

## **Metallogeny and geochemistry of rare earth mineralization, Mongolia**

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REE mineralization is poorly studied in Mongolia, but result of various types of geological study including geological mapping and academic research and exploration reports indicate that we have 4 REE bearing deposits, 80 occurrences and more than 300 anomalous areas. Main types of REE mineralization is carbonatite related and alkaline related deposits. Regarding to regional geodynamic setting REE mineralization is spatially related with rift zones, which are developed in several time period: West part Devonian and north and south part Carboniferous-Permian and Jurassic-Cretaceous.

We studied more than 80 localities of REE mineralization and analyzed more than 250 samples for major, trace and REE content by ICP-MS method at “ActLab” laboratory. Result of these analyses summarized using various discrimination diagrams in order to distinguish magma type, genesis and as well as to clarify tectonic setting of main REE mineralization in Mongolia. First, TAS diagram shows clear discrimination between alkaline and carbonatite related mineralization. Rocks of alkaline related REE mineralization are alkaline granite, but in case carbonatite related mineralization they are mainly syenite and nepheline-syenite in composition.

REE abundance also shows clear difference between two types of mineralization: alkaline related REE mineralization indicates that amount of REE content shows positive correlation with silica content, indicating REE enrichment is influenced by magma differentiation, but carbonatite related mineralization shows weak or no correlation.

REE content shows clear positive correlation with yttrium in both types, but different characteristics on niobium and zirconium. Alkaline related REE mineralization precisely correlates with zirconium, niobium and tantalum.

On the chondrite normalized REE pattern rocks of alkaline related mineralization show clear negative europium anomaly, indicating plagioclase fractionation, but rocks from carbonatite related mineralization no europium anomaly detected, indicating difference between magma source.