



57-71
eu Rare
 sustainable exploitation

EURARE:
 RESEARCH FOR A
 SUSTAINABLE
 EUROPEAN REE
 EXPLOITATION
 INDUSTRY



Beneficiation Pilot Plant

-  Fen Complex, NO
TANBREEZ
-  Kvanefjeld, GL
GME
-  Norra Karr, SE
TASMET
-  Kringlorna, GL
TANBREEZ



Outotec



REE
CONCENT
RATES



RED
MUD
GREECE

Extraction & Separation Pilot Plants

 Johnson Matthey

 REE COMPOUNDS

 LCM
less common metals

 REE METALS & ALLOYS

 noorem
magnets

 REE MAGNET & ALLOYS



MEAB

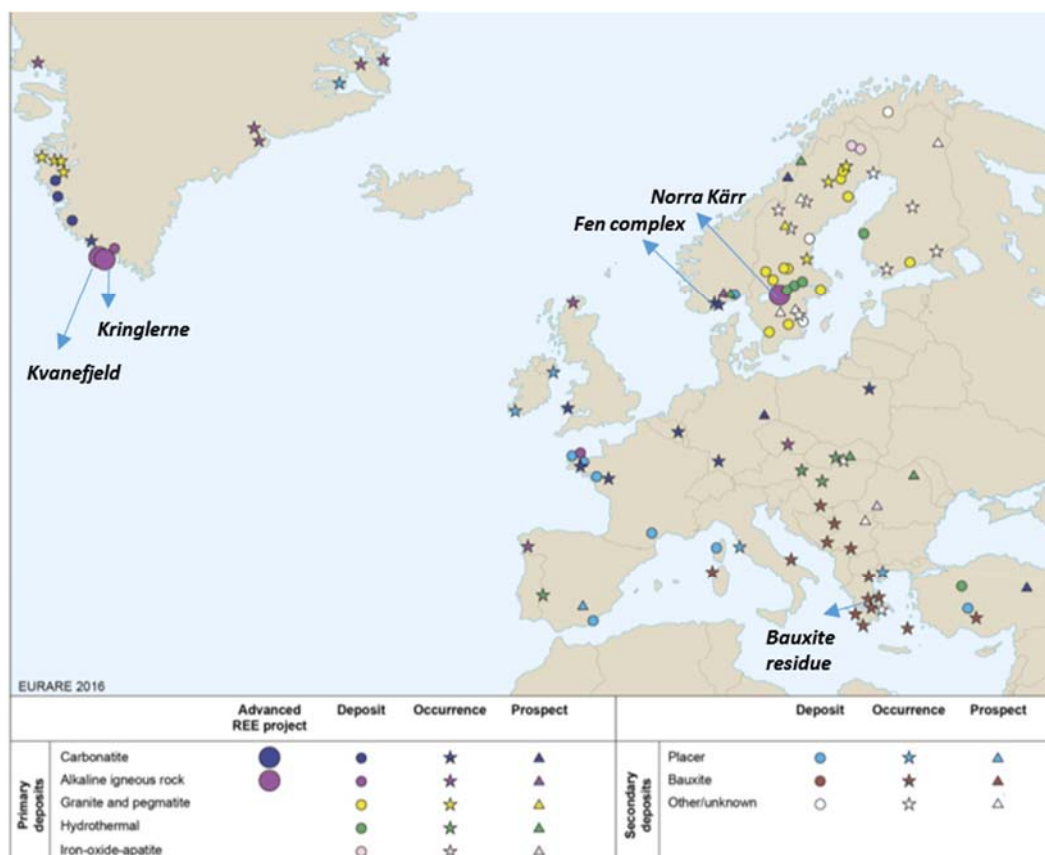


Fig. 1 European REE occurrences and deposits in the EURARE-IKMS (<http://EURARE.brgm-rec.fr>)

