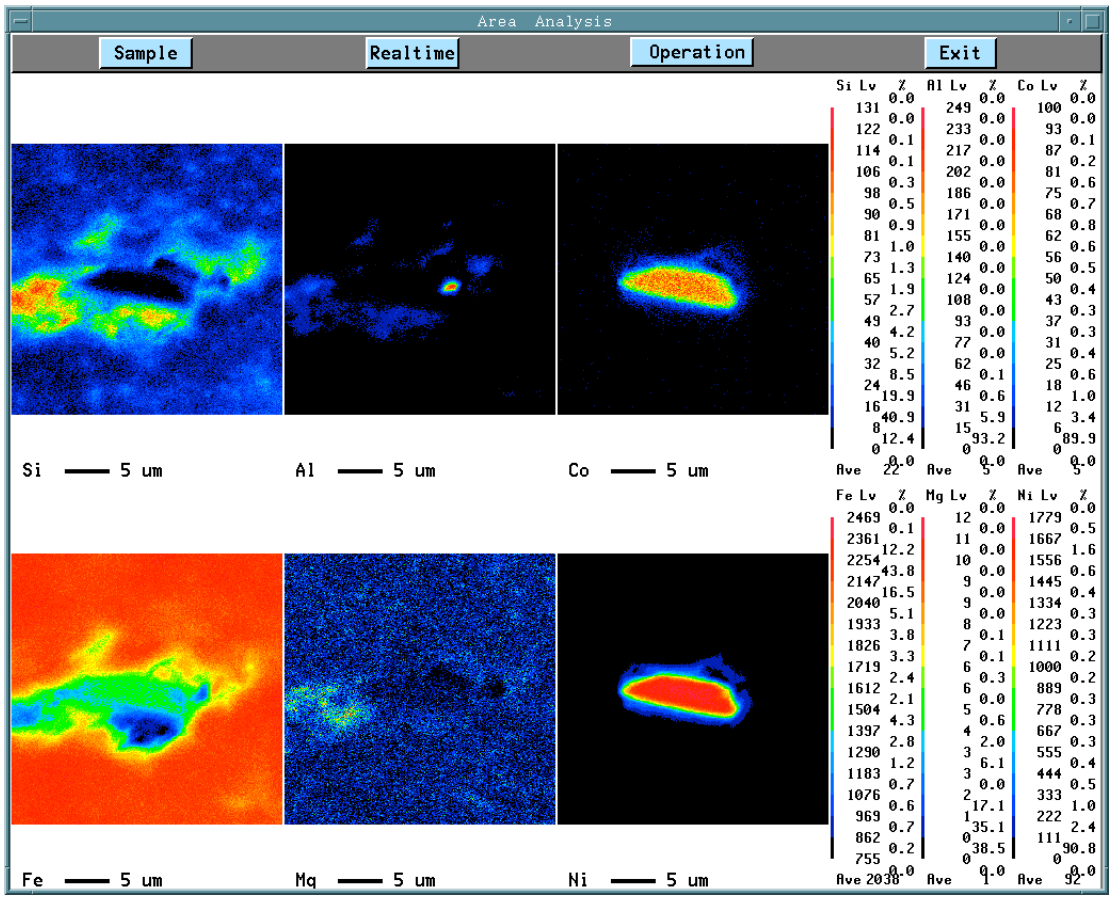

FIGURE 2. X-ray mapping in EPMA showing elemental distribution in and around the tetrataenite crystal. Note the uniform distribution of Fe, Ni and Co in tetrataenite.

