

Rare Earth Element Recovery...

Ore Characterisation, Mineralogy and Processing

Rare Earth Element recovery presents specific challenges due to the multiple mineral phases carrying the economic elements of interest. This combined with the typical requirement of a range of unit processes required to fully exploit the resource potential puts XPS in an excellent position to assist in your Rare Earth project.

Using a combination of QEMSCAN and EPMA, XPS Mineral Scientists can quantify the mineral carriers and elemental department of interest and define the recovery processes that are likely to be successful. Once department is defined, XPS Mineral Processing engineers have experience with lab and pilot scale evaluations of integrated desliming, gravity, magnetic separations and non-sulphide flotation recovery of your Rare Earth Elements in a concentrate ready for subsequent processing in a pyrometallurgical or hydrometallurgical recovery process.



QEMSCAN is used to identify and measure Rare Earth Element (REE) minerals such as:

- Monazite $(\text{Ce,La,Nd,Th})\text{PO}_4$
- Allanite $\text{Ca (REE,Ca)Al}_2(\text{Fe,Fe})(\text{SiO}_4)(\text{Si}_2\text{O}_7)\text{O}(\text{OH})$
- Columbite $(\text{Mg,Fe,Mn})(\text{Nb,Ta})_2\text{O}_6$
- Bästnasite $(\text{Ce,La,Y})(\text{CO}_3)\text{F}$
- Xenotime YPO_4
- Synchysite $\text{Ca}(\text{Ce,Y,Nd})(\text{CO}_3)_2\text{F}$
- Fergusonite $(\text{Ce,La,Y,Nd})(\text{Nb,Ti})\text{O}_4$
- Thorite ThSiO_4

EPMA (Electron Probe Microanalysis) uses WDS (Wavelength Dispersive Spectrometry) which is required to distinguish multiple x-ray overlaps between REEs. This information is then incorporated into the QEMSCAN software to enable and refine the Species Identification Protocol (SIP). Extensive study and research at XPS has, in recent years, enabled our lab to offer this service at a level of quality and efficiency that is second to none in the minerals testwork industry.

Flowsheet Development

Whether it be from a base of sound mineralogical analysis undertaken at XPS or a conceptual scoping study flowsheet, XPS has the equipment and expertise to offer full flowsheet development services for your REE projects. Our lab is a world class testwork facility with state of the art equipment to ensure our clients have quality and reliable data to make their business decisions.

Our expertise include, but are not limited to, the following:

- Process modeling and simulation
- Flotation testwork (bench scale and piloting)
- Physical separation (gravity, magnetic etc...)
- Element specific upgrading techniques such as solvent extraction

Other services and testing are available. XPS is committed to providing the best service and support needed to maximize recovery and performance of your operation or project.



For further information on REE metallurgy services please contact:

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...Reducing risk”