

# **AEX METAL MINING**

**2022 Q2**

**General Information**



- **As a result of our uninterrupted exploration activities since June 2016 by applying "CIM Identification Standards", Economic Polymetallic Mineralization was discovered in our 5 license areas covering 8,340 hectares of land in the Alanya Massif.**
- **This discovery was made in the YT Region, where we have detected the highest anomalies in our significant search areas and where we intensify detailed searches. The first discoveries were made in the #F1 (Cu-Au-Ag) and #F2 (Fe-Cu-Au-Ag-Pd) mineralization zones.**
- **In the 2020, with the ~ 300 Ton rock chip materials obtained from 15 RAB Drilling opened at a depth of ~ 200mt in an area of 4km X 1km, a numbers of Heavy Mineral Separation (HLS), Magnetic Separation and Chemical analyzes. As a result of these studies, #F3 Porphyry Polymetallic Mineralization (Ni, Co, Cu, Zn, Pb, Au, Ag, Fe, S +PGE) was discovered.**
- **10% of the discovered ~ 2 Billion Tons Porphyry Polymetallic Mineralization is Ferro Magnetic and contains Major Pyrrhotite-Pentlandite-Chalcopyrite and other Minerals.**
- **Strategic Metals Ti-Sc-REE-Li-Rb-Nb-Ta are economically present in the Strong-Weakly Magnetic part with high magnetism which constitutes ~10% of the total mineralization.**

- **Technological Tests and Analysis were carried out with "ARGETEST Ore Enrichment, R&D-Analysis Ltd" and Mineralogical - Petrographical SEM-EDS analyzes were carried out with " HUNITEK Hacettepe University Advanced Technologies Application and Research Center ".**
- **The FM Ferro Magnetic part, which constitutes 10% of the ore, was subjected to experiments with a large number of Gaussian - Magnetism Power made in WLIMS and WHIMS Magnetic Separators and it was determined that the %80 efficiency was obtained with 3250 Gs WLIMS.**
- **Flotation, Hydrometallurgy and Pyrometallurgy tests, which were initiated with the Ferro Magnetic concentrates obtained, are continuing.**
- **On the other hand, the 1st Stage of EDS/SEM/XRD analyzes was completed at "HUNITEK Hacettepe University Advanced Technologies Application and Research Center" in order to determine the mineralization and petrographic-mineralogical properties that control the concentration of all rocks.**

**In this study, Pyrotite 4C, Pentlandite, Chalcopyrite, Galen, Sphalerite and other primary minerals were determined.**

# AEX ALANYA MASSIF PROJECT EXPLORATION

## CIM Definition Indicator Mineral Method has been applied in the AEX Project



The Canadian Institute of Mining,  
Metallurgy and Petroleum



15 kg till sample;  
2 kg bedrock sample

→  
Bedrock  
crushing



Preconcentrate heavy  
minerals  
on shaking table

→  
←



Pan gold, sulphide &  
PGM grains

↘



Electron microprobe  
and LA ICP-MS  
analyses



Visual picking: 0.25-0.5,  
0.5-1.0, 1.0-2.0 mm fractions

\*Counts normalized to 10 kg weight



Ferro & paramagnetic  
separations



Heavy liquid  
separation in MI  
SG 3.2 g/cm<sup>3</sup>

### WORKS COMPLETED :

- Number of samples taken from the fields : + 2500
- Magnetic Separation – Screen Analyses : + 6.000
- HLS analyses sample quantity : + 2500
- SEM-EDS Analyses Exploration period : + 7.000
- Chemical Analyses sample quantity : + 500
- SEM-EDS Analyses #F3/FM Mineralogy : + 1.000

### ANALYSIS LABORATORIES :

- Alanya Company Laboratory  
Crushing-Milling-Screen,-Magn.Sep. Analyses -HLS  
Heavy Liquid Analyses(Tetrabromoethan. 2.98gr/cc)
- BVM Bureau Veritas (ACME) Laboratory- Canada  
Chemical / Fire-assay / Neutron Activation Analyses
- ARGTEST Chemical Analysis / Fire-assay Analyses  
Mineral Processing /Magnetic Separation&Flotation
- ÇBİ Çayeli Bakır İşletmeleri Laboratory  
Chemical Analyses / Fire-assay Analyses
- Hacettepe University Advanced Technologies  
Application and Research Center (HUNITEK)  
Electron Microscopy Laboratory  
Petrographic-Mineralogical SEM-EDS analyses
- Hacettepe University Earth Sciences Research  
and Application Center  
Petrographic and Ore Microscopy Analyses
- Hacettepe University Department of Geological  
Engineering EPMA Electron Probe Micro Analyses