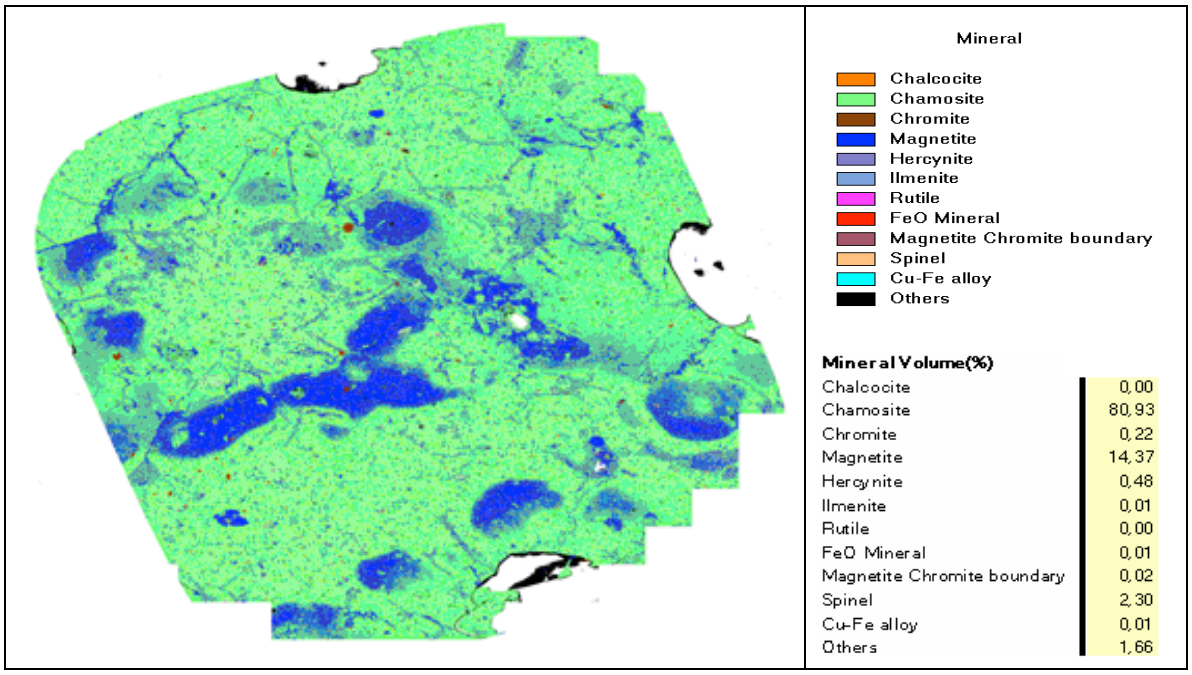

FIGURE 3. Pseudo-color image of polished mount by QEMSCAN showing distribution of various minerals in sample T1. Mineral quantitative vol.% is given in the inset table. Size of the section is ~20mm X 20mm.

