GEOCHEMISTRY, U-PB ZIRCON DATING AND GEODYNAMIC CONDITIONS OF GABBRO-TONALITE COMPLEX OF LESSER CAUCASUS

SADIKHOV E.A.[1*]

[1] Russian Geological Research Institute A.P.Karpinsky 199106, St.Petersburg, 74 Sredny prospect, Russia (*correspondence: sadikhov.emin@gmail.com)

Introduction

Based on the modern scientific methods were performed geological, geochemical studies and the first geochronological U-Pb (SHRIMP II) zircon ages of gabbro-tonilite complexes of Lesser Caucasus in the Lok-Karabakh tetonomagmatic zone. The composition of the complex mainly consists of gabbro (first stage) and granitoids diorite-granodiorites (second stage) rarely of toniltes [1].

Generally for gabbro-tonilite intrusive rocks LREE and HREE ratios (La/Yb)n are approximately equal from 1.2 for basic-medium silica rocks to 8.2 for granitoids rocks. REE patterns have negative slope curves and enriched in large-ion lithophile elements (LILE – Pb, Ba, K,Sr, La) as well as Th, U and relatively depleted in high field strength elements HFSE – Nb, Zr, Y, Ti, Yb these signatures most likely point to different forming conditions. Thus, gabbro corresponds to ocean crust (approximately N-MORB), whereas granitoid rocks corresponds to volcanic arc rocks, indicating that they probably formed from a mixed mantle-crust source with influence of fluid processes.

Geodynamic settings and discucsion

To determine the geodynamic position of the gabbro-tonalite complexes was used discrimination diagrams[3]. As a result of plotting these diagrams established that the geodynamical position was volcanic island arc. To further constrain the tectonic settings and mantle sources of gabbro and granitoid rocks was used Nb/Th-Zr/Th, Zr/Th - Nb/Y diagrams [2]. These diagrams indicates mixing of continental crust and subducted slab source or mantle wedge. As a conclusion, mezosoic gabbro-tonilete rocks formed in volcanic arc system in oxfordian- kimmeridgian age and formed from magmatic differentiation of depleted source in mantle wedge within the following influence of continental contamination and flued processes.

[1] Ak. Alizade *et. al.* (2001) *Geology of Azerbaijan.: Magmatism* **Vol. III**, 434 p. [2] Condie K.C., (2005) *Lithos*, **79,** pp. 491–504. [3] Pearce J.A., *et. al.* (1984), *J.Petrol*. **Vol. 25.** – P. 956–983