

## Study of economic geology - iron mineralization at Permian limestones in Soghanchi - Miandoab

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**Abstract:** The study area is located at the Soghanchi village (east of Miyandoab city, NW of Iran). The Oligocene age Soghanchi stock is intruded into Permian carbonate rocks during Pyrenean orogenic epoch. Petrographically, the main minerals of this intrusive are plagioclase, biotites, pyroxenes, olivines, hornblendes, and alkali-feldspars. The microscopic and geochemical assessments of intrusive, show gabbro-dioritic, monzo-gabbroic and monzonitic composition with high potassic- calc-alkaline to shoshonitic and meta-aluminous characters. Based on this investigation, the Soghanchi pluton has formed in a continental arc setting. Intrusion of this stock into the Permian limestones, results in different degrees of recrystallization and skarnification. The Soghanchi calcic skarn is mainly composed of anhydrous calc-silicates, retrograde metasomatic products, some calcite, and quartz. Magnetite and minor hematite are the main metallic minerals in this area. Physico-chemical investigations showed 450-650°C for skarnification (prograde stages) and 400-450°C for retrograde metasomatic event and iron mineralization.

**Keywords:** *Meta; aluminous; geochemical; calcic skarn; calc; silicate; prograde; retrograde metasomatism; Soghanchi.*

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