In conclusion, the Ackerl nappe within the Austroalpine nappe complex contains metamorphic complexes which are dissimilar in age from nearby Middle Austroalpine metamorphic basement units. Applying paleogeographic restorations of Alpine displacements (both Permian to Jurassic distension and Cretaceous shortening) Late Variscan stacking of the AGU onto the AMU may have occurred along southern margins of the Variscan orogen during collision of Central European microplates with the future Gondwana (microplates surrounding the northern margin of Africa).

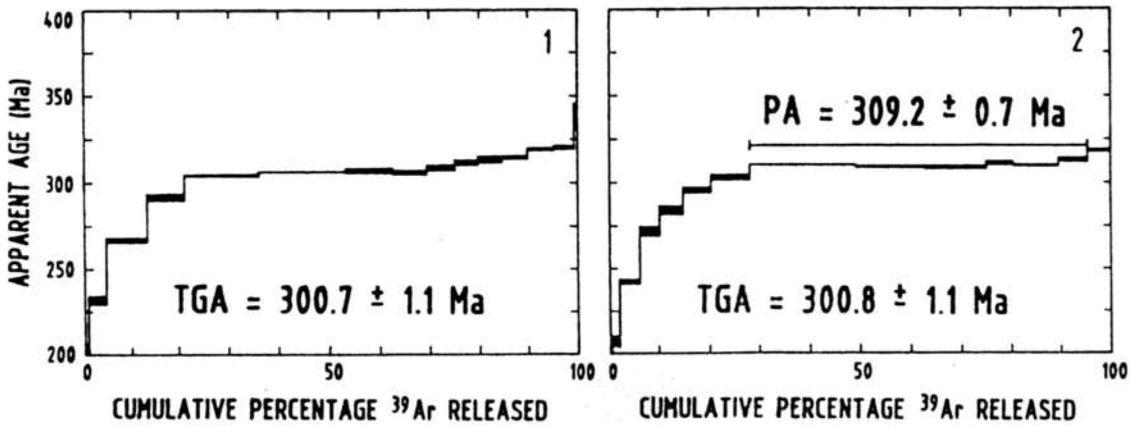

Fig.1. $^{40}Ar/^{39}Ar$ release spectra ofthe two white mica concentrates ofthe AGU. PA – plateau age; TGA – total gas age.

INCOMENSURATE FRACTIONATION TRENDS IN THE SCHEIBENGRABEN BERYL–COLUMBITE PEGMATITE AT MARŠÍKOV, NORTHERN MORAVIA, CZECH REPUBLIC; THE ROLE OF A (F_2).

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The Scheibengraben pegmatite is the most fractionated pegmatite body in the pegmatite field of the Hrubý Jeseník Mountains. Mineralogy, geochemistry and internal structure of these pegmatites correspond to the beryl–columbite pegmatite subtype of the rare–element class; however, Barrovian metamorphic facies–series of the host rocks suggests a probable transition from the rare–element to the muscovite class.

This lenticular pegmatite, up to 10 m thick and several tens m long, is hosted by a hornblende gneiss. The contact with host rocks is sharp and mostly concordant; biotite is apparently dominant over hornblende here. The foliation of the exocontact gneissic rock parallels that of the outer pegmatite units.

The following textural–paragenetic units were recognized: a coarse–grained unit of Ab + Msc + Qtz + Kfs, with minor to rare Grt > Brl > Tur, Ap, Zrn, Mag, Nb,Ta–minerals; a saccharoidal albite unit with Ab + Qtz + Msc, minor to accessory Grt > beryl–aquamarine > gahnite > Tur, Ap, Mag, Py, Zrn ; a graphic pegmatite unit with Kfs + Qtz and minor to accessory Grt, Ab > Tur, Msc, Brl > Ap, Zrn, bismuth, Nb,Ta–oxide minerals; a blocky Kfs + Qtz unit, with minor to accessory Msc > Ab > Grt, Brl > Tur, Zrn, Ap, bismuth, Nb,Ta–oxide minerals; a cleavelandite unit of Ab + Qtz, with accessory Nb,Ta–oxide–minerals > Grt, Zrn, Toz, triplite, and bismuth. The cleavelandite unit locally contains small pockets lined with crystals of albite, quartz, late muscovite and rare apatite, topaz, tourmaline, euclase, uranmicrolite, microlite, and rynersonite.

The internal structure of the pegmatite is irregular; textural–paragenetic units are randomly distributed and they do not form continuous zones. The coarse–grained unit, seems to be the earliest one, and is commonly located in the outer parts, whereas the other units are concentrated in the central parts of the body. The coarse–grained unit and particularly the saccharoidal albite unit show a distinct foliation and, locally, a lineation of beryl–aquamarine crystals.