**AEX METAL MINING  
ALANYA MASSIF PROJECT  
2016 - 2022**

**ALANYA MASSIF GEOLOGICAL SURVEY  
TIME SCALE**

- Blumenthall,1951 - MTA
- Peyronnet,1967 - MTA
- Dr.Metin Şengün,1978 - MTA
- Özgül,1983-1984
- Okay-Özgül,1984
- Okay,1989
- Bozkaya,1999
- Çetinkaplan – Pourteau – Candan – Koralay
- Oberhansli – Okay - Chen – Kozlu – Şengün,2016
- Ergen – Bozkurt - Tuncay - Esirtgen,2020 – MTA
- AEX METAL MINING, 2016 – 2022

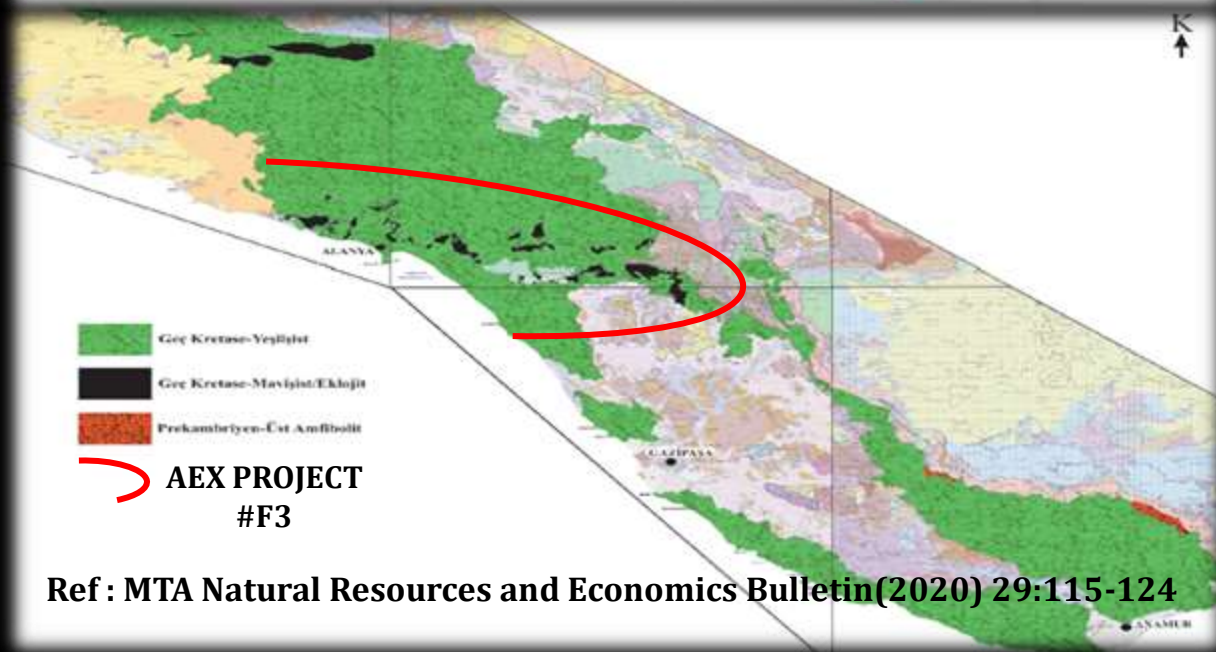
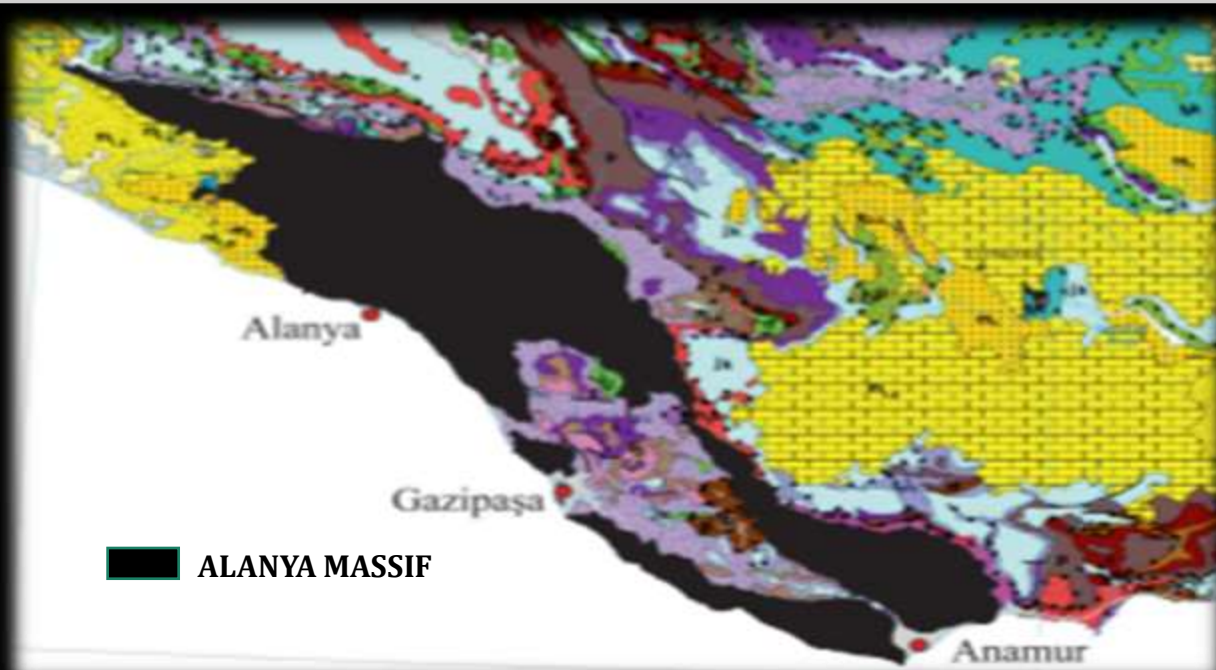
**AEX #F3/FM  
WORKS COMPLETED**