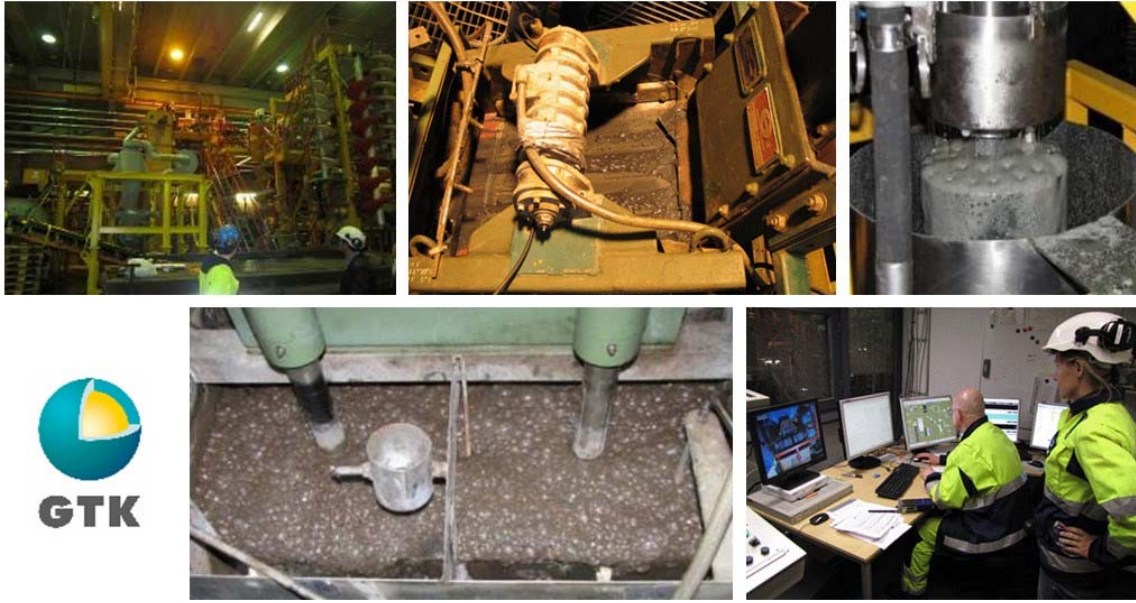


Fig. 2 Kvanefjeld ore froth flotation beneficiation pilot in GTK (Finland)



Fig. 3 Treatment of eudialyte concentrate was performed in the demonstration pilot plant at the IME Process Metallurgy and Metal Recycling lab of RWTH Aachen.

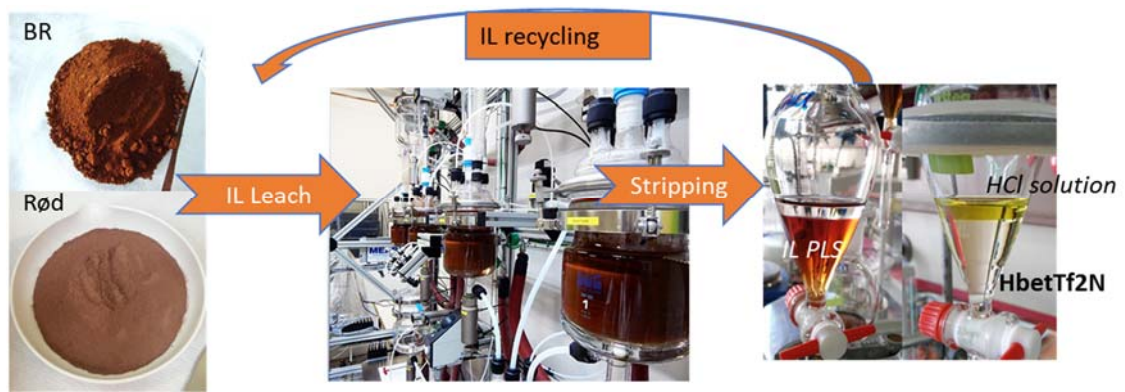


Fig. 4 Ionic liquid leaching of Rödberg and bauxite residue. Visual flowsheet with demo prototype plant designed by MEAB and built in Laboratory of Metallurgy, NTUA

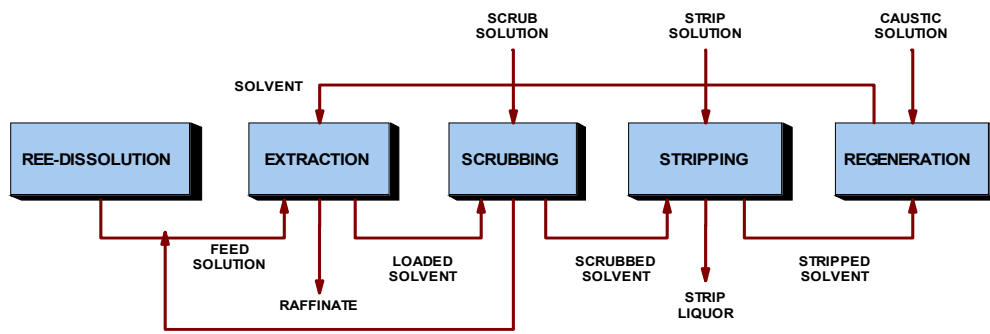


Fig. 5 General Process Flow Sheet – REE separation and purification by solvent extraction (MEAB).

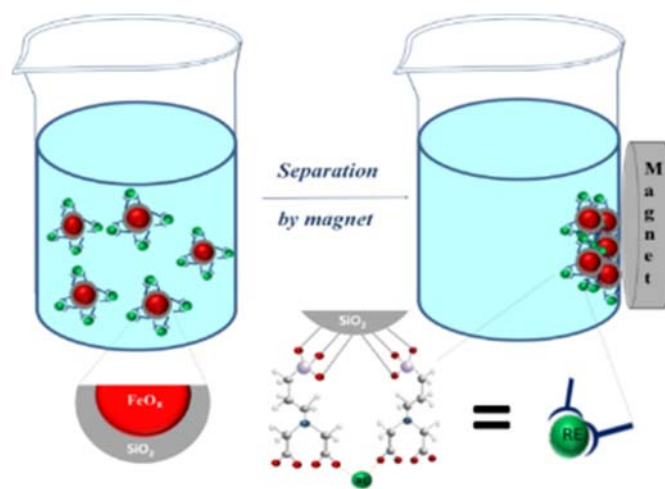
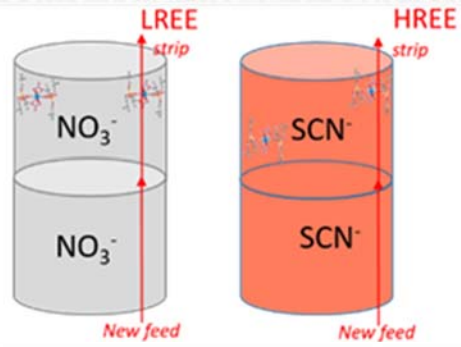


Fig. 6 Schematic presentation of hybrid magnetic adsorption of REE developed from SLU, Sweden.

