Geochemistry of Rare Earth Element in garnet group minerals in some regional metamorphic complexes - Central Iran Micro-Continent (CIMC)

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Abstract: This study focuses on the amount and concentration of trace elements and REEs pattern in garnet crystals which experienced regional metamorphism in the central Iran micro-continent, including the areas of Deh-Salm, Zaman Abad, Mishdowan, and Tanbour. Generally, garnet crystals are isolated from mica schists of greenschist to amphibolite facies. Mineralogical composition of garnets shows almandine rich in Mg and Mn. The REE pattern of garnets can be classified in two manners, one rich in HREE, and the other rich in LREE. The concentration and modification of the REEs of these minerals indicate the protolith enrichment and substitution of Y+HREE and HFSE with bivalent cations in their crystalline structure. Influx of concentrated trace elements and LREE fluids accounts for the enrichment of LREE and LILE in the second type, and it is the function of partition coefficients ratio between the minerals in equilibrium, crystallization and/or reaction with garnet crystal.

Keywords: garnet; Rare Earth Elements; regional metamorphism; Central Iran Micro-Continent.

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