rift environment. Middle Devonian sandstones only occur within the PG, they are extremely rich in quartz and often reddish in color indicating possible relationships to the Old Red. Early Carboniferous sandstones occur within turbiditic clastic wedges of a foreland basin. These sandstones are rich in lithic, often acidic volcanic fragments which are interpreted to reflect magmatism within a continent–continent collision environment. Early Carboniferous acidic volcanics do not occur in present outcrop levels. Widespread granites may represent contemporaneous magmatic equivalents of these volcanic fragments. Late Carboniferous molasse–like overstep sequences record a rapid change from graywackes to quartz arenite with a significant amount (– 20 volume percent) of detrital muscovite. The compositional and textural maturity rapidly increased within Late Carboniferous.

In general terms, the determination of muscovite contents is a useful tool to distinguish quartz arenites from molasse–like overstep sequences from such of passive continental margins. We propose, therefore, to add the determination of muscovite contents to the commonly used DICKINSON–GAZZI method. Furthermore, rift environments are not represented in present versions of the DICKINSON–GAZZI method display similar modal compositions like arc environments.

THE ACKERL METAMORPHIC COMPLEX: A LATE VARISCAN METAMORPHIC NAPPE WITHIN THE AUSTROALPINE UNIT OF THE EASTERN ALPS

F. NEUBAUER[1], R.D. DALLMEYER[2]

1 Dept. of Geology and Paleontology, University, Hellbrunner Str. 34, A–5020 Salzburg, Austria

2 Dept. of Geology, University of Georgia, Athens / GA, 30602, USA

The Ackerl nappe forms a tectonic klippe representing the highest structural element within the Austroalpine nappe complex of the Eastern Alps. It constitutes, in ascending order, by the pre–Alpine Ackerl Micaschist Unit (AMU) and the Ackerl Gneis Unit (AGU) which are depositionally overlain by Permian to Triassic cover. Lithological relationships suggest that these basement units including the Alpine cover have been thrust from southern margins of the Austroalpine domain over at least 60 km over structurally deeper units of the Gurktal nappe complex.

The AMU mainly constitutes by metapelites including chloritic albite porphyroclast micaschists with a simple metamorphic history. Mineral parageneses are dominated by phengitic white mica, paragonite, quartz, albite, garnet, chloritoid indicating pressure–dominated upper greenschist facies during peak metamorphic conditions.

The AGU mostly contains a thick paragneiss pile with minor intercalations of amphibolites and deformed aplite. Lithological characteristics in the field, especially well–preserved mineralogical changes within decimetre–scaled layers suggest origin from graded turbiditic graywackes. Chemical (major, minor, trace elements including REE) and isotopic compositions ($^{87}Sr/^{86}Sr$ at 330 Ma b.p. as the minimum age of deposition: 0.7125–0.7191) of the paragneiss indicate an upper crust origin of these metasediments. Relatively high La_N/Yb_N ratios of amphibolite intercalations and missing respectively positive Eu*/Eu anomalies indicate an origin from both basaltic and gabbroic alkaline liquids. The paragneiss display a complex metamorphic history. The peak metamorphic conditions are within amphibolite facies conditions indicated by the mineral parageneses including quartz, plagioclase (oligoclase/albite), muscovite, biotite, garnet and staurolite.

The boundary between AMU and AGU is characterized by a ductile shear zone with well–preserved fabrics which were formed within upper greenschist facies metamorphic conditions. These fabrics are interpreted to correspond to the emplacement of the AGU nappe onto the AMU within middle levels of the crust.

Four concentrates of muscovite (each two of the AMU and AGU respectively) have been prepared in order to evaluate the minimum age of thrusting and of the subsequent cooling of AMU/AGU. All four argon isotopic release spectra display similar plateau–like characteristics at high temperature increments of the experiments with ages between 309 and 320 Ma (e.g., a plateau age of one AGU sample with 309.2±0.7 Ma: Fig. 1) and minor argon loss within low temperature increments with model ages younger than 200 Ma. We interpret these data to record late Variscan cooling of both AGU and AMU post–dating peak metamorphic conditions and a minor metamorphic overprint during Cretaceous reactivation during Alpine nappe stacking.

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).

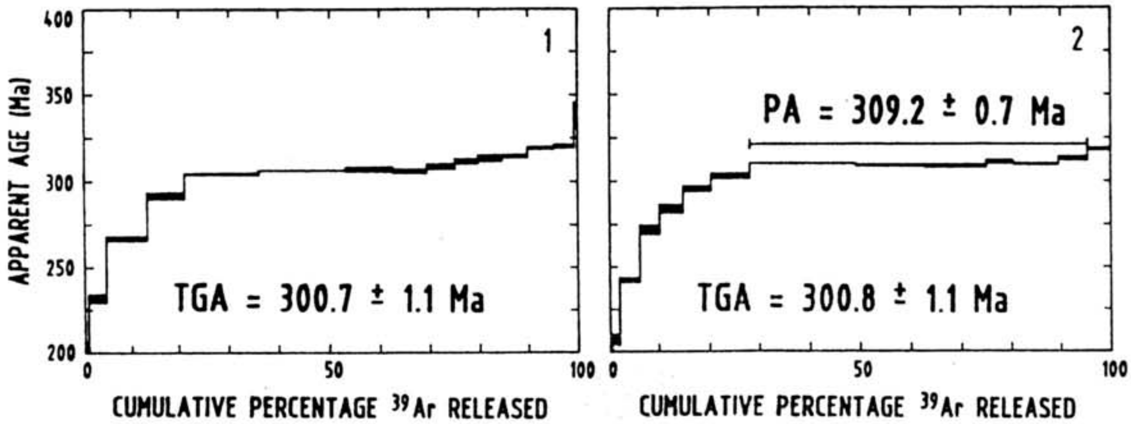

Fig.1. $^{40}Ar/^{39}Ar$ release spectra ofthe two white mica concentrates ofthe AGU. PA – plateau age; TGA – total gas age.

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

M. NOVÁK[1], J. STANĚK[2], P. ČERNÝ[3]

[1] *Department of Mineralogy and Petrography, Moravian Museum, Zelný trh 6, 65937 Brno, Czech Republic*

[2] *Department of Mineralogy, Petrology and Geochemistry, Masaryk University, Kotlářská 2, 611 37 Brno, Czech Republic*

[3] *Department of Geological Sciences, University of Manitoba, Winnipeg, MB R3T 2N2, Canada*

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