The role of feldspar crystals zoning in interpreting the magmatic evolution of the Goushe granitoid Pluton (SE of Boroujerd)

S. A. Mousavi, Z. Tahmasbi¹, F. Sarjoughian², A. Ahmadi Khalaji¹, M. Zare Shooli¹

1- Department of Geology, Faculty of Sciences, Lorestan University
2- Department of Geology, Faculty of Sciences, Kordestan University

(Received: 24/11/2019, in revised form: 15/2/2020)

Abstract: The Goushe granitoid Pluton is located southeast of Boroujerd. The study area is composed of granite, granodiorite and the microgranular enclaves located in it with the granodiorite to quartzmonzodiorite combination. The microgranular enclaves presence along with evidence of the presence of the non-equilibrium textures such as dissolved margin and plagioclase zoning, sieve textures, mafic clots, blade biotite, feldspar Poikilitic texture indicate the unstable conditions and imbalance in the crystallization environment that probably has been created due to rapid ascent of magma or magma mixing process. Alkaline feldspar and plagioclase crystals in the Goushe intrusive rocks show zoning structure in terms of composition and texture. Feldspar crystals were analyzed in different units such as granodiorite, monzogranite and microgranular enclaves, which are relatively abundant throughout the granitoid intrusion. The plagioclase chemical composition in granitoid rocks changes in the compositional range of albite (An: 2) at the edge to Andzin (An: 33) in the center and the enclaves plagioclase composition of in a wider range fluctuates from early oligoclase (An: 11) to mid-andesine (An: 36). The alkaline feldspar composition is determined in granitoid rocks with Or = 94-97 and in the enclave with Or = 69-96. The abundance of trace elements Fe, Sr, Ba and Mg in feldspars show an oscillating and variable pattern. The trace and rare elements oscillation pattern from the center to the margin in the feldspar crystal indicates the effective role of the magmatic mixing phenomenon in the formation of the Goushe Pluton.

Keywords: Feldspar; Zoning; Magmatic mixing; Goushe; Boroujerd.

*Corresponding author, Tel: 06633120611, Fax: 06633120618, E-mail: tahmasebi.z@lu.ac.ir