- Number of samples taken from the fields : + 2500
- Magnetic Seperation – Screen Analyses : + 6.000
- HLS analysis sample quantity : + 2500
- SEM-EDS Analysis Exploration period : + 7.000
- Chemical Analyses sample quantity : + 500
- SEM-EDS Analyses #F3/FM Mineralogy : + 1.000

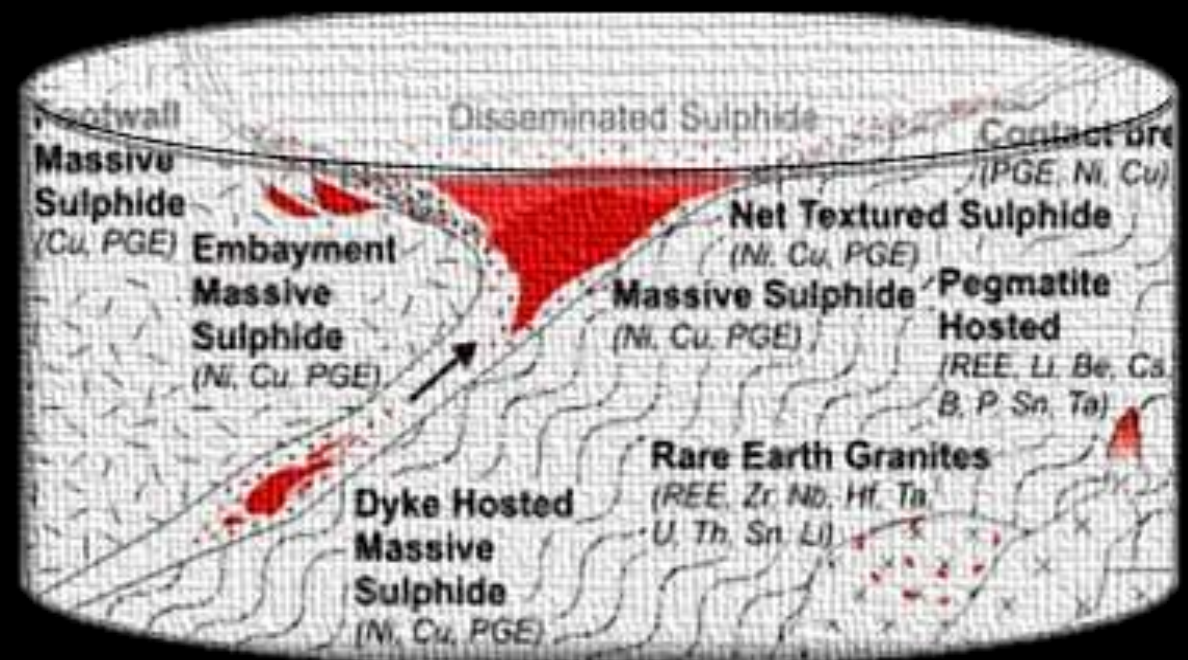
# ALANYA MASSIF

## #F3

### Disseminated Sulphide Deposit



Ref : MTA Natural Resources and Economics Bulletin(2020) 29:115-124



Ref : [www.earthsci.org/mineral/mindep/ma\\_sulp/ma\\_sulp.html](http://www.earthsci.org/mineral/mindep/ma_sulp/ma_sulp.html)

PROJECT UPSIDE POTENTIAL :

Tectonic and hydrothermal based High Grade Mineralization formations has a significant potential.

The presence of these formations has been revealed in all of the important Magmatic Sulphide deposits in the World.

## **AEX PROJECT Geology/Mineralogy**

**(Alanya Massif / Sugözü Nappe / Cebel-i Reis Mountain / # F3 Magmatic Sulphide Porphyry Mineralization)**

- **"ALANYA MASSIF"** consists of a Precambrian basement, which is thought to correspond to the Pan-African Basement of the Gondwana Plate, and a Paleozoic-Mesozoic metasedimentary cover.

**It contains Precambrian basement in its core and generally covers Paleozoic units; A south-overtained anticlinorium and a Southeast-dipping synclinorium consisting mostly of Mesozoic aged units and a north-dipping tectonic slicing form the structure of the Alanya Massif.**

**As a result of the academic studies carried out until today and the mining activities carried out by us in Isparta-Burdur-Alanya region in the last 15 years, it has been determined that the "Isparta Angle" is African origin, Precambrian Old Craton. "Alanya Massif" is located on the Southeast wing of Isparta Angle.**

- **"SUGÖZÜ NAPPE"** It has been proven by scientific studies that Sugözü Nappe is 84-82 Ma old and originates from ~ 60 km, and it consists of High Pressure - Low Temperature (HP / LT) metamorphic rocks.

**Sugözü Nappe, which also contains Eclogite, Eclogitic Metabasite and Blue Schists, is composed of Precambrian aged Metamorphic schists. Eclogites and Bedrock first transformed into Blue Schist facies and eventually Green Schist facies. The mineral assemblage of Schists on the surface consists of garnet, glaucophane, phengite, sphene, calcite, quartz, albite and opaque oxides, and at the base there are Gneiss & Chlorite, Mica, Quartz, Albite and Magmatic Sulfide Minerals.**

- **"CEBEL-I REIS MOUNTAIN"** The main mass of Cebel-i Reis Mountain consists of Paleozoic-Mesozoic aged hard and thick bedded gray-dark gray limestone formation with little metamorphic crystallization and Marble and Dolomite formations. Cebel-Reis Mountain with an altitude of 1650 meters is the only mountain in the region that is formed perpendicular to the sea.

- **" #F3 MAGMATIC SULPHIDE PORPHYRY ORE "**

As a result of the Petrographic, Mineralogical and Chemical Analyzes of the samples obtained from the RAB chip drillings made from 15 different points of the southern slope of Cebel-i Reis Mountain; It continues in the East-West direction with an extension of > 4 km and a depth > 200m; Economic Magmatic Sulfur Polymetallic Mineralization, which contains Pyrrhotine, Pentlandite and Chalcopyrite, which are the main Sulfur phases found in mantle rocks, begins after 15-20 m depth from the surface.

