Investigation internal structure, mineral chemistry and origin of Fe-Ti oxide in Ghazan-Khanik mafic-ultramafic layered intrusion, NW Urmia

M. Asadpour¹, S. Heuss²
1- Department of Geology, Faculty of Sciences, Urmia University, Iran
2-Department of Earth and Environmental Sciences, LM-University, Muenchen, Germany
(Received: 30/12/2017, in revised form: 15/4/2018)

Abstract: Ghazan-Khanik complex is a small mafic-ultramafic intrusive body with Permian age at the extremity of NW of the Sanandaj-Sirjan zone, has intruded into the Precambrian metamorphic rocks. Field studies, geochemistry mineral compositions and assemblages of them demonstrate this complex has four lithological zones. The lower zone of non-layered gabbro is the fine-grain gabbronoritic component and non-mineralized. The second zone include of non-apatite ultramafic, clinopyroxenite, verlite and minor amounts of dunite with high proportion of Fe-Ti oxide (25-30%). The pure Fe-Ti oxide mineralization (with highly 90%) occurred as sill-like cumulates parts within this ultramafic zone. The third zone consists of layered gabbro, which is occurred Fe-Ti oxide mineralization (0.5-5%) only in the apatite-rich mafic parts. The upper zone includes the anorthosite and pegmatite gabbro with 0-2% Fe-Ti oxide. Based on this studies for establishment of rich Fe-Ti oxide layers, two processes are involved; (1) enrichment in residual melts which is derived from basaltic parental magma and (2) injection of Fe-Ti oxide immiscible melts into mafic-ultramafic crystallizing mass.

Keywords: Fe-Ti oxide; mineral chemistry; internal structure; mafic-ultramafic layered Ghazan-Khanik.

*Corresponding author, Tel: 09143433202, Fax: (044)32753272, Email: m.asadpour@urmia.ac.ir