

**THE PLANKOGEL DETACHMENT OF THE EASTERN ALPS: PETROLOGICAL EVIDENCE FOR AN OROGENY-SCALE EXTRATCION FAULT**

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The Saualpe and Koralpe regions are characterized by Cretaceous high-pressure metamorphism that occurred around 90Ma (e.g. THÖNI et al., 2008) in response to the onset of Eoalpine intracontinental subduction, but also experienced an earlier metamorphic event in the Permian (SCHUSTER et al., 2001). In both, the southern Saualpe and the Koralpe regions, eclogite-facies high-pressure rocks occur in sharp contact with amphibolite-facies metapelites. The contact is of tectonic nature. In the southern Koralpe it is referred to as the Plankogel detachment. While any traces of older metamorphic events have been erased by the Eoalpine event in the eclogite-facies units, the lower-grade metapelites preserve complexly zoned garnets as an expression of the conspicuously different pressure-temperature conditions of both the Permian- and Eoalpine metamorphic events. During the Eoalpine evolution, both units have been subducted to different crustal levels as inferred by pseudosection modelling combined with conventional geothermobarometry. Despite the different peak metamorphic conditions, ranging from ~2.3GPa and 680°C for the eclogite-facies units and ~1.3GPa and 550-580°C for the amphibolite-facies metapelites, both units display a common retrograde overprint at conditions around 1.0GPa and 580-650°C. From this, we infer a two-stage exhumation process. We interpret this two stage exhumation process to be a reflection of slab extraction (FROITZHEIM et al., 2003), during early Eoalpine subduction. We suggest that the first stage of exhumation occurred due to the extraction of a crustal boudin that was localized in the trace of the Plankogel detachment. This would define the latter as an extraction fault in the sense of FROITZHEIM et al. (2006). In view of the fact that the Plankogel detachment is directly related to the Plattengneiss shear zone, we also suggest that our model may solve the long-standing discussion about the enigmatic shear sense of the Plattengneiss shear zone.

FROITZHEIM, N., PLEUGER, J. & NAGEL, T.J. (2006): *Journal of Structural Geology*, 28, 1388-1395.

FROITZHEIM, N., PLEUGER, J., ROLLER, S. & NAGEL, T.J. (2003): *Geology*, 31, 925-928.

SCHUSTER, R., SCHABERT, S., ABART, R., FRANK, W. (2001): *Mitteilungen der Geologie und Bergbau Studenten Österreichs*, 44, 111-141.

THÖNI, M., MILLER, C., BLICHERT-TOFT, J., WHITEHOUSE, M. J., KONZETT, J., ZANETTI, A. (2008): *Journal of Metamorphic Geology*, 26, 561-581.