

GEOLOGY 17.01: Mineralogy

LAB 9: COMMON ORE MINERALS

Learning Objectives:

- Students will reinforce their ability to identify Fe-bearing oxides and hydroxyoxides (hematite, magnetite, and limonite) in hand-sample
- Students will be able to identify common sulfide and oxide minerals in hand sample
- Students will be able to identify hand samples of relatively common salts (carbonates, sulfates and halides) associated with ore bodies

Iron Minerals

Pyrite	FeS_2
Pyrrhotite	$\text{Fe}_{0.83-1}\text{S}$
Magnetite	Fe_3O_4
Hematite	Fe_2O_3
Limonite	$\text{FeO}(\text{OH}) \cdot n\text{H}_2\text{O}$
Siderite	FeCO_3

Copper Minerals

Copper	Cu
Chalcopyrite	CuFeS_2
Bornite	Cu_5FeS_4
Malachite	$\text{Cu}_2(\text{CO}_3)(\text{OH})_2$
Azurite	$\text{Cu}_3(\text{CO}_3)_2(\text{OH})_2$

Manganese Minerals

Rhodocrosite	MnCO_3
Pyrolusite	MnO_2

Lead Minerals

Galena	PbS
Cerussite	PbCO_3

Antimony Minerals

Stibnite	Sb_2S_3
----------	-------------------------

Arsenic Minerals

Orpiment	AsS
Arsenopyrite	FeAsS

Miscellaneous Metals

Sphalerite	ZnS
Cinnabar	HgS
Molybdenite	MoS_2
Barite	BaSO_4

Associated Minerals

Fluorite	CaF_2
Topaz	$\text{Al}_2\text{SiO}_4(\text{F},\text{OH})_3$
Sulfur	S

Document the properties of each of the minerals listed above.

Identify the minerals in the five unknown samples (each sample contains 2 or more minerals).