

EVIDENCE OF A HIGH PRESSURE EVENT IN GRANULITE FACIES ROCKS FROM THE DROSENDORF NAPPE – LOWER AUSTRIA

Sorger, D.¹, Hauzenberger, C.¹ & Linner, M.²

¹Department of Petrology and Geochemistry, NAWI Graz Geocentre, University of Graz, Univesitätsplatz 2, 8010, Graz, Austria

²Department of Hard Rock Geology, Geological Survey of Austria, Neulinggasse 38, 1030, Vienna, Austria
dominik.sorger@uni-graz.at

Various paragneiss and amphibolite types occur in the Drosendorf nappe in the southeastern Moldanubian superunit. A high grade garnet, K-feldspar and sillimanite bearing paragneiss from the southernmost part of the Drosendorf nappe contains large garnet porphyroblasts, showing a conspicuous zoning pattern. A constant grossular plateau in the core (6–7 mol% grs) and a sharp increase at the garnet rim (9–10 mol% grs) followed by a decrease to the outermost rim (4–5 mol% grs) indicates a discontinuous garnet growth (Fig. 1). Inclusions of muscovite with a high Si content of 3.20 apfu together with kyanite indicate higher pressure and lower temperature conditions for the initial garnet growth. Calculation of equilibrium phase diagrams obtained 1.5–1.7 GPa for garnet core growth at a temperature of 650–700 °C. For the garnet rim and equilibrated matrix phases conditions of 0.8–1.0 GPa and 800–900 °C could be determined, which are similar to conditions proposed by PETRAKAKIS (1997) for the paragneiss in the southern Drosendorf nappe.

Garnet bearing amphibolites are widespread in the Drosendorf nappe and have the general mineral assemblage amphibole + garnet + plagioclase ± sphene ± epidote/zoisite ± orthopyroxene ± clinopyroxene. Garnet is heavily resorbed and show typical plagioclase coronas or orthopyroxene + plagioclase symplectites, which indicate an isothermal decompression path at high temperature (ITD). Large garnet porphyroblasts in amphibolite show a similar zoning pattern as observed in paragneiss. The grossular content shows a significant increase from the core (24–25 mol% grs) to the rim (28–29 mol% grs) and decreases to the outermost rim (21–22 mol% grs).

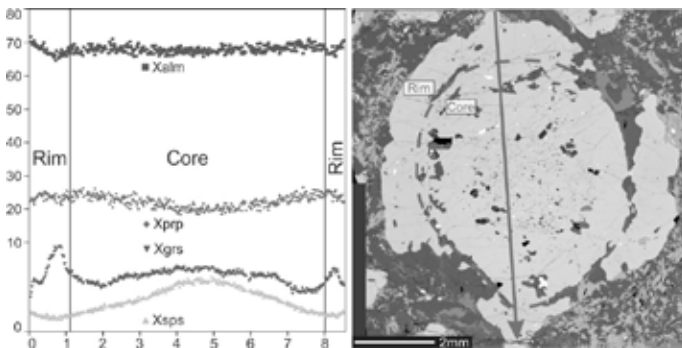


Figure 1. Garnet porphyroblast in a paragneiss sample shows a compositional zoning especially in the grossular component. A backscatter electron (BSE) image shows the garnet and the profile line of the analysed profile.

PETRAKAKIS, K. (1997): Journal of Metamorphic Geology, 15, 203-222.