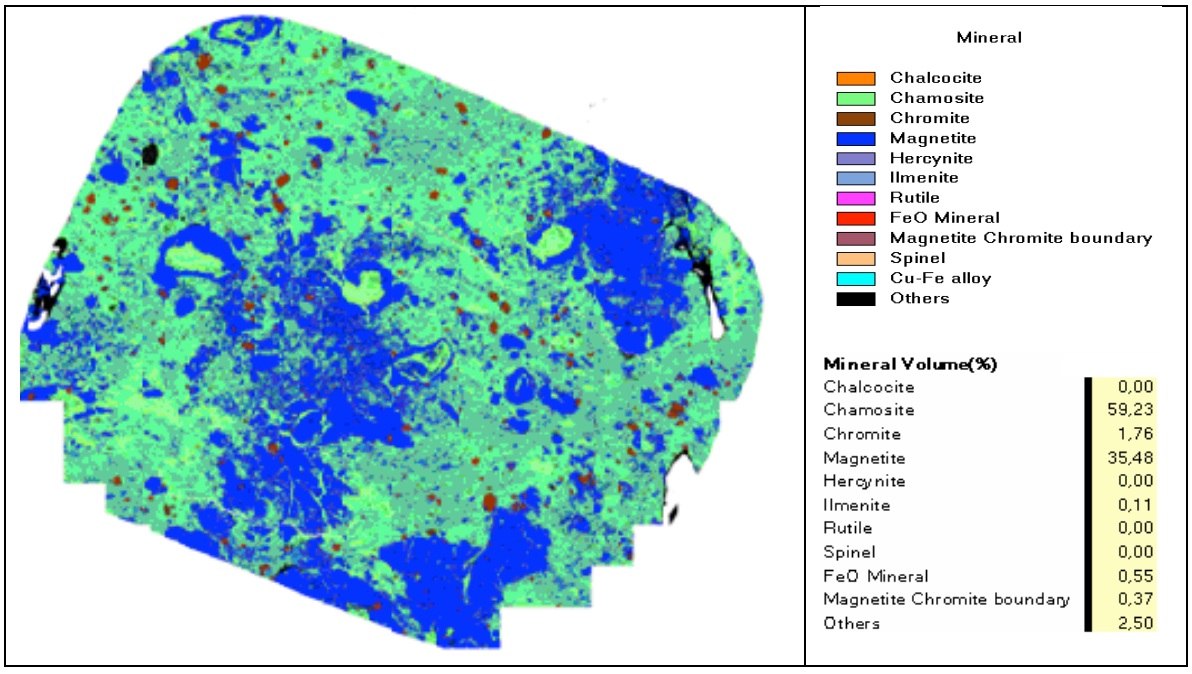

FIGURE 4. Pseudo-color image of polished mount by QEMSCAN showing distribution of various minerals in sample T2. Mineral quantitative vol.% is given in the inset table. Size of the section is ~20mm X 18mm.

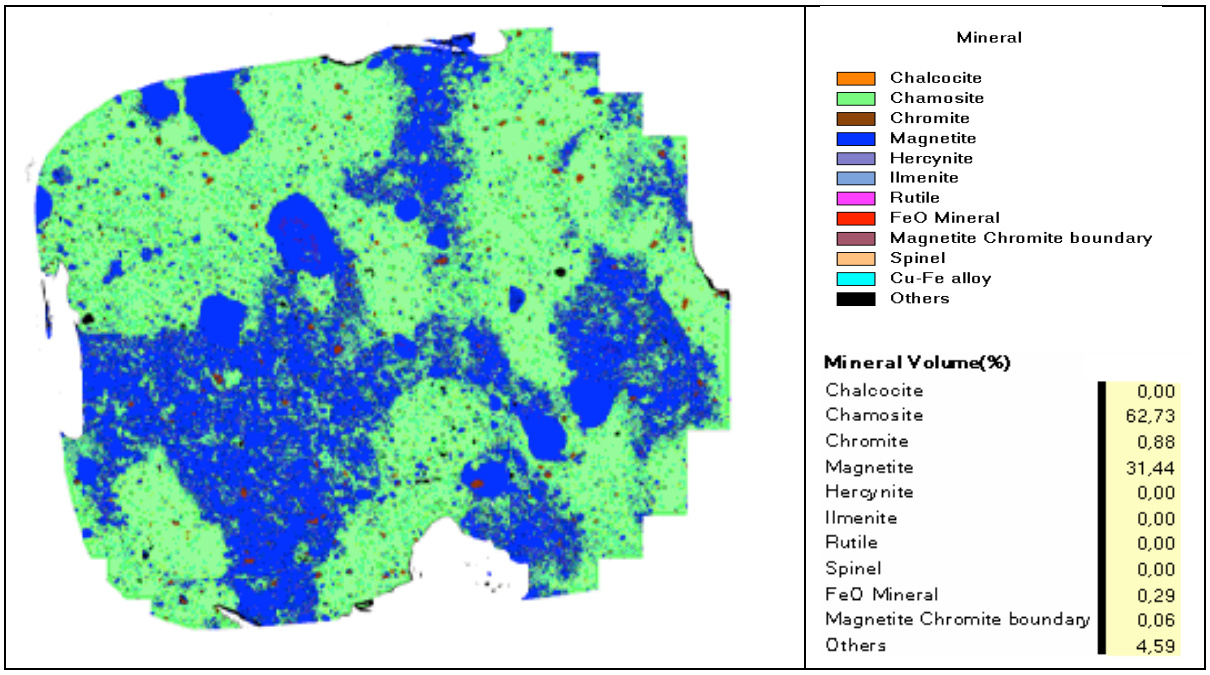

FIGURE 5. Pseudo-color image of polished mount by QEMSCAN showing distribution of various minerals in sample T3. Mineral quantitative vol.% is given in the inset table. Size of the section is ~20mm X 20mm.

