

WEBINAR TALK ON

An Overview of Rare Earth Elements (REE): Introduction, Extraction Method and Its Potential in Malaysia

CPD Hours : 2 Ref No : IEM21/HQ/318/T(w)

Oil, Gas and Mining Technical Division

SYNOPSIS

Rare earth elements (REE) are relatively abundant in the earth's crust, with cerium being the 25th most abundant element at 68 parts per million (ppm). Because of their geochemical properties, REE are typically dispersed. This means they are not often found in clusters that are concentrated which led them to be called rare earths. Rare earths are categorised into light rare earth elements (lanthanum to europium) and heavy rare earth elements (gadolinium to lutetium together with yttrium) whereas scandium is unclassified. The latter are less common and consequently more expensive. Ion-adsorption clays are also commonly known as weathered clays and is a non-radioactive REE (NR-REE) type. Extraction methods such as leaching is performed to extract the rare earth elements from ore bodies and further separation of these elements into individual elements would be done via separation process, for example solvent extraction. In-situ leaching process of ion-adsorption rare earth ore also known as weathering shell leaching rare earth ore involve ion exchange reaction between leaching solution (ammonium sulfate or magnesium sulfate) and ore body that occurs during the seepage process, recovering rare earth cations thereby extracting REE. The pregnant solution obtained is then precipitated using oxalic acid or ammonium bicarbonate, forming rare earth oxalates or carbonates. Produced RE oxalates or RE carbonates would then be further purified into pure REE for usage in various industries.

The pure REE then are used as components in high technology devices including smart phones, digital cameras, computer hard disks and many more. Nonetheless Malaysia is rich in rare earth oxide (REO) ion adsorption resources estimated at 15.18 million metric tonnes and has about 30,000 tonnes of rare earths based on the finding in the residual tin deposits. Therefore, with the new global interest and demand for RE minerals especially the metals, Malaysia should take the opportunity to be among the global players in developing the REE.

SPEAKER

Dr. Ismail Ibrahim

Dr. Ismail bin Ibrahim obtained his doctoral degree (Ph.D.) in Mineral Resources Engineering from USM which specializes in Feldspar Processing. He is currently the Head of Mineral Processing Technology Section, Mineral Research Centre, Department of Minerals and Geoscience Malaysia. His areas of research involve mineral processing in the field of physical, physico-chemical, hydrometallurgy and synthesis which are related to the processing and upgrading of minerals such as rare earth elements (REE), iron ore, tin ore, feldspar ore, gold ore, silica sand, amang and bauxite ore. He is also a Fellow Member of the Institute of Mineral Engineering Malaysia (IME).



Saturday | 16 October 2021 | 10AM – 12PM

Registration Fee:

Student Member: Free | IEM Member: RM15 | Non-Member: RM70

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