



Mineral chemistry of index minerals and their implications in the genesis of the Baba Ali magnetite skarn deposit, western Iran.

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Abstract

The Almoughlagh Batholith, consisting chiefly of quartz-syenite and syenogranite rocks, belong to the magnetite series granitoids, are mostly of I- type, metaluminous and calc-alkaline in nature. The batholith invaded both the Baba Ali diorite and Songor Series culminated in thermal and hydrothermal metamorphic aureoles in which Baba Ali magnetite deposit formed. Petrography and geochemistry of the host rocks and index minerals such as garnet, pyroxene and magnetite reveal a descending temperature regime, beginning at the peak of thermal metamorphism (550°C) and ending with the main phase of magnetite mineralisation ($350-400^{\circ}\text{C}$) Mineral chemistry of prograde minerals namely garnet and pyroxene implemented to classify the Baba Ali as a typical Fe-Skarn deposit.

Keyword : Almoughlagh , Fe-Skarn , Baba Ali , magnetite , hydrothermal .

Introduction

The Baba Ali magnetite deposit is located in the western Sanandaj-Sirjan Zone of Iran and also on the northeastern slope of the Almoughlagh Mountain (long. $48^{\circ} 50' \text{E}$ - $48^{\circ} 10' \text{E}$ and lat. $34^{\circ} 45' \text{N}$ - $35^{\circ} 00' \text{N}$). The Almoughlagh Batholith forms the Almoughlagh Mountain with an outcrop area of $159,5 \text{ sq. km}$. Baba Ali deposit is approachable from Hamadan city ($\sim 40 \text{ km}$, Fig 1). The entire mineralized area forms a complex, referred to as the Hamakassi deposits, constituting of four

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