



Exhumation history of the Schneeberg Complex west of the Tauern Window

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Synform structures separated by southeast directed thrust zones dominate the internal architecture of the Alpine monometamorphic Schneeberg Complex. The exhumation history recorded by folding and thrusting continued from Late Cretaceous to the Early Miocene and is established by microstructural, microthermometric and thermobarometric methods. Two main ductile deformational stages occurred: (1) NW-SE-directed oblique convergence produced large scale tight SE-vergent folds and (2) NE-SW-trending ductile strike-slip zones. Subsequently, both phases were superimposed by non-coaxial shear to SW at lower metamorphic conditions. Retrograde P-T-D-paths based on fluid inclusion and textural studies record a complex multi-stage density evolution of CO₂-N₂ and saline aqueous fluid chemistries. Beside primary high density inclusions, the orientation of intragranular and transgranular fluid inclusion planes records final stages during exhumation. Isothermal decompression is documented after peak metamorphism of ca. 9.5 kbar and 540 ± 15°C. Peak metamorphism is estimated by thermobarometry and consistent with estimations on paragonite-hornblende metabasites (Konzett and Hoinkes, 1996). Phengites indicate a decrease in Si-content from 3.33 apfu to 3.15 apfu during deformation and metamorphism. Relicts of a prograde path are preserved by the textural occurrence of pumpellyite within older biotites, indicative for a low temperature gradient (Krenn et al., 2004).

The internal structures of the Schneeberg main synforms point to a common exhumation history with the polyphase metamorphosed surrounding basement units (Ötztal Basement) along a ductile long-lasting suture zone which juxtaposes Alpine metamorphosed units to the north and Variscan metamorphosed units to the south. SE-vergent wedge extrusion during oblique Late Cretaceous to the Early Oligocene NW-SE-directed convergence is considered as exhumation mechanism. Late sinistral transpression in the Early Miocene that modifies the shape of the Schneeberg Complex is

related to movements along the southern located Pässeier-Jaufen-Fault system.

Krenn, K., Kaindl, R., Hoinkes, G., Pumphellyite in metapelites of the Schneeberg Complex (Eastern Alps, Austria): a relict of a prograde p-T path? *Europ. J. Min.*, 16, 661-669.

Konzett, J., Hoinkes, G., 1996. Paragonite-hornblende assemblages and their petrological significance: an example from the Austroalpine Schneeberg Complex, Southern Tyrol, Italy. *Journal of Metamorphic Geology* 14:85-101