

Geological - mineralogical characteristics and trace-elements geochemistry in Aghadjari bauxite deposit, south of Shahindezh, NW of Iran

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Abstract: Aghadjari bauxite deposit is located in ~15km south of Shahindezh, West-Azərbayjan province. This deposit was developed as stratiform lenses along the contact of Rutheh and Elikā carbonate formations. Bauxitization processes led to the formation of boehmite, diasporē, kaolinite, pyrophyllite, illite, hematite, goethite, anatase, rutile, and quartz. Ferruginization and deferruginization mechanisms are two important factors controlling distribution of elements in this deposit. Mafic igneous rocks are the potential protolith. Obtained data show that elements such as Al, Ti, Fe, Zr, Hf, REE, and Nb moved down from the upper horizons to the lower parts of residual system by organic complexes during kaolinization processes. The carbonate bedrocks played dual roles in distribution of elements in this deposit. These rocks neutralized the acidic weathering solutions causing an increase in deposition of iron oxides and hydroxides which in turn due to their adsorption capacity caused considerable concentration of Cr, Co, and LREE in lower parts of the bauxite horizon. On the other hand, the carbonates by forming stable ionic complexes with HREEs caused these elements to drain out of the residual system.

Keywords: Bauxite, Immobile elements, Lateritization, Adsorption, Aghadjari, Shahindezh.