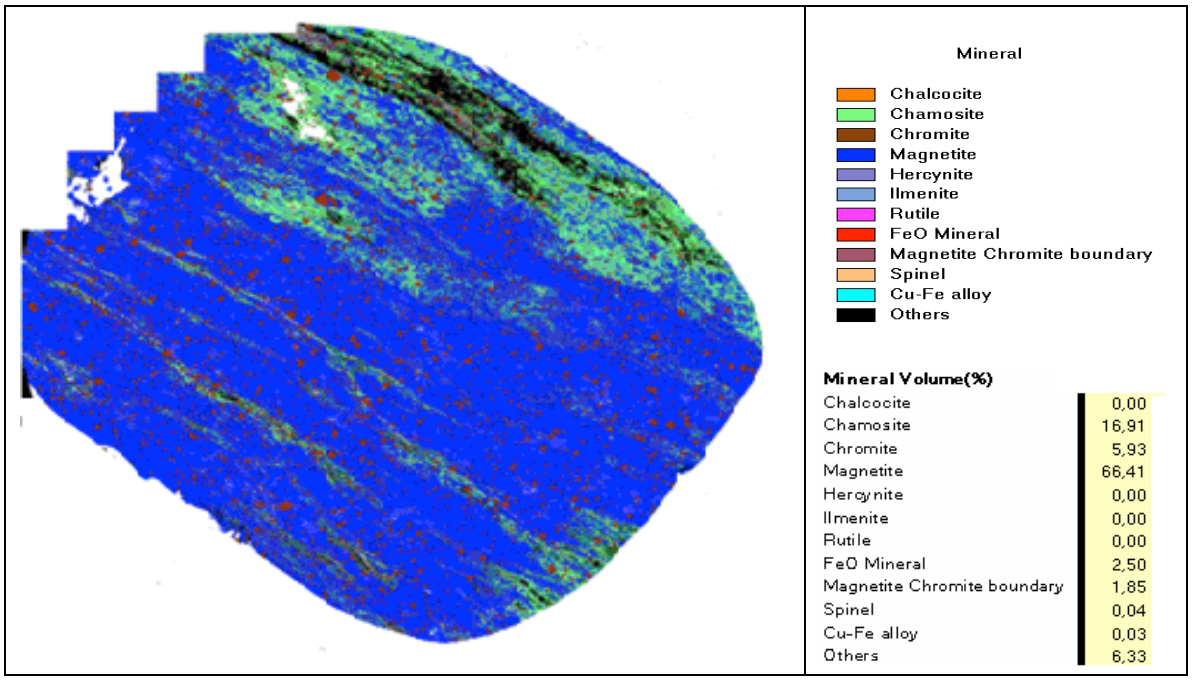

FIGURE 6. Pseudo-color image of polished mount by QEMSCAN showing distribution of various minerals in sample T4. Mineral quantitative vol.% is given in the inset table. Size of the section is ~20mm X 20mm.

