Material characterization at Eramet Research

Ore/material characterization
Beneficiation products
Hydrometallurgical products
Metallurgical products
Metals and alloys
Quality control

Services for each of your project phases:
LABORATORY – DESIGN – PILOT – INDUSTRIALIZATION
We provide high quality, innovative solutions

- 40 years of experience in extractive metallurgy of non-ferrous metals

- For all steps of processing:
  - Conceptualization, including documentation
  - Numerical modeling and simulation
  - Laboratory and pilot testing: Ore beneficiation, Hydrometallurgy, Pyrometallurgy
  - Industrial plant start-up assistance
  - Continuous quality control at all steps using physico-chemical material characterization

- A tight collaboration with ERAMET Engineering guaranties the successful industrialization of your project

For further information on mineral characterization facilities and services, please contact us at:

eramet.research@erametgroup.com

www.eramet.com/R&D
Material characterization and evaluation

Mineralogical mapping on ore thin section

Modal mineralogy

Statistic textural information

Grain morphology study

Typical provided services:
- Modal mineralogy by Qemscan® and Visilog® software
- Mineral characterization by microprobe and XRD
- Micro-textural study by SEM-FEG
Beneficiation processes control

Process modelling: recoveries predictions

Micro-textural study

Chemical element localization

Liberation analysis

Typical provided services:
- Mineralogical characterization during each step of the process by XRD
- Particle size characterization by Laser Diffraction
- Liberation analysis for milling/crushing optimization
- Elemental deportment to choose the best separation process
- Link between micro-textural information and process efficiency
Hydrometallurgical processes control

XRD principal components study

Crystallization processes

Modal mineralogy on acid leaching processes

Bacterial imaging

Typical provided services:
- Mineralogical characterization during each step of the process by XRD
- High resolution morphological study of precipitates by SEM-FEG
- Modal mineralogy of acid leaching residues and elemental deportment by Qemscan®
- Bacteria and wet sample characterization by environmental SEM
- Particle size characterization by Laser Diffraction
Pyrometallurgical processes control

**Metal droplets in slag**

- Embedding and polishing big blocks from furnaces
- Metal droplets in slag: statistical localization and granulometric repartition by SEM analysis
- Melting/crystallization textural characterization by SEM-FEG
- Mineralogical mapping of up to 10 cm sized blocks by Qemscan®
- Dust granulometric repartition by Laser Diffraction

**Thermodynamic modeling**

- Starting composition
- 

**Freeze lining mineralogical mapping**

- 3 minerals zone: manganosite (MnO), galaxite (MnAlO₃) and tephroite (MnSiO₃)

Typical provided services:

- Embedding and polishing big blocks from furnaces
- Metal droplets in slag: statistical localization and granulometric repartition by SEM analysis
- Melting/crystallization textural characterization by SEM-FEG
- Mineralogical mapping of up to 10 cm sized blocks by Qemscan®
- Dust granulometric repartition by Laser Diffraction
Typical provided services:

- High resolution imaging on large samples by SEM-FEG
- Elementary mapping by SEM-EDS
- Crystallographic identification and orientation information by SEM-EBSD
- Qemscan® system: Automated EDS device enhanced for detection and chemical analyses of inclusions in steel or alloys
Quality control of industrial products

Corrosion mechanisms on metal and refractories

Hazardous material identification

Carbides granulometric repartition in alloys

Default analysis

Typical provided services:

 ✓ High resolution morphological study of products by SEM-FEG
 ✓ Large block imaging by SEM-FEG and image treatment (Multiscan and Visilog® software)
 ✓ Defaults characterization and quantification by Qemscan®
 ✓ Particle size characterization by Laser diffraction