Conventional neutral or basic route SX



Split-Anion Extraction

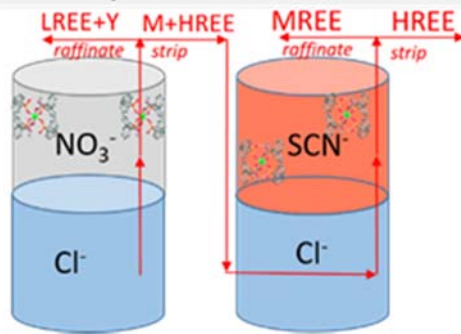


Fig. 7 General representation of the separation of REE by split-anion extraction developed by KUL. Comparison with conventional route.

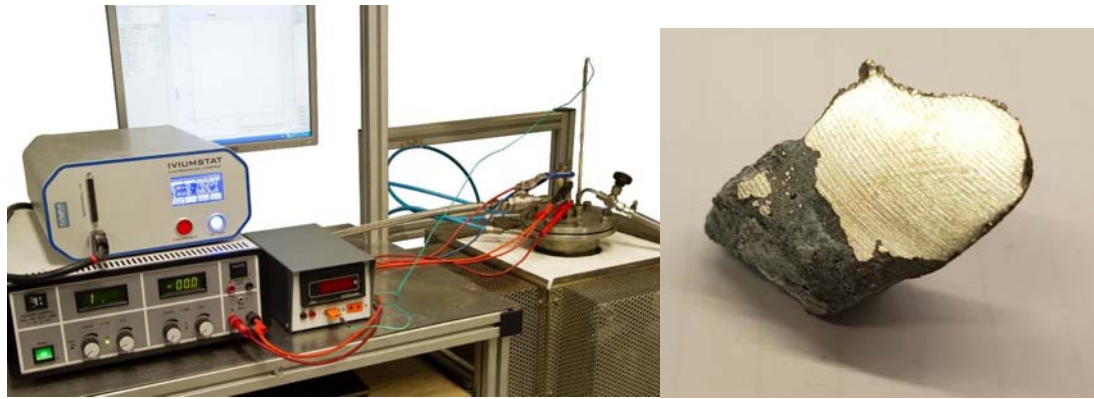


Fig. 8 Left : Optimized Molten salt electrolysis cell setup ; right: Didymium alloy obtained by electrodeposition in $\text{PrF}_3\text{-NdF}_3\text{-LiF}$ electrolyte at IME Process Metallurgy and Metal Recycling lab of RWTH Aachen.

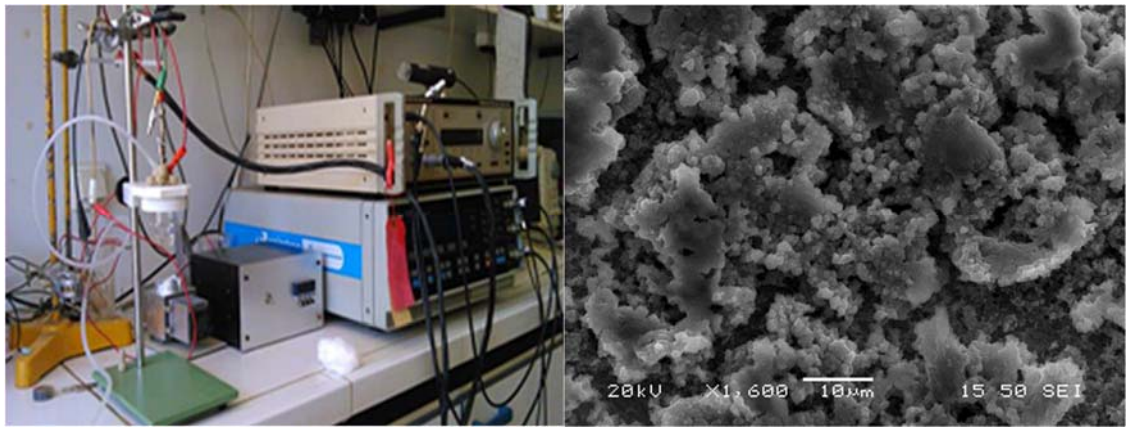


Fig. 9 Cyclic voltammetry equipment and SEM image of Nd deposition at Laboratory of Metallurgy, NTUA.



Fig. 10: EURARE Pilot achievements on the Kvanefield ore