IRANIAN SOCIETY of CRYSTALLOGRAPHY and MINERALOGY

Vol. 16, No. 2, summer 1387/2008

IRANIAN JOURNAL of CRYSTALLOGRAPHY and MINERALOGY

Mineralogy, geochemistry and role of olivine mechanical separation in generation of Lower Paleozoic igneous rocks in Shirgesht area, NW of Tabas, Central Iran

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(Received: 7/5/2007, in revised form: 4/2/2008)

Abstract: This area is located in Derenjal Mountains, 60Km northwest of Tabas in central Iranian structural zone. The igneous rocks occur as plutonic with composition of olivine-gabbro, gabbro, diorite and monzodiorite in Kalshaneh Formation with Middle Cambrian age and as the extrusive rocks with composition of olivine basaltic lavas in lower part of Niur Formation with Silurian age. Petrographical and geochemical evidences show a genetic relationship between the plutonic and volcanic rocks and generation of them from a common magma. Unlike the magmatic differentiation process, the role of magmatic contamination was weak and olivine mechanical separation was the main process in their magmatic evolution. Different diagrams and documents have been shown that these rocks have transitional to alkaline nature and produced in a within plate continental setting by 12-17 percent partial melting of an enriched garnet-pridotite mantle source during the early Silurian. This tectonic setting is agree with an extensional setting (intercontinental rifting) in Central Iran during Lower Paleozoic and specially with Silurian magmatism during Paleo-Tethyan rifting in this part of Central Iran.

Keywords: *Petrology, Geochemistry, Lower Paleozoic, Central Iran, Shirgesht.*