plied with sediment predominantly from the southern point spot source. Therefore, although less prominent in its basal proximal parts, the second megacycle shows many features similar to the first megacycle and can be interpreted in similar way. It recorded sedimentary evolution from lowstand slope-fan or slope-apron into distal base-of-slope fan as the sea-level gradually rose switching off the western linear source in favour of sedimentation of distal basin-plain deposits of the southern spot source. Both megacycles are separated by a sequence boundary.

Considering its sequence architecture the upper part of the Formation (Vikštejn Member) is poorly understood and requires further study.

References

BOUMA A.H., STELTING C.E. and COLEMAN J.M, 1984. Mississippi fan: internal structure and depositional processes. *Geo-Marine Letts*, 3: 147-154.

MUTTI E., 1992. Turbidite sandstones. AGIP publication, Instituto di Geologia, Universita di Parma.

MUTTI E. and RICCI-LUCCHI F., 1972. Le torbiditi dell´Appennino settentrionale: introduzione all´analisi di facies. Mem. *Soc. Geol. Italy*, 11: 161-199.

POSAMENTIER H.W., ERSKINE R.D., MITCHUM R.M. and VAIL P.R., 1987. Submarine fans in a sequence stratigraphic framework. *AAPG Bull.*, 71: 602-603.

Niemcza Zone Granitoids – Durbachites in the Sudetes

Jaromír LEICHMANN[1] and Aleksandra GAWEDA[2]

[1] *Dep. of Geology and Palaeontology, Masaryk University, Kotlarska 2, 611 37 Brno, Czech Republic*

[2] *Dep. of Mineralogy, Geochemistry and Petrography, University of Silesia, Bedzinska 60, Sosnowiec, Poland*

Durbachites and other ultrapotassic rocks belong to the oldest (340–330 Ma) Variscan magmatites. They have been described from the Moldanubian zone throughout the Variscan belt in the Western and Central Europe. Members of this suite range from K-rich gabbros to syenites and granites. They typically contain K-feldspar megacrysts in the matrix consisting of biotite, actinolite with rare relics of clinopyroxene, K-feldspar, plagioclase with accessory phase's apatite and zircon. The characteristic features for the whole suite are high concentrations of LILE (K, Rb, Ba), radioactive elements (U, Th), and REE, which are associated with high concentrations of Mg, Cr and Ni.

Durbachites form three large plutons on the south-eastern margin of the Bohemian Massif – Rastenberg, Třebíč, Jihlava, and several smaller bodies, cropping out mainly north of the Třebíč pluton.

Syenites and melanogranites from the Niemcza zone (Puziewicz, 1992) at the northern margin of the Bohemian Massif are compared with well-known durbachites from the Moldanubian Zone.

Granitic rocks from the Niemcza zone can be classified as granites, quartz monzonites and syenites. The amphibole-biotite-bearing granitoids contain up-to-3-cm-long phenocrysts of K-feldspar in a medium-grained matrix of granodioritic composition. They are ultrapotassic with a high concentration of MgO (4.0–5.6 wt. %) and K_2O (4.3–5.1 wt. %), and low Na_2O (2.4–2.5 wt. %). LILE are strongly elevated (Rb 138–197 ppm, Sr 506–607 ppm, Ba 1213–1758 ppm) as well as Cr and Ni (40–102 ppm). The REE normalized plot (Fig. 1) resembles durbachites from the Třebíč pluton by their strong enrichment in LREE, week negative Eu anomaly, and low HREE. A normalized plot of the trace elements (Fig. 2) indicates a lower concentration of U and Th in the durbachites from the Niemcza zone when compared with the Třebíč pluton. Such lower concentrations of radioactive elements are more typical for the Jihlava pluton.

The U-Pb dating of the Niemcza Zone syenites define a discordia with a lower intercept age of 338 ±3 Ma and an upper intercept age of about 1.8 Ga (Oliver, 1993). Ar-Ar ages on amphiboles from the Niemcza Zone reveal values of 335 ±5

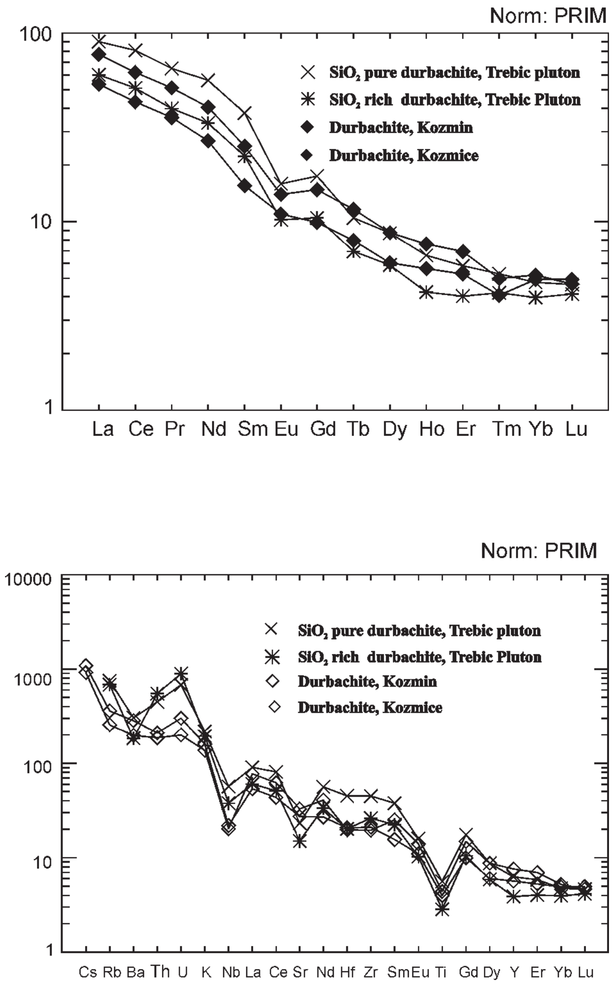

Fig. 1. Prim normalised REE plot, durbachites from Třebíč pluton and durbachites from Niemcza zone (above). Prim normalised trace elements plot. Durbachites from Trebic pluton and Niemcza Zone (below).

Ma (Dudek et al., 2000). The ages ~ 340 Ma were reported from durbachites in Austria as well (Kloetzli and Parrish, 1996). Rb-Sr study (Lorenc, 1998) didn't allow unequivocal geochronological interpretation, indicating an important role of magma mixing in the formation of these granitoids. The very complex U-Pb and Rb-Sr systematics (Scharbert and Veselá, 1990) are typical of durbachites from the eastern Moldanubicum too.

References

DUDEK K., WOJTOWICZ A. and KORZENIOWSKA A., 2000. Ar-Ar Dating of Hornblende from Pegmatite in Quartz Monzodiorite from Przedborowa (lower Silesia, Poland) – Preliminary Results. *Miner. Pol.*, 31(2): 75-83.

KLOETZLI U. S. and PARRISH R.R., 1996. Zircon U/Pb and Pb/Pb Geochronology of the Rastenberg Granodiorite, South Bohemian