# F3 Magmatic Sulphide Mineralization consists of billions of tons of economic resources and the Ferro Magnetic Fraction which constitutes ~ 10% of Polymetallic Mineralization includes the following Metals; Ni 1870 g/t - Co 425 g/t - Cu 834 g/t - Zn 462 g/t - Pb 420 g/t - Ag 8 g/t - Fe 45% - S 30%

- In certain parts of the # F3 Magmatic Sulphide Belt, High Grade Mineralization occurrences of Tectonic - Hydrothermal origin and formed by the Natural Concentration of the Metals at the Base have occurred;

# F1 Mineralization contains 3.8% Cu, 0.60 g/t Au, 30g/t Ag

# F2 Mineralization contains 3.4% Cu, 0.24 g/t Au, 4.4g/t Ag and > 40% Fe.



# ALANYA MASSIF AEX PROJECT #F3 Simplified Geology



Cebel-i Reis Mountain  
1650mt

GEOLOGICAL FORMATION	AGE
Marble, Schist in places	Mesozoic

GEOLOGICAL FORMATION	AGE
Metaclastics and metacarbonates	Upper Cretaceous

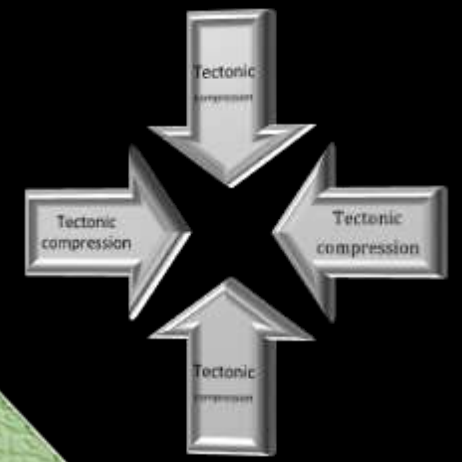
Depth +200mt

#F3  
Disseminated Sulphide

- Eclogite
- BlueSchist
- GreenSchist

GEOLOGICAL FORMATION	AGE
Gnays,schist, phyllite,etc	Cambri - Ordovician

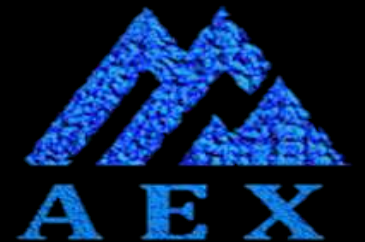
Potential  
Net textured-Massive Sulphide  
? Mt ?



# **AEX**

## **ALANYA MASSİF PROJECT**

- #F1 Cu,Au,Ag Mineralization**
- #F2 Fe,Cu,Au,Ag Mineralization**
- #F3 Polymetallic Mineralization  
( Ni,Co,Cu,Pb,Zn,Au,Ag,PGM )**





