

**BLOOM's solutions will help make mining and processing more sustainable and efficient, supporting Europe's transition to a greener and more competitive economy**



## Expected impact

BLOOM aims to revolutionise the EU mining and processing sector by demonstrating:

- / Cost-effective operations through advanced, data-driven processes, reducing operational expenses and unlocking new deposits.
- / Strengthened EU supply chains through sustainable and responsible domestic sourcing.
- / Diversified sourcing of critical raw materials from resource-rich countries like Canada, Ukraine, and Brazil.
- / Improved sustainability through circular economy models and reduced environmental impact.




# BLOOM

LiBeration anaLysis for Optimising extraction and prOcessing of CRMs



**Funded by  
the European Union**

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## What makes BLOOM unique?

The EU-funded BLOOM project will develop an integrated, real-time online Mineral Liberation Analysis system, supported by machine learning and artificial intelligence (AI), for use in both CRM and non-CRM processing plants.

As a result, new tools will be available for the users to optimize their processes to:

- / Increase the efficiency of mineral extraction and processing.
- / Reduce the costs associated with extraction and processing.
- / Improve the financial viability of ore production by enabling the profitable exploitation of low-grade deposits, thereby opening access to new raw material supplies.



## Key objectives

### 1. Develop and validate a Modular Analysis System (MAS)

BLOOM will create and demonstrate a user-friendly, modular online mineral liberation analyser (MLA). This system will analyse a variety of samples (e.g., solid samples from drilling and slurries from processing stages), delivering detailed insights into mineral composition, size distribution, and other properties. It will operate with adaptive resolutions, enabling quick and scalable processing, providing results in as little as 15 minutes.



### 2. Optimise mineral processing with AI

By integrating AI algorithms and control strategies, the MAS will enable real-time adjustments to key processing stages, such as grinding, gravity, and froth flotation. These optimisations will ensure efficiency across the entire processing chain rather than focusing on isolated stages, balancing performance for maximum overall output.

### 3. Enable real time mine planning for new block economic models

BLOOM will develop new economic models that integrate real-time cost and mineral yield data into mine planning. This will enable dynamic updates to mining strategies, redefining mine limits, extraction schedules, and reserve estimations while recalculating economic indicators like Net Present Value (NPV) and Internal Rate of Return (IRR).

### 4. Demonstrate technological improvements of the Modular Analysis System (MAS)

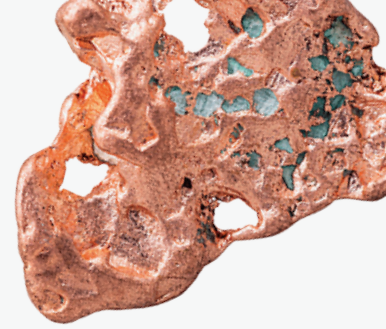
BLOOM's technology will be validated in real-world conditions at different pilot and demo sites. The applications will include:

- / Optimising mineral processing for increased efficiency.
- / Recalculating economic indicators for mining operations.
- / Demonstrating adaptability to primary and secondary raw materials with a focus on tantalum, niobium, copper, and cobalt to show scalability and replicability.

### 5. Prove the sustainability of BLOOM solutions

The project will perform a life cycle assessment in line with the Environmental Footprint method to demonstrate the environmental, technical, and economic benefits of its solutions. This will include enabling other new circular business mod-

els that transform low-grade ores and waste into exploitable reserves, increasing access to EU raw materials.



### 6. Develop a business case

BLOOM will deliver a techno-economic analysis to evaluate the performance and market viability of its solutions. This includes detailed assessments of processes, costs, and scalability to facilitate the adoption of these technologies by the industry.



## Pilot sites

BLOOM collaborates with key mining sites across Europe and North America to enhance resource recovery, optimise processing, and improve sustainability through advanced technologies.

### Tantalum & Niobium

- / Blue River // Canada
- / Mostove Project // Ukraine

### Copper & Polymetallic ores

- / Cobre Las Cruces // Spain
- / Lalor-Copper Mountain // Canada
- / SandfireMatsa // Spain

