Inverted Barrovian Metamophic Sequence in the Lesser Himalayan Crystalline Sequence of the Siyom Valley, Eastern Himalaya

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Lesser Himalayan Crystalline Sequence (LHCS) of the Siyom valley, western limb of Siyom antiform have undergone inverted Barrovian metamorphism. Siyom antiform is the southern extension of the Namcha barwa sytaxial bend. Metamorphism in the LHCS gradually increases from biotite grade in the east through garnet-staurolite-kyanite-sillimanite-sillimanite K-feldspar zone towards the structurally higher level in the west, exhibiting the inverted metamorphism form greenschist to granulite facies. Based on petrography, phase equilibria and pseudosection different isograd such as biotite-garnet-staurolite-kyanite-sillimanitesillimanite k-feldspar zone and mineral reaction are inferred for the rocks of the LHCS. Our observation suggest that the peak metamorphic mineral assemblage are developed during the S₂ schistosity related to D₂ deformation. P-T calculations of different mineral assemblages by using conventional geothermobarometry suggest that the temperature as well as pressure increases from lower structural level to high structural level. The peak metamorphism took place in sillimanite-kfeldspar zone and it reaches upto ~750 °C and pressure of ~10 kbar obtained form the rock of sillimanite k-feldspar zone. At higher structural level, high grade metamorphic rocks exhibit decompression corona texture of cordierite around kyanite. PT estimates under consideration of core and rim composition of garnet, textural evidence of decompression reactions and pseudosection topology interpretation suggest that LHCS of Siyom valley have undergone clock wise PT path.

Key words: Inverted Barrovian metamorphism, Lesser Himalayan Crystalline sequence, Eastern Himalaya, Siyom valley.