



## **New information about petrogenetical characteristics of volcanic rocks in northeast region of Birjand – east of Iran**

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### **Abstract**

In northeast region of Birjand between 59° [U+0652], 30' - 60° [U+0652] east longitude and 33° [U+0652] - 33° [U+0652], 30' north latitude two spectrum of volcanic rocks are the main formations. A) Eocene to Miocene intermediate to acidic rocks containing dacite, andesite and rhyolite and B) younger basic volcanic rocks including basaltic andesite, mugearite and basalt. The first group of volcanic rocks belongs to active continental margin lavas in related with Sistan suture zone subduction under the Lut block that have influenced of crustal contamination especially in dacitic and rhyolitic terms. The second group of extrusive rocks have alkaline nature and they belong to syn collision – within plate orogenic basalts. Petrogenetic evidences show that their mantle primary magma has differentiated to basaltic andesite through passing thick crust and it has resulted a tendency to subalkaline in some samples due to contamination with upper crust substances. These rocks have formed from 25 – 50% melting of a mantle origin with the lack of garnet or less amount of garnet bearing spinel Lherzolite composition and the magmatic process has resulted a residue with the composition of 25% garnet amphibolite and eclogite. In this area the linear arrangement of basaltic outcrops at the background of intermediate to acidic volcanic rocks with the dominant trend of northwest – southeast is in relation with right lateral fault zones. Due to remarkable deep of these zones and development of extensional regime, after partial melting, the alkaline magma has formed and ascend to the surface.