Mineralogy and geochemistry of rare earth elements in Zan lateritic deposit, Tehran Province.

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Abstract: Zan lateritic horizon is located about 25 km southeast of Damavand, Tehran Province. This horizon developed as stratiform in lower part of shales and sandstones of Shemshak Formation (Jurassic). Mineralogical investigations show that diaspore, hematite, goethite, anatase, and kaolinite are the principal minerals of this horizon accompanied by lesser amounts of accessory minerals like boehmite, siderite, rutile, quartz, titanomagnetite, zircon and pyrite. The mineralogical composition of the ores indicates a semi-acidic to alkaline and reduced to semi-oxidized environment for the formation of this horizon. Chemistry of the major elements reveals that weak to moderate lateritization processes caused the formation of ores of bauxitic clay and ferruginous laterite, and laterite composition in this horizon. Correlation coefficients among elements suggest that anatase, rutile, zircon clay minerals, Mn-oxides, and secondary phosphates ( xenotime and gorceixite) are the potential host minerals for REEs in the ores.

Keywords: Laterite; REE geochemistry; mineralogy; Zan; Tehran.

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