

Metamorphic evolution of high-grade metamorphic rocks from Rogaland, Norway

Migmatitic ortho- and paragneisses are exposed in the proximity of the anorthositic Rogaland Complex, Norway. The rocks are supposed to be affected by amphibolite-facies regional metamorphism during the Sveconorwegian orogeny (M1) at c. 1000 Ma, followed by granulite-facies contact metamorphism (M2) in an up to 20 km wide contact-thermal aureole around the c. 930-920 Ma Rogaland Complex. Our research focused on the P-T-t-evolution of samples inside and outside the contact-metamorphic aureole. One of the main goals of this project was to correlate growth episodes of dateable minerals with the P-T-evolution. Local reaction domain modelling and in-situ LA-ICPMS dating was concentrated on the high-grade metamorphic paragneisses, including sapphirine granulites and osumilite gneisses which preserve delicate retrograde reaction textures. Combining microstructural investigations with conventional geothermobarometry and thermodynamic modelling in the NCKFMASH system, we were furthermore able to model the mineral reaction history and detailed P-T-paths of the polymetamorphic rocks and to refine the regional extent of contact metamorphism.