



SUPREEMO

SUstainable EuroPean Rare Earth Elements
production value chain from priMary Ores

The SUPREEMO project will demonstrate at TRL7 environmentally friendly, safe, flexible, and cost competitive processes for the production of targeted Rare Earth Oxides (REO) for Permanent Magnets (PM) applications. This will be based on integrated efficient processing technologies to create a sustainable and resilient pre-commercial European Rare Earth Elements (REE) value chain.

The project will be using resources from Fen deposit located in Norway, the largest known light rare earth elements deposit in Europe.

Norway



OBJECTIVES

- Develop and optimise beneficiation technologies to treat various ores of different REE mineralogy, achieving >50-70 % gangue removal, and reducing downstream process costs for energy and reagents.
- Develop and demonstrate advanced froth flotation to reduce >35 % REE concentrate with >90 % recovery.
- Optimise the leaching operation with a sustainable process capable of extracting REEs from complex structures in an environmentally friendly and highly efficient way.
- Develop a low-cost, circular process for selective REE recovery and radioactive element removal using bio-based extractants and green diluents, aiming for near-zero waste and fewer steps.
- Optimise and develop highly efficient electrolysis cell for Rare Earth Alloy (REA) production and manufacturing of NdPr-based permanent magnets.
- Demonstrate the environmental, social, and economic sustainability of the SUPREEMO process value-chain.
- Effectively communicate and disseminate project results to society, scientific, and industry communities, maximising technology market uptake.

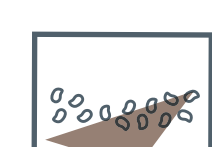
IMPACT



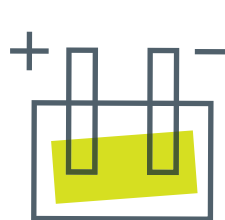
Effective beneficiation technologies eliminate significant amount of gangue materials (~80 %), while concentrating the TREO to a level of >35 % concentrates without significant loss of TREO (<10 %).



Flexible leaching process targeting an efficiency of >90 % of REEs recovery concentrates without significant loss of TREO (<10 %).



Sustainable, circular and green solvent extraction process aiming to recovery >95 % of targeted REOs with minimal operation steps to reach the desirable purity (>97 % of REE).



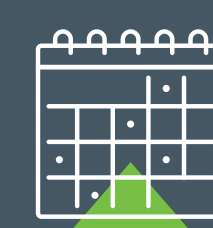
Innovative multi-cathode electrolysis cell to produce REA with 99 % purity.



Minimise residues by identifying specific valorisation routes.



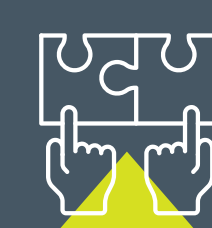
€7.06 Million Total budget
€6.40 Million EU Funding budget



48 months



11 partners



9 countries



REE
Minerals



CONTACT US

PROJECT COORDINATOR



Dr. Arne Petter Ratvik



SINTEF



arne.p.ratvik@sintef.no



Dr. Samuel Senanu



SINTEF



samuel.senanu@sintef.no

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