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BASIC VOLCANICS IN CENTRAL EUROPEAN VARISCAN BASINS – AN APPROACH TOWARDS A MODIFIED GEOTECTONIC INTERPRETATION

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During Devonian and Carboniferous the Rhenohercynian and Saxothuringian basins as well as many others within the European Variscides are characterized by bimodal submarine volcanism. The setting is clearly characterized as thinned continental crust. Usually rifting or back arc spreading is assumed as the major cause. On the other hand, the Rhenoherzynian realm is considered to be a passive continental margin bordering a small oceanic basin to the south, which itself was obliquely subducted towards further south, mainly during Lower Carboniferous.

The most important chemical pattern of the basic rocks will be reviewed to derive some principal processes of magma genesis. The basic rocks were often classified as continental basalts. Yet typically, characterisation of these rocks with commonly used discrimination diagrams fail as most continental basalts do (Wang & Glover 1992). Nevertheless, many basic rocks show strong similarity to E–MOR–basalts (e.g. Schmincke & Sunkel 1987) which occur in present oceanic crust near plume areas often associated with transform faults (e.g. LeRoex et al. 1983). Such magma pathways may cut into continental margins with a small angle, if the spreading axis is at a high angle to the continental margin. Hence concomitant opening of small oceanic basins characterized by strike slip transform motion and a strongly dissected ridge very similar to the present Gulf of California (Saunders et al.1979) is assumed during Devonian and Carboniferous evolution of the Rhenohercynian and Saxothuringian basins.

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INDICATION OF LOWER CRUSTAL ORIGIN FOR THE WEINSBERG GRANITE (SOUTH BOHEMIAN PLUTON, AUSTRIA)

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The intrusives of the composite South Bohemian Pluton cover a large area in the western part of the Bohemian massif in Austria. They consist mainly of different types of granites with only subordinate basic and intermediate rocks such as gabbros and diorites. The coarse grained Weinsberg granite is the most widespread in this area, forming smaller bodies close to the Bavarian border containing dark patches of a quartz monzodiorite.

It consists of two assemblages which are not in mutual equilibrium. The younger one crystallized from a biotite–granite melt with dark colored orthoclase, plagioclase (An~30), quartz, and biotite. Both feldspars show clear magmatic textures and zoning. The older one is formed by a granulitic assemblage of plag(An~50)–opx–cpx with a metamorphic texture. The XMg value range for the cpx from 0.50–0.54 and for the opx from 0.35–0.42. Both pyroxenes are homogenous and are partly re–

placed by amphiboles and biotite. Even the amphiboles reflect the two stages. A tschermakitic amphibole being part of the metamorphic assemblage forms corona–like reaction rims around the pyroxenes. The actinolitic to ferro–actinolitic amphiboles reflect the magmatic (subsolidus) stage. A myrmekitic reaction zone of oligoclase and quartz, locally including biotite is common between the two assemblages.

Temperatures around 765 °C have been calculated for the older granulitic paragenesis using the two pyroxene thermometry. According to the Al content of the tschermakitic amphibole the metamorphic granulite facies event occurred at rather high pressures. The actinolitic to ferroactinolitic amphiboles indicate a low pressure granitic evolution which is defined by complex chemical zoning of the coexisting magmatic feldspars. The subsolidus thermal history is shown by different stages of micropertitic exsolution and followed by a later microclinisation.

Two types of zircons could be detected: an idiomorphic long–prismatic type with core and rim and a short–prismatic one with a strong overgrowth. Based on $^{207}Pb/^{206}Pb$ evaporation data the rim and the overgrowth zones yielded 320±10 and 326±3 Ma respectively. The ages of the core range from 498 to 549 Ma with a moderate error. The younger ages are probably due to the Variscan intrusion of the Weinsberg granite. The Early Paleozoic ages reflect probably the formation of the protolith in granulite facies. According to the wide variation of the Early Paleozoic ages a complex mixing of Pb components of different ages has to be considered. The SiO_2 content of the quartz monzodiorite ranges from 54–62% which is identical with the range of the common diorites. MgO, CaO, and Cr is significantly lower, K_2O, Zr and Ba higher than in the diorites. Their geochemical composition resembles that of charnockites contaminated by some upper crustal components. The Weinsberg granite itself ranges from 63–74% SiO_2 forming a distinct evolution trend with the quartz monzodiorites.

The petrography and the geochemistry of the quartz monzodiorites indicate an important contribution of granulitic lower crust to the formation for the Weinsberg granitic melt.

NEW GEOLOGICAL WALL–MAPS (STRUCTURAL RELIEFS) OF CENTRAL EUROPE 1 : 800 000; ENGLAND, WALES, AND IRELAND 1 : 1 000 000 AND FRANCE 1 : 1 000 000

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At the Department of Geology of the Technical University of Munich a new kind of geological wall–map has been developed. It selects and combines the advantages of different "styles" of reproduction: constant scale, topographical contents and habitual colours are taken from normal geological maps, perspectivic view and orientated cross–sections from bloc–diagrams, underground structures from subcrop maps, and tectonic structures are visualized by what Hans CLOOS introduced and called as "Structural Reliefs". By all these means, synoptically employed, the map becomes highly illustrative, particularly for those who are not yet perfectly trained to interpret geological maps in the third dimension. The map is recommended, therefore, for use in university lectures, highschools, earthscience–bound offices, museums, etc.

MID – LATE DEVONIAN ARC–TYPE MAGMATISM IN THE BOHEMIAN MASSIF: Sr AND Nd ISOTOPE AND TRACE ELEMENT EVIDENCE FROM THE STARE SEDLO AND MIROTICE GNEISS COMPLEXES, CZECH REPUBLIC

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Within the Moldanubian zone of eastern Hercynides in the Bohemian Massif there are metamorphic complexes with the gross form of roof pendants in the mid – late Hercynian granitoids of the Central