**#F1**

**YT AREA #F1 ZONE**  
Average of  
24 Grab & Chip Samples

- Cu 9.50 %
- Au 2.90 ppm
- Ag 103.80 ppm



#F1

**YT AREA #F1**

**Ultra High Grade Grab Sample**

**Analyses : Acme/Bureau Veritas Lab. Canada**

**Copper (Cu) ..... 15.6 %**

**Gold (Au) ..... 33 gr/ton**

**Silver (Ag) ..... >1000 gr/ton**

#F1

#F1

YTT1418

Cu=9.13%

Au=0.56 g/t

Ag=33.4 g/t

YTT1213

Cu=4.39%

Au=0.37 g/t

Ag=18.5 g/t

YTT1011

Cu=2.80%

Au=0.37 g/t

Ag=18.5 g/t

YTT89

Cu=2.56%

Au=0.47 g/t

Ag=24.0 g/t

YTT67

Cu=2.79%

Au=0.90 g/t

Ag=28.3 g/t

YTT45

Cu=1.51%

Au=0.15 g/t

Ag=17.3 g/t

YTT 123

Cu=3.54%

Au=0.942 g/t

Ag=66.3 g/t

17

16

15

14

13

12

11

10

09

08

07

06

05

04

03

02

01

**YT AREA #F1 ZONE**

**Average of 17 Channel Samples**

- Cu 3.82 %
- Au 0.59 ppm
- Ag 29.97 ppm

**YT AREA #F1 ZONE**

**17 Channel Samples Gravimetric Concentre**

**ARGETEST LAB. Analysis 17.12.2020**

- Cu 23.36 %
- Au 4.009 ppm
- Ag 269.2 ppm

# #F2

## BIF Banded Iron Formation & Cu,Au,Ag

<u>Sample</u>	<u>Cu</u>	<u>Au</u>	<u>Ag</u>	<u>Pt</u>	<u>Pd</u>
F2/C001	14,300%	276ppb	19626ppb	2ppb	13ppb
F2/C002	1,608%	5ppb	1296ppb	3ppb	21ppb
F2/C003	3,726%	1394ppb	7197ppb	230ppb	16ppb
F2/C004	0,137%	8ppb	261ppb	5ppb	10ppb
F2/020	4,641%	206ppb	3414ppb		
F2/021	1,196%	10ppb	1819ppb		
F2/025	0,132%	4ppb	99ppb		
F2/026	1,635%	6ppb	1629ppb		
<b>Average</b>	<b>3,422%</b>	<b>0.24 ppm</b>	<b>4.42 ppm</b>		

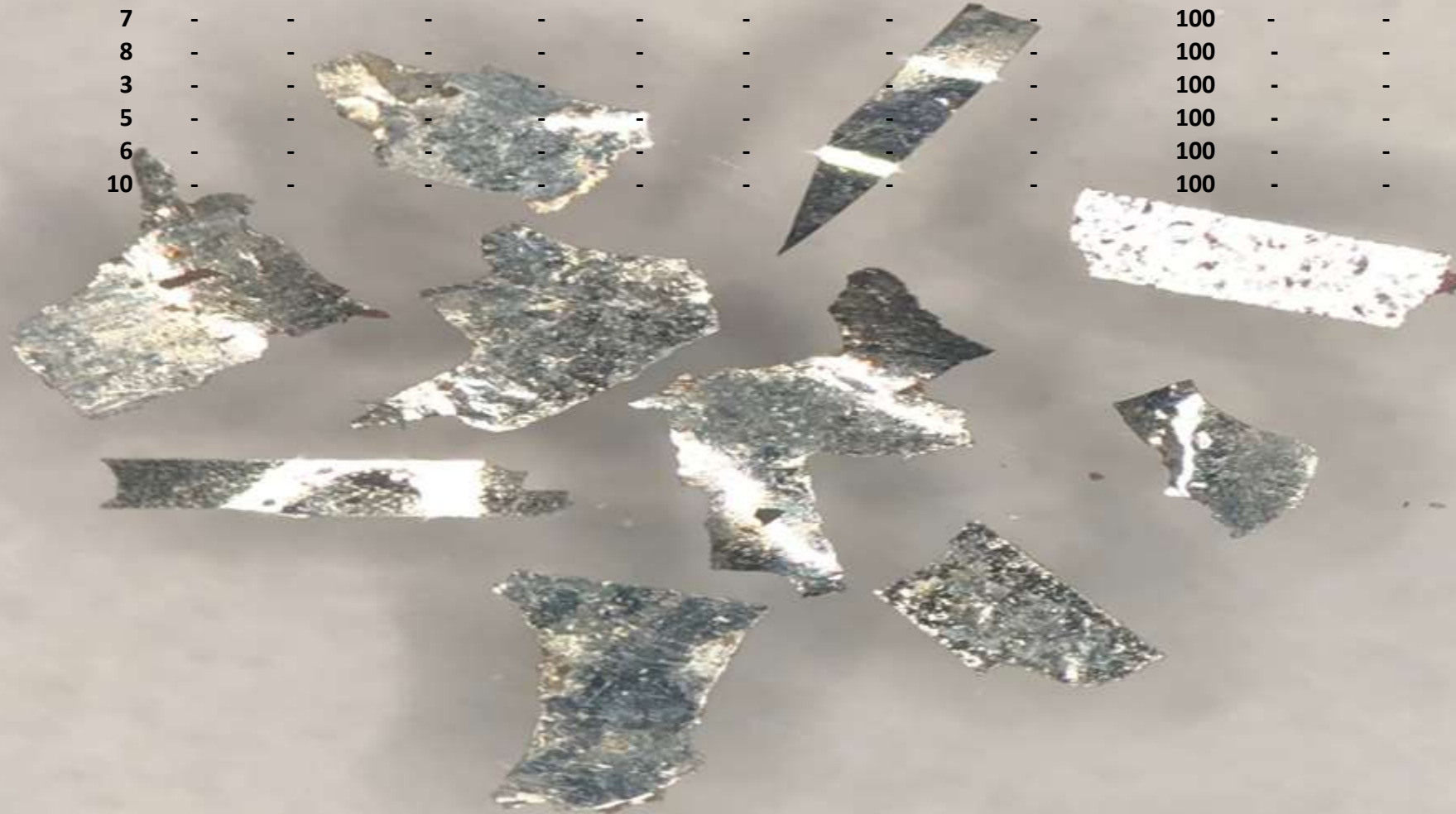
#F3

Quartzite, Chlorite, Albit, Mica Schist - Gneiss



# #F3 100% Pure Native Metallic Nickel found for the first time in the World

Sample	Grain	Na2O	Al2O3	SiO2	Cl	CaO	TiO2	Cr2O3	FeO	Ni	Cu	Zn	Mo	Pb
SS-J-	7	-	-	-	-	-	-	-	-	100	-	-	-	-
SS-J-	8	-	-	-	-	-	-	-	-	100	-	-	-	-
SS-H-	3	-	-	-	-	-	-	-	-	100	-	-	-	-
SS-H-	5	-	-	-	-	-	-	-	-	100	-	-	-	-
SS-H-	6	-	-	-	-	-	-	-	-	100	-	-	-	-
SS-H-	10	-	-	-	-	-	-	-	-	100	-	-	-	-



Hacettepe University Department of Geological Engineering  
EPMA Electron Probe Micro Analysis



# #F3

## Ni-Co-Cu-Au-Ag-PGE Magmatic Sulfide Deposits Major Main Mineral PYRRHOTITE 4C

Sudbury–Canada , Norilsk–Russia and Jinchuan–China ores is Magmatic Sulfide formations their Nickel, Cobalt, Copper, Au, Ag, PGM contents and they contain large amounts of Iron and Sulphure. Main mineral is Pyrrhotite, chemical combination of iron and sulfur. Pyrrhotite is ubiquitous in the ores of the Sudbury – Norilsk – Jinchuan district and is the major sulphide composing the massive and disseminated ores in the main deposits.

Pyrrhotite, which is formed with minerals containing Nickel, Cobalt, Copper and PGE, is of economic importance and Fe and S are generally produced as by-products in this type of deposits.

