

MINERALOGRAPHIC LABORATORY

803940  
R.V. Kirkham  
Thesis Material  
- Sulphurets

Date

*No 18*

Name or number of section . . . . .

Polish

*good prismatic*

Colour

*galena white*

Hardness

*appears to have  
2 clv.*

Streak

*gray-bl.*

Texture

Pleochroism

*weak - grey.*

Anisotropism

*strongly deep blue grey to light grey.*

Texture under xd. nicols

*twins <sup>course</sup> or str. grain boundaries*

Twinning

Internal reflection

Cleavage

Association

Etch tests

HgCl<sub>2</sub>

KOH

KCN

HCl

FeCl<sub>3</sub>

HNO<sub>3</sub>

Aqua regia

Microchemical tests

Grain size

Confirmatory features such as magnetism, sectility, fluorescence, blowpiping,

radioactivity, etc. . . . .

Mineral or Group

Interpretation of textures.

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Date	Oct. 11/60		
Name or number of section	No 1 Tray M7	No 6 M7	#18 M7
Polish	fair to good but many pits	fine prismatic fibrous striated good XPLS.	fair to good
Colour	galena white	gal. white	gray
Hardness		H = 1-2	H = 1-2
Streak		gray-bl.	gray-bl.
Texture		mosaic.	
Pleochroism		distinct (but weak) gray-blue.	weak
Anisotropism	weakly but distinct	Strong gray to blue gray	<del>distinct</del> Strong gray
Texture under xd. nicols	mainly small grains	mosaic	
Twinning			odd poly twins
Internal reflection			
Cleavage			3 excell.
Association			
Etch tests			
HgCl <sub>2</sub>			
KOH			
KCN			
HCL			
FeCl <sub>3</sub>			
HNO <sub>3</sub>			
Aqua regia			
Microchemical tests			
Grain size			
Confirmatory features such as magnetism, sectility, fluorescence, blowpiping, radioactivity, etc.			
Mineral or Group			
Interpretation of textures.			

3 excell.  
prismatic  
clv.

Zinkenite

# BLOWPIPE ANALYSIS

DEPARTMENT OF GEOLOGY

UNIVERSITY OF BRITISH COLUMBIA

I. PHYSICAL PROPERTIES:

COLOUR: \_\_\_\_\_

STREAK: \_\_\_\_\_

HARDNESS: \_\_\_\_\_

S.G. \_\_\_\_\_

INDICATING

II. CLOSED TUBE

P142 III. OPEN TUBE

*mainly for oxidation*

*Flux  
Bismuth  
Copper  
Zinc  
Lead  
Cadmium  
Tin*  
*as very important  
coating*

P139

IV. ON CHARCOAL:

*(Pb, Fe, Co, Ni) are magnetic on heating*  
**ALONE:** *It is impossible to extract some metals by ordinary  
blow pipe means, some merely by heating, (Au, Ag, Sn, Cu + Pb) (S, Sb, As)*  
**WITH  $Na_2CO_3$ :** *in equal proportions, reducing mixture.  $\downarrow$  need reducing agent  
serves as a good reducing agent for most reactions  
(Ag, Sn + Cu)*

**WITH  $CO(NO)_2$ :** \_\_\_\_\_

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V. FUSIBILITY

*Fusible or Infusible (if fusible 1-6 scale)  
(above 1000°C)*

VI. FLAME COLOURATION \_\_\_\_\_

VII. WITH FLUXES ON PLATINUM WIRE (AFTER ROASTING)

SOD. CARB.: \_\_\_\_\_

BORAX: \_\_\_\_\_

PHOSPHORUS SALT: \_\_\_\_\_

VIII. WITH ACIDS \_\_\_\_\_

IX. SILVER COIN TEST \_\_\_\_\_

X. WITH COPPER OXIDE \_\_\_\_\_

MINERAL IS: \_\_\_\_\_

Chemical Analysis:

	Tete Mineral	Australian Davidite
TiO <sub>2</sub>	51.00	54.3
Fe <sub>2</sub> O <sub>3</sub>	13.57	13.0
Cr <sub>2</sub> O <sub>3</sub>	3.23	} 4.6
U <sub>3</sub> O <sub>8</sub>	7.10	
FeO	12.37	16.0
ZrO <sub>2</sub>	3.30	8.3
Na <sub>2</sub> O	1.72	1.5
CaO	1.00	
PbO <sub>2</sub>	—	1.5
H <sub>2</sub> O+	1.09	
SiO <sub>2</sub>	0.68	
Al <sub>2</sub> O <sub>3</sub>	4.24	
K <sub>2</sub> O	0.32	

One significant difference from published analyses is that the Tete mineral has more uranium and less rare earths

The type formula was derived as FeTi<sub>3</sub>O<sub>7</sub>

Heat Treatment and X-ray Investigation:

Heating to 1000°C in air for 24 hours brought about recrystallization but not to a single crystal. It was thought that oxidation of Fe might occur so further work was done in an inert atmosphere. Similar patterns occurred when heat treated at 800°C, 1000°C, and 1200°C but the lines became clearer as the temp. increased. Also at 1200°C 3 lines due to Fe were present showing dissociation at high temperature.