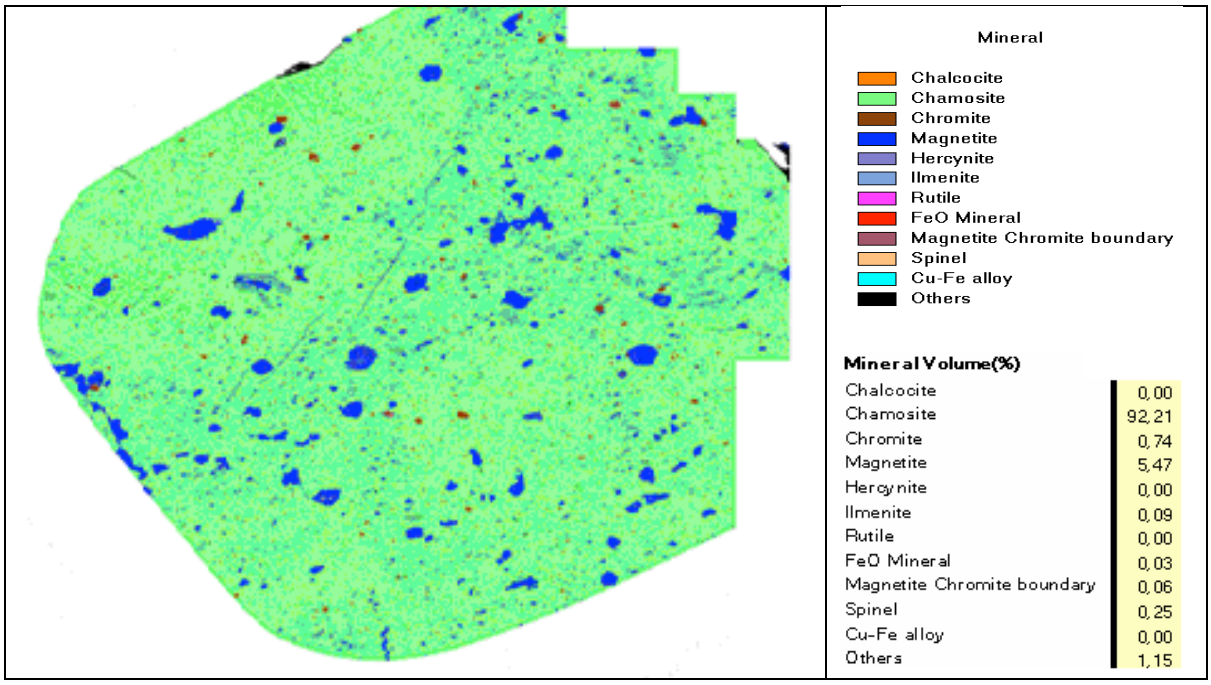

FIGURE 7. Pseudo-color image of polished mount by QEMSCAN showing distribution of various minerals in sample T5. Mineral quantitative vol.% is given in the inset table. Size of the section is ~20mm X 20mm.

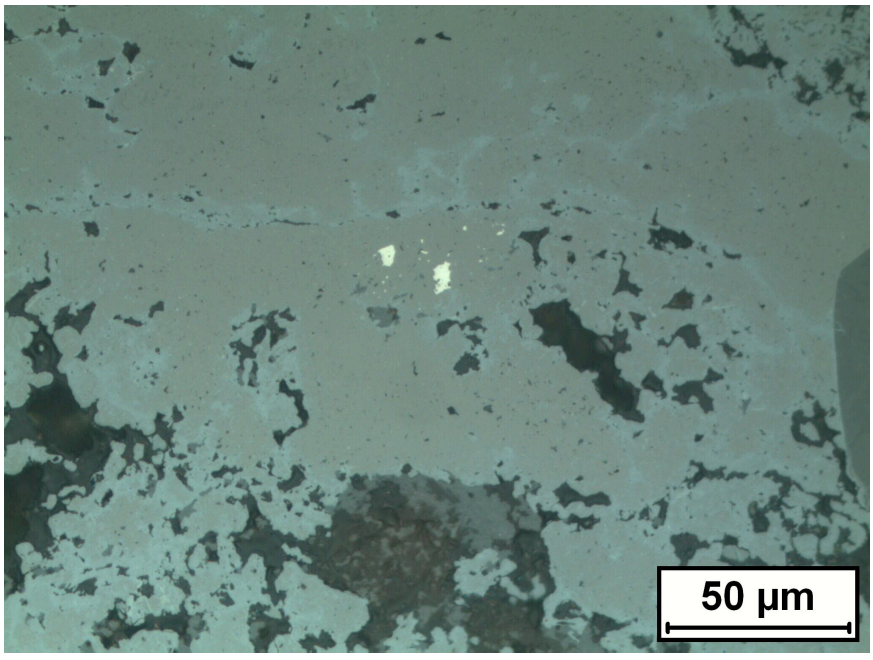

FIGURE 8. Occurrence of chalcocite (the two bigger inclusions with high reflectance) within magnetite (brownish). The tiny inclusions are either CuFe alloys or CuFe sulfides. Plane polarized reflected light. The grey-black portions are Fe-chlorite (chamosite).

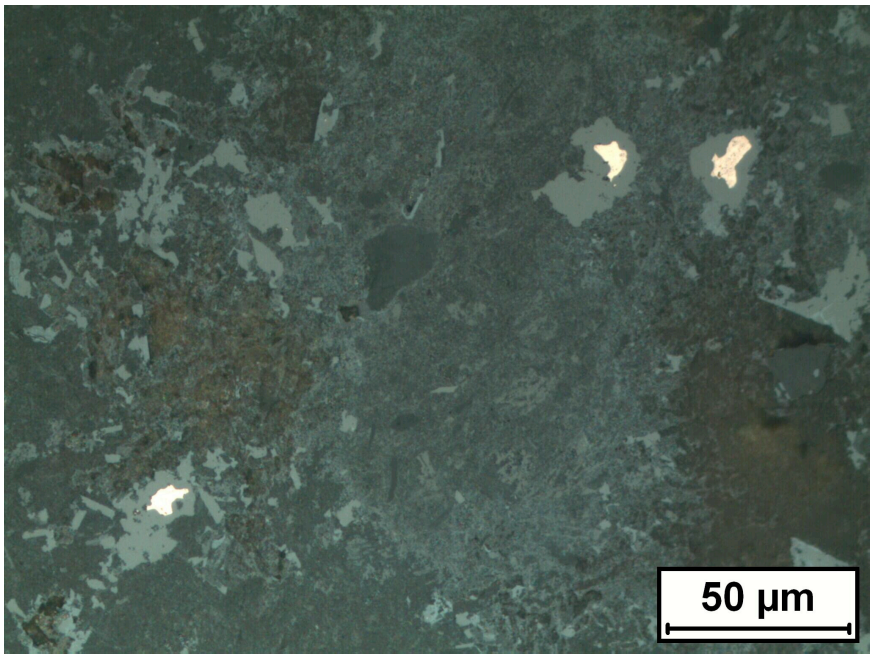

FIGURE 9. Occurrence of CuFe alloys (~93 wt.% Cu and ~7 wt.% Fe) within altered Cr-Al spinels. The groundmass consists mainly of Fe-chlorite. Plane polarized reflected light.

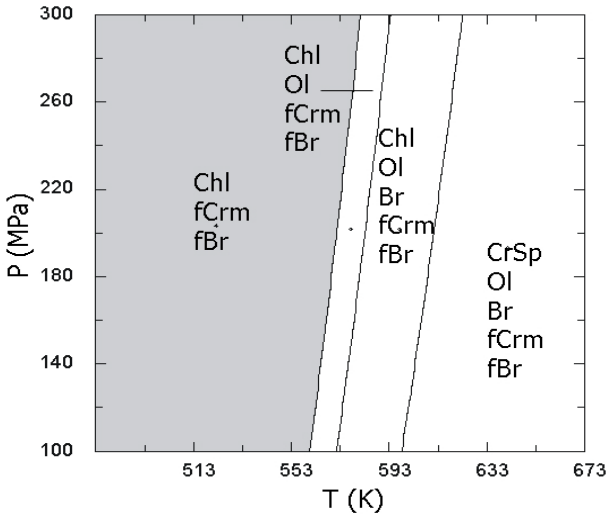

FIGURE 10. Phase diagram derived from PERPLEX program showing P-T stability fields for different assemblages. Chl = chlorite; Ol = olivine; fCrm = ferrochromite; fBr = ferrobrucite; Br = brucite; CrSp = chromespinel. At a pressure of 1Kb and a temperature of smaller c. 290 °C, the model predicts that olivine is no longer stable. The stable assemblage is chlorite, ferrochromite, and ferrobrucite. In the studied samples we have not recorded ferrobrucite in the stable low –T assemblage.

TABLE 1. Chemical composition of Fe-chlorite (chamosite) measured by EPMA

Sample		MgO	Na2O	CaO	K2O	MnO	Al2O3	TiO2	Cl	FeO	SiO2	Cr2O3	NiO
T1	Min.	0.52	0.04	0.03	0.00	0.18	20.28	0.73	0.00	37.78	10.42	2.50	0.22
	Max.	0.90	0.07	0.30	0.01	0.29	26.33	1.95	0.02	51.69	17.37	4.48	0.33
(n=11)	**Avg.**	**0.70**	**0.06**	**0.07**	**0.00**	**0.22**	**23.47**	**1.23**	**0.01**	**41.49**	**14.76**	**3.43**	**0.27**
T2	Min.	0.76	0.00	0.01	0.00	0.27	10.63	0.00	0.00	38.57	19.91	0.25	0.17
	Max.	1.88	0.07	0.13	0.04	0.74	15.82	0.17	0.02	42.80	25.57	7.29	0.53
(n=14)	**Avg.**	**1.28**	**0.02**	**0.05**	**0.01**	**0.46**	**14.00**	**0.07**	**0.00**	**41.11**	**22.35**	**2.66**	**0.37**
T3	Min.	1.82	0.00	0.01	0.00	0.57	21.15	0.00	0.00	37.43	20.06	1.05	0.20
	Max.	2.53	0.05	0.07	0.03	0.73	23.29	0.47	0.03	40.14	22.68	3.72	0.34
(n=17)	**Avg.**	**2.04**	**0.03**	**0.04**	**0.01**	**0.66**	**22.33**	**0.23**	**0.01**	**39.07**	**21.04**	**2.00**	**0.26**
T4	Min.	3.22	0.01	0.10	0.00	0.17	8.66	0.00	0.03	17.82	18.67	2.22	1.32
	Max.	8.49	0.06	0.57	0.16	0.34	14.52	0.08	0.19	42.64	32.69	6.37	2.91
(n=11)	**Avg.**	**5.01**	**0.04**	**0.33**	**0.08**	**0.25**	**12.53**	**0.01**	**0.11**	**23.88**	**28.09**	**3.36**	**2.13**
T5	Min.	0.34	0.00	0.00	0.00	0.11	16.06	0.06	0.00	38.57	16.84	3.65	0.13
	Max.	0.60	0.04	0.09	0.01	0.24	21.46	1.61	0.01	43.79	21.86	5.91	0.24
(n=15)	**Avg.**	**0.46**	**0.02**	**0.03**	**0.00**	**0.16**	**18.66**	**0.73**	**0.00**	**41.56**	**19.35**	**4.75**	**0.19**

TABLE 2. Chemical composition of chrome-spinel measured by EPMA

Sample		SiO2	P2O5	TiO2	CaO	FeO	Al2O3	Cr2O3	MgO	MnO	NiO	Cu2O	ZnO
T1	Min.	0.00	0.00	0.26	0.00	30.15	10.26	21.11	0.20	0.31	0.09	0.00	0.16
	Max.	0.09	0.00	1.44	0.23	48.48	35.30	33.52	8.97	1.68	0.17	0.03	4.36
(n=6)	**Avg.**	**0.05**	**0.00**	**0.64**	**0.05**	**37.24**	**27.54**	**26.69**	**6.56**	**0.57**	**0.13**	**0.01**	**1.08**
T2	Min.	0.00	0.00	0.39	0.00	32.77	14.32	35.37	6.94	0.38	0.07	0.00	0.18
	Max.	0.02	0.01	0.75	0.00	37.54	21.24	43.49	9.38	0.49	0.11	0.02	0.24
(n=7)	**Avg.**	**0.01**	**0.01**	**0.46**	**0.00**	**35.17**	**16.33**	**40.00**	**7.83**	**0.45**	**0.09**	**0.01**	**0.21**
T3	Min.	0.00	0.00	0.29	0.00	32.69	16.87	36.42	5.51	0.42	0.05	0.00	0.14
	Max.	0.02	0.02	0.63	0.01	37.12	20.13	40.57	8.71	0.48	0.10	0.02	0.63
(n=6)	**Avg.**	**0.01**	**0.01**	**0.42**	**0.00**	**34.00**	**18.56**	**38.59**	**7.80**	**0.46**	**0.08**	**0.01**	**0.30**
T4	Min.	0.00	0.00	0.31	0.00	31.57	10.76	43.81	4.92	0.41	0.11	0.00	0.16
	Max.	0.05	0.02	0.44	0.01	39.51	16.39	47.62	8.92	0.55	0.14	0.02	0.20
(n=8)	**Avg.**	**0.02**	**0.00**	**0.37**	**0.00**	**35.17**	**12.78**	**45.46**	**6.18**	**0.47**	**0.13**	**0.01**	**0.19**
T5	Min.	0.00	0.00	0.25	0.00	29.48	17.02	32.32	4.77	0.32	0.06	0.00	0.14
	Max.	0.05	0.01	0.46	0.01	38.57	29.10	39.79	9.28	0.50	0.12	0.03	0.53
(n=7)	**Avg.**	**0.02**	**0.00**	**0.35**	**0.00**	**34.04**	**21.73**	**36.46**	**7.02**	**0.41**	**0.08**	**0.01**	**0.28**

TABLE 3. Chemical composition of magnetite measured by EPMA

Sample		SiO2	P2O5	TiO2	CaO	FeO	Al2O3	Cr2O3	MgO	MnO	NiO	Cu2O	ZnO
T1	Min.	0.00	0.00	0.72	0.00	73.86	0.00	0.65	0.00	0.07	0.00	0.00	0.00
	Max.	0.08	0.01	6.73	0.59	90.47	13.44	13.07	0.83	0.60	0.19	0.41	0.11
(n=6)	**Avg.**	**0.06**	**0.00**	**2.54**	**0.14**	**82.01**	**4.50**	**4.41**	**0.32**	**0.25**	**0.07**	**0.08**	**0.03**
T2	Min.	0.33	0.00	0.05	0.00	83.01	0.07	0.07	0.00	0.18	0.09	0.00	0.00
	Max.	5.01	0.03	0.71	0.05	92.20	3.52	2.52	0.38	0.40	0.18	0.02	0.02
(n=7)	**Avg.**	**2.28**	**0.01**	**0.29**	**0.03**	**89.15**	**0.86**	**1.22**	**0.09**	**0.28**	**0.13**	**0.01**	**0.01**
T3	Min.	1.03	0.00	0.87	0.00	87.34	0.91	1.18	0.06	0.05	0.02	0.00	0.00
	Max.	1.56	0.05	2.31	0.19	90.55	1.77	1.94	0.15	0.26	0.05	0.02	0.01
(n=6)	**Avg.**	**1.35**	**0.01**	**1.41**	**0.06**	**88.29**	**1.21**	**1.55**	**0.09**	**0.14**	**0.03**	**0.01**	**0.00**
T4	Min.	0.42	0.00	0.00	0.00	85.42	0.13	0.48	0.02	0.44	0.33	0.00	0.00
	Max.	1.10	0.04	0.05	0.02	92.04	1.86	3.40	0.75	1.43	0.52	0.02	0.04
(n=8)	**Avg.**	**0.80**	**0.02**	**0.03**	**0.01**	**90.11**	**0.42**	**1.04**	**0.21**	**0.75**	**0.39**	**0.01**	**0.01**
T5	Min.	1.12	0.00	0.05	0.00	84.67	0.40	0.26	0.00	0.05	0.02	0.00	0.00
	Max.	3.07	0.02	1.45	0.25	91.49	2.13	2.56	0.06	0.12	0.15	0.03	0.02
(n=12)	**Avg.**	**1.95**	**0.01**	**0.71**	**0.10**	**88.42**	**1.37**	**1.46**	**0.02**	**0.08**	**0.09**	**0.01**	**0.01**