Development of S–C fabric is marked by break–down of rigid feldspar skelet while weaker phase starts to be interconnected. Strain rate and stress are concentrated to quartz/mica weak layers shielding isolated pockets of rigid feldspar aggregates. Final stage of banded mylonite is marked by decreasing ratio of viscous contrast between both hard and weak phases. Power law creep mechanisms (dislocation creep) operate in both quartz and feldspar monomineral aggregates which are equally rheologically active.

This progressive microstructural development of deformed granite help to understand 1) a rheological behaviour of continental rocks in mid–crustal levels and 2) steady state flow microstructure of polyphase quartz/feldspar material under amphibolite facies conditions.

CHARACTERIZATION, 3–DIMENSIONAL ORIENTATION AND DECOMPRESSION OF THE ZEV MINERAL ZONES (NE–BAVARIA)

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In the main part of the ZEV (Zone of Erbendorf Vohenstrauß), three mineral zones of NNW–SSE extension were mapped (from W to E): a Staurolite zone with staurolite+garnet (+kyanite/sillimanite) + biotite + muscovite + quartz, a Garnet–Aluminiumsilicate zone with garnet + kyanite/sillimanite + biotite + muscovite + quartz and a Cordierite zone with cordierite + andalusite + biotite. The Cordierite zone extends along the late Variscan Leuchtenberg Granite, but is also found, in small "isles", far away off the granite.

In the KTB drill hole the first 7800 m represent the Garnet–Aluminiumsilicate zone with some migmatitic portions and a segment of Cordierite zone at 470 m. Below 7800 m in cuttings the assemblage staurolite + garnet + kyanite + sillimanite + biotite + muscovite + quartz and others with andalusite + biotite + quartz are recovered, the latter which eventually represents the Cordierite Zone.

Garnet of the Staurolite zone show bell–shaped Mn–profiles, but is nearly homogenized in the Garnet–Aluminiumsilicate zone except for a retrograde rim. In the latter mineral zone e decompressive reaction garnet + muscovite > biotite + sillimanite + quartz is observed. Wherever both aluminiumsilicates occur, sillimanite often seems to be the younger polymorph.

Calculated temperatures with garnet–rim / contact biotite pairs range from 568°C–616°C at pressures below 5–6 kbar as given by the stability of sillimanite. Cordierite zone is characterized by the reaction garnet + aluminiumsilicate + quartz > cordierite, indicative of a second decompression reaction.

TECTONOMETAMORPHIC EVOLUTION OF THE INTERNAL VARISCAN BELT – EXAMPLES FROM EASTERN/WESTERN ALPS, BOHEMIAN MASSIF, MASSIF CENTRAL AND SOUTHERN BRITTANY

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Pressure–temperature–time–deformation (P–T–t–d) paths from metamorphic rocks provide considerable insight to the tectonothermal history of single crystalline segments in an orogenic belt. Most precise information about the P–T–t–d–space evolution of a terrain can be obtained from single metapelite and metabasite samples by relating mineral zonations and successive mineral equilibria to linear and planar (L–S) structures of progressive deformation. When continuous reactions are considered in such rocks, each step of garnet or amphibole growth zonations represents a finite temporal and spatial domain of equilibration within the assemblages and allows to evaluate P and T or P–T changes for each deformational step by geothermobarometry based on cation exchange and amphibole