When Pyrrhotite is affected by surface conditions, sulfur minerals react with water and oxygen to transform into Iron oxide (Magnetite-Hematite) and Iron hydroxide (Goethite) minerals, which is why it is very difficult to find in geochemistry and surface surveys.

Pyrrhotite, which has 6 different crystal structures, has a high Ferromagnetic property type 4C. PYRRHOTITE 4C (Fe<sub>7</sub>S<sub>8</sub>) is in Monoclinic crystal structure and is the most important type.

### Crystallography of Pyrrhotite

<u>Pyrrhotite-11C</u>	<u>Pyrrhotite-11H</u>	<u>Pyrrhotite-4C</u>	<u>Pyrrhotite-5C</u>	<u>Pyrrhotite-6C</u>	<u>Pyrrhotite-7H</u>
Fe <sub>10</sub> S <sub>11</sub>	Fe <sub>10</sub> S <sub>11</sub>	Fe <sub>7</sub> S <sub>8</sub>	Fe <sub>9</sub> S <sub>10</sub>	Fe <sub>11</sub> S <sub>12</sub>	Fe <sub>9</sub> S <sub>10</sub>
Orthorhombic	Hexagonal	Monoclinic	Monoclinic	Monoclinic	Hexagonal

### Pyrrhotite-Pentlandite-Chalcopyrite



Ref: The Sudbury-Noril'sk Symposium

<http://www.geologyontario.mndmf.gov.on.ca/mndmfiles/pub/data/imaging/SV05/SV05.pdf>

# Conventional Green Mining



High Technology Green Metals

