PETROLOGY OF THE CHILAS COMPLEX IN THE KINERGAH AREA, CHILAS, GILGIT-BALTISTAN, PAKISTAN

By

WAQAS JAVAID

DANIAL AMIN

MUNEEB ARSHAD

Department Of Earth and Environmental Sciences
Bahria University, Islamabad

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WAQAS JAVAID

DANIAL AMIN

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ABSTRACT

The Chilas Complex is 40 km wide plutonic body present at the center of Kohistan Island Arc sequence extending up to 300 km in east-west direction. The Kohistan arc terrane has been considered to form due to the northward subduction of the Neo-Tethyan oceanic lithosphere plate under the Eurasian plate during Cretaceous time. The rocks of Chilas complex are exposed in Kiner Gah, east of Chilas town. These rocks include gabbro, gabbronorite, tonalite, pyroxene quartz diorite, amphibolites and granites. Field studies suggest that the complex has intrusive lower contact with the Thak amphibolite and has a direct upper contact with granitic rocks of Kohistan batholith. This research focuses on petrographic and geochemical study of Chilas complex rocks to find out its origin. Major and trace elements study signify that these rocks to belong to a one common magma source composition. The primary magma seems to be basaltic in finally fractionating to granites. Negative Nb and P anomaly in the rocks of the Kiner Gah area represented by spider diagrams indicate that the melt was derived from metasomatized mantle, probably developed in island arc type back arc environment. Kyanite bearing garnet tonalite, which is first time reported from the Chilas complex in this research also serves as the evidence that the melt was derived from metasomatized mantle.

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