Electron Microprobe Data

Rruff ID: **R060271** Mineral: **Chalcophanite**
Locality: "Glory Hole", Gold Hill mine, Tooele County, Utah, USA

Weight Percents

Analysis	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	Average	StDev
MnO_2	56.16	55.62	55.65	55.42	55.56	55.65	54.82	55.48	55.65	55.75	55.57	0.33
MnO	6.86	6.79	6.79	6.77	6.78	6.80	6.69	6.77	6.79	6.81	6.79	0.04
ZnO	18.53	19.00	18.82	18.36	18.76	18.85	18.48	18.70	18.34	18.84	18.67	0.23
Totals	81.55	81.41	81.26	80.55	81.10	81.30	79.99	80.95	80.78	81.40	81.03	0.48
H_2O*	18.45	18.59	18.74	19.45	18.90	18.70	20.01	19.05	19.22	18.60	18.97	0.48

* = calculated values

Cation normalized to 7 Oxygens											ACN	StDev	NCN	CNISF**
Mn^{4+}	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	0.00	3.01	3.00
Mn^{2+}*	0.02	0.01	0.01	0.02	0.01	0.01	0.01	0.02	0.02	0.01	0.02	0.00	0.02	0.03
Zn	0.95	0.98	0.97	0.95	0.97	0.97	0.97	0.97	0.95	0.97	0.97	0.01	0.97	0.97
Cation	3.98	3.99	3.99	3.98	3.99	3.99	3.99	3.98	3.98	3.99	3.98	0.01	4.00	4.00

Ideal Chemistry: $(Zn,Fe^{2+},Mn^{2+})Mn^{4+}{}_3O_7 \cdot 3(H_2O)$
Calculated chemistry $(Zn_{0.97}Mn^{2+}{}_{0.03})Mn^{4+}{}_3O_7 ? 3(H_2O)$
minor amouns of Ca

Instrument: Cameca SX50
Sample Voltage: 15 kV
Acceleration Current: 10 nA
Beam Size: 10 microns
Date of Analysis: 06/03/2006

Microprobe Calibration Data

Xtal	El	Line	Pk(s)	Bkg(s)	Bkg(+)	Bkg(-)	Standards
PET	Ca	Ka	20	10	500	-350	wollast
PET	Mn	Ka	20	10	600	-600	rhod-791
PET	Ag	La	20	10	500	-500	ag
LIF	Zn	Ka	20	10	500	-500	zn

ACN: Average Number of Cations
NCN: Normalized Cation Numbers (NCN = ACN*4/3.98)
StDev: Standard Deviation
CNISF** = Cation Number In Structural Formulae, charge balanced