Geophysical Research Abstracts
Vol. 19, EGU2017-14613, 2017
EGU General Assembly 2017

Metamorphic evolution of granulite facies rocks from the Drosendorf nappe (Bohemian Massif)

Dominik Sorger (1), Christoph Hauzenberger (1), and Manfred Linner (2)

(1) NAWI Graz Geocentre, Petrology and Geochemistry, University of Graz, Graz, Austria (dominik.sorger@uni-graz.at), (2) Geological Survey of Austria, Vienna, Austria

Conspicuous variable rocks assemble the Drosendorf nappe, which was therefore called “Variegated Unit”. At its base is the granodioritic Dobra gneiss, overlain by paragneiss, quartzite, amphibolite, marble, calc-silicate rock and graphite bearing schist.
A grt-bt-sil-paragneiss from the southernmost part of the Drosendorf nappe exhibits the mineral assemblage garnet + biotite + sillimanite + K-feldspar + plagioclase + quartz + ilmenite. Inclusion rich garnet porphyroblasts (8–10mm) occur in a matrix composed of (2mm) K-feldspar and smaller (<1mm) plagioclase and quartz. Large garnet grains show a conspicuous zoning pattern, particularly apparent is a sharp increase of grossular component from garnet core (Xgrs=0.06–0.07) to rim (Xgrs=0.09–0.10), followed by subsequent decrease to the outermost garnet rim (Xgrs=0.04–0.05). Cores of garnet grains are rich in inclusions such as biotite, K-feldspar, plagioclase, muscovite, kyanite, quartz, ilmenite and rutile. Obtained P–T conditions of 750 – 800°C and 0.7–0.8 GPa for the matrix assemblage are similar to former petrological work in southern part of the Drosendorf nappe (Petrakakis, 1997). The mineral assemblage ms + qz + kfs + ky in garnet cores implies that the muscovite breakdown reaction was overstepped within the stability field of kyanite and the conspicuous high Si content (3.20 apfu) of muscovite inclusions suggest high pressure conditions for garnet core growth.
Resorbed garnets with typical opx + pl symplectites are preserved in grt-opx-pl gneiss from the Kremstal in the western part of the Drosendorf nappe. These textures usually appear in granulite facies rocks following a near isothermal decompression path at high temperatures (ITD). Garnet bearing, partly migmatic paragneiss and amphibolite occur in the northern part of the Drosendorf nappe and in the adjacent Gföhl nappe system. However, no petrological data are available whether these units share a similar high grade metamorphic evolution or not. The comparison of samples from the Drosendorf and the Gföhl nappe system related to mineral assemblage, metamorphic conditions and metamorphic age should clarify if there are compelling arguments for a separation of these units based on their metamorphic evolution additionally to their lithological differences.

Petrakakis K, (1997) Evolution of Moldanubian rocks in Austria: review and synthesis. Jornal of Metamorphic Geology 15: 203–222