

## Petrography, geochemistry and tectonic setting of the Gharabolagh intrusive mass in North Hashtrud, East Azarbaijan

M. Rezaei Aghdam<sup>\*1</sup>, A. Jahangiri<sup>1</sup>, M. Moayyed<sup>1</sup>, Gh. Sohrabi<sup>2</sup>

1- Department of Earth Sciences, Faculty of Natural Sciences, University of Tabriz, Tabriz, Iran

2- Department of Geology, Faculty of Sciences, University of Mohaghegh Ardabili, Ardabil, Iran

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**Abstract:** The plutonic body of Bostanabad-Meyaneh belt formed during the Cenozoic magmatism on the west Alborz-Azarbaijan zone. The Oligocene plutonic rocks consist of alkaligranite, granodiorite and biotitegranite, intruded into the Eocene volcanic-sedimentary rocks. The predominant textures are granular, graphic and perthite. Geochemical evidence reveals that they are cogenetic and have features typical of calc-alkaline to high-K calc-alkaline, metaluminous with I-type nature. Enrichment in LILE (i.e. Cs, K, Rb and Th) rather than HFSE (Eg., Nb, Zr and Ti), typical negative anomalies of Nb and Ti and LREE enrichment in comparison to HREE, are important characteristics indicating that these rocks were formed in a magmatic belt in a subduction zone. Positive anomalies of Pb and K demonstrate the involvement of continental crust in evolution of parental magma. During magma ascent, assimilation processes, fractional crystallization and crustal contamination (AFC) took place simultaneously. Tectonic discrimination diagrams show formation of these rocks in VAG, Syn-COLG event and an mature continental arc setting with less than 45 Km crustal thickness. Primitive magmas should have formed by low degree melting of an enriched mantle wedge peridotite.

**Keywords:** *Petrography; Geochemistry; Tectonic setting; Gharabolagh; Intrusive mass.*

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\*Corresponding author; Tel: 09141181560, Email: mrezaeiaghdam@pnu.ac.ir