Chemical composition of muscovite–phengite is characterized by high Fe and Mg contents, which are fixed throughout the pegmatite crystallization. There is a distinct increase of F content and slight increase of Rb, Mn, Na in muscovite–phengite from the coarse–grained unit to blocky Kfs + Qtz unit, and to the saccharoidal albite unit. A quite similar pattern was recorded in schorl, with F increasing from the coarse–grained unit through saccharoidal albite to schorl with increased amount of olenite and elbaite components in the blocky Kfs + Qtz unit. Garnet (spessartine–almandine) is mostly zoned with Mn–depleted, Fe–enriched rims; however, compositions of garnet cores display similar Mn–contents in the coarse–grained unit, graphic pegmatite and blocky Kfs + Qtz unit and increased Mn in the cleavelandite unit. Garnet from saccharoidal albite is almost homogeneous and fairly Mn–depleted. Apatite shows increased F from the coarse–grained unit through graphic pegmatite, blocky Kfs + Qtz unit to the cleavelandite unit. Composition of beryl seems to be similar in all pegmatite units.

Significant increasing of F in mica, tourmaline and apatite throughout the pegmatite crystallization is the most typical feature of this pegmatite, whereas evolution of Mn/Fe ratio in garnet and tourmaline is quite insignificant. Also recorded were weak increases of K/Rb and K/Cs ratios as well as a very low Li–content (≤1150 ppm Li) in mica and Rb and Cs in K–feldspar.

Niobium–tantalum oxide minerals represent typical accessory minerals in almost all pegmatite units, but they are absent in the saccharoidal albite unit. They display extreme fractionation of Ta from Nb from ferrocolumbite to manganocolumbite with Ta/(Ta+Nb) (at.) = 0. 06–0. 35, Mn/(Mn+Fe) = 0.35–0.64 in the coarse–grained unit; through manganocolumbite to manganotantalite characterized by Ta/(Ta+Nb) = 0.46–0.83, Mn/(Mn+Fe) = 0.66–0.90 in the graphic and blocky units; to manganotantalite with Ta/(Ta+Nb) = 0. 73–0. 97, Mn/(Mn+Fe) = 0. 75–0. 90 and ferrotapiolite with Ta/(Ta+Nb) = 0.96–0.98, Mn/(Mn+Fe) = 0.22–0.35 in the cleavelandite unit. Compositionaly variable pyrochlore–microlite replaced columbite–tantalite in all textural–paragenetic units, and its Ta/(Ta+Nb) ratio is mostly equal to that of precursor.

The extreme evolution of Ta/Nb ratios in the manganotantalite–ferrotapiolite pair approaches a level comparable with that from highly evolved complex Li–rich pegmatites. The insignificant fractionation of muscovite, K–feldspar, garnet, beryl, tourmaline in the terms of K/Rb, K/Cs and Mn/Fe ratios as well as the very low Li, Rb and Cs contents in mica and K–feldspar are in a conspicious contrast. However, there is a distinct positive relationship between the Ta/(Ta+Nb) ratio of Nb, Ta–oxide minerals and the F–content in apatite, mica, and tourmaline from the same textural–paragenetic unit. The increasing μHF in the parent medium also indicated by the presence of topaz, triplite, microlite and euclase seems to have been the crucial factor which promoted the increase in Ta/(Ta+Nb). The extreme enrichment of the ferromanganoan minerals in Mn, which precedes enrichment in Ta in the lepidolite pegmatites (high μKF), is not observed here.

HIGH, MEDIUM AND LOW PRESSURE METAMORPHIC ROCKS: EYEWITNESSES TO THE VARISCAN DISTURBANCE IN THE BOHEMIAN MASSIF

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Metamorphic rocks provide a fundamental insight into the past thermal structure as well as tectonic behaviour of the earth. Mountain building episodes seriously disturb the thermal structure of the lithosphere by juxtaposing rock units of different ambient temperatures and it is during the drive to eradicate these perturbations that metamorphic transformations take place. The metamorphic rocks thus formed are therefore the eyewitnesses to the disturbance. Our task is to 'interview' the rocks, by various geological means, and try to decipher the encoded mineralogical, chemical and structural record in terms of temperature, pressure, stress and material transport variations over time. The job is made difficult by the fact that the studied rocks have generally made their way to the surface and thus may have 'forgotten' what happened at depth i.e. they have recrystallised at lower pressure. Likewise, during complex polyphase (different events separated by a long time period) or multiphase (different stages during the same orogenic episode) evolutions a rock body may only 'remember' the high–lights