

## Petrography and Mineral Chemical Study of Younger Quartzofeldspathic Bodies in Chakdara Granite Gneiss, Northwest Pakistan

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**Abstract :** The Chakdara granite gneiss is an extension of Swat granite gneisses. It is characterized by biotite bands and the occurrence of fluorite and blue beryl. Younger phases (quartzofeldspathic veins) occur within gneisses are characterized by various mineral phases that include beryl, biotite, phlogopite, annite, muscovite, ilmenite-pyrophane, monazite, zircon, apatite, magnetite and minor amounts of sphene, rutile, and ulvöspinel. The present paper is an attempt to address the detailed mineral chemistry and genesis of minerals occurring in these younger phases. These quartzofeldspathic veins are assumed to be of hydrothermal origin on the basis of Th<sub>2</sub>O content in monazite, Zr/Hf ratio in zircon, REE enrichment, and Ce/Y ratio of allanite. Biotite in the present study is characterized by high F content. Muscovite is phengitic and contains very high amounts of Fe as compared to the normal muscovites. The Th<sub>2</sub>O content for monazite is low (0.81-1.56 wt. %) like those of hydrothermal origin. The Zr/Hf ratio in zircon is variable for different analyses but mostly falls in the range of ~ 41 and above. Allanite is generally unaltered and characterized by LREE enrichment. The properties of beryl and columbite in the present study show pegmatitic features.

**Keywords :** Beryl, Chakdarra granite gneiss, micas, quartzofeldspathic veins

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