

Signatures of poly-phase deformation and an upper amphibolite metamorphism from garnet bearing schists of Askot Klippe, Kumaun Himalayas

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Askot klippe, a detached mass from the main crystallines of the Himalayas, lies in the lesser Himalayan sedimentary zone of the eastern Kumaun Himalayas, it is known for its occurrence of polymetallic mineralization within the schist and gneisses. The present work is focused on microtextural studies and computation of the thermal gradients of the garnet bearing schists of Askot klippe, these schists preserves signatures of poly phase deformation in their microstructure related to tectonic transportation and deformational histories of Himalayan orogeny. The micro-texture of these schists shows three distinct stages of deformation (D1, D2, and D3) with syn-tectonic garnet growth. The Thermal gradients have been computed by using Fe-Mg exchange between garnet and biotite. The X_{Mg} values for garnet and biotite are $X_{Mg}(\text{grt}) \sim 0.06$ and $X_{Mg}(\text{bt}) \sim 0.85$ respectively. The computed temperatures (~ 590 °C) suggests that the garnet bearing schists of Askot klippe has undergone a peak metamorphic conditions upto upper amphibolite facies.

Keywords: Kumaun Himalayas, klippe, geothermobarometry