tudes. Whereas the magnetic susceptibilities are generally low within the Weinsberg granite, the Karlstift type values are definitely higher (0.05 - 0.08 * 10^{-3} SI vs. 0.23 - 7.00 * 10^{-3} SI). These magnetic structures are due to marginal parts of the Karlstift granites which have been tectonically dislocated (HÜBL, 1993). The very intensive alterations in these areas are undefined additionally by the results from gamma-ray spectrometric measurements, especially from the ^{40}K-channel; the potassium distribution traces the horse-shoe-shaped margin of the Karlstift body. The central parts of the intrusion contrast its marginal areas in a way, that depletion in the inner part and enrichment in the outer part (due to the selective good mobility of potassium) becomes obvious.

Comparable behavior of the radiating mineral phases in the Nebelstein area could be observed. In the western part of the large magnetic structure near St. Martin - St. Wolfgang the U-Th ratios are very high (2.6). This is due to enrichment of U whereas the contents of Th remains stable. All these results are in good coincidence with the increasing depth of the top-bottom of modelled sources and the results from isotopic and FI-studies (HÜBL, 1993; SLAPANSKY et al., 1994).

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METAMORPHIC EVOLUTION OF THE MORAVIAN ZONE IN AUSTRIA (THAYA DOME)

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The Thaya dome has been affected by several phases of metamorphism termed the older Moravian, the middle Moravian and the younger Moravian phase (FRASL 1970).

The first one is possibly of Cadomian age and caused by the intrusion of the granitoids of the Thaya batholith into the Therasburg formation. Apart from some migmatic textures, mainly preserved in the northern part, mineral relicts of this phase are rare. Possible pseudomorphs after cordierite and almandine-rich cores of distinct two-phase garnets from the Therasburg formation are interpreted as mineralogical evidence of the older Moravian phase.

The Hercynian middle Moravian phase formed an inverse metamorphism with a mineral zonation from the greenschist to the amphibolite facies oblique to the

regional strike. Temperatures calculated from coexisting garnet-biotite pairs (rim composition of garnet) revealed temperatures of 590 °C for the garnet-biotite zones and 590 to 620 °C for the garnet-biotite-staurolite zone according to the model of HODGES & SPEAR (1982). In the absence of pressure-indicative Al_2SiO_5 minerals the overall pressure can be estimated based (1) on the garnet-muscovite-plagioclase-biotite-geobarometer in the micaschists (HODGES & CROWLEY, 1985) and (2) on phengite-barometry in adjacent gneisses between 6 to 8 kbars. The younger Moravian phase finally leads to a regressive assemblage of chlorite and muscovite partly completely replacing garnet, biotite and staurolite.

$^{40}Ar/^{39}Ar$ cooling ages of white micas from orthogneisses and hornblende from amphibolites range from 326 to 329 Ma (DALLMEYER et al., 1992). These ages are very well comparable to these from the Moldanubian zone. These are probably due to the late amphibolite facies event in the Moldanubicum with PT conditions of 5 - 6 kbars and approximately 500 °C which is slightly lower than the peak metamorphic condition in the Moravian.

The mineral zones (isograde) are obliquely cutting the lithological boundaries in the south and in the north of the Thaya dome. At the same time they show clearly an inverse sequence with low temperatures in the structural deeper and higher temperatures in the structural upper parts. This inverse temperature zonation of the middle Moravian phase is believed to have formed together with the overthrusting of hot Moldanubian crustal material over the Moravian block. The oblique strike of the mineral zone in respect to the lithological boundaries could be explained by differential uplift between the central part and the northern/southern areas of the Moravicum.

PREALPINE MAGMATIC AND METAMORPHIC EVOLUTION OF THE AUSTROALPINE ÖTZTAL BASEMENT IN THE KAUNERTAL AREA

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Petrological and geochemical investigations of the pre-Alpine magmatic and metamorphic evolution of the Ötztal-basement were carried out in the Kaunertal area which was last effected by retrogression during the Alpidic orogeny. This area is mainly composed of quartzo-feldspatic to pelitic metasedimentary rocks with intercalations of different concordant metagranitoid bodies and amphibolites.

The metagranitoids can be subdivided into three groups using petrographic and geochemical constraints. These are: