

HP metamorphism recorded by kyanite-garnet gneisses in the Kåfjord Nappe, Northern Norway – preliminary results

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Scandinavian Caledonides are Himalaya-type mountain belt consisting of allochthons that are a result of the Ordovician-Silurian collision of Baltica and Laurentia (Gee et al. 2008). The Skibotn Nappe Complex, traditionally ascribed to the Upper Allochthon (but possibly being a part of the Middle Allochthon) is situated in northern Norway. It consists of the Normandsvik, Kåfjord and Vaddas nappes (Anderson et al. 1992). The Kåfjord Nappe has not been fully examined, so the information about the age and metamorphic conditions are lacking. The main goal of this project is to provide a new data about peak metamorphic conditions to which the Kåfjord Nappe has been exposed and to compare them with possible equivalents within the Scandinavian Caledonides.

Three samples of kyanite-garnet gneisses from different parts of the Kåfjord Nappe have been studied. All of them contain similar mineral assemblage. Progressive paragenesis occurs in lenses and contains garnet, kyanite, quartz, white mica, biotite, plagioclase, rutile and opaque minerals. Retrogressive paragenesis contains similar minerals with additional presence of chlorite. Two generations of garnet, white mica and biotite are present. Garnet I occurs as large poikiloblasts up to 6 mm in diameter with

abundant variably sized inclusions, whereas garnet II is smaller (up to 1 mm) with less numerous inclusions. Biotite and white mica appear as flakes conformable with the main foliation and as transversal blasts. Kyanite occurs as transversal blasts up to 5 mm in size, with moderate number of inclusions. All the observations mentioned above suggest that these rocks were probably subjected to at least two metamorphic events, one of which could have happened under high pressure conditions.

On the basis of chemical composition of minerals and rocks bulk chemistry, thermodynamical modeling will be performed and peak temperature and pressure as well as the retrogressive paths will be determined. Similarities in lithologies and the inferred grade of metamorphism suggest that, in contrast to the previous correlations, the studied gneisses from the Kåfjord Nappe may be an equivalent of the Seve Nappe Complex described by Hacker & Gans (2005).

REFERENCES

- Anderson M.W., Barker A.J., Benett D.G. & Dallmeyer R.D., 1992. A tectonic model for Scandian terrane accretion in the northern Scandinavian Caledonides. *Journal of the Geological Society*, 149, 727–741.

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- Gee D.G., Fossen H., Henriksen N. & Higgins A.K., 2008. From the early Paleozoic platforms of Baltica and Laurentia to the Caledonide orogen of Scandinavia and Greenland. *Episodes*, 31, 1, 44–51.
- Hacker B.R. & Gans P.B., 2005. Continental collisions and the creation of ultrahigh-pressure terranes: Petrology and thermochronology of the nappes in central Scandinavian Caledonides. *GSA Bulletin*, 117, 1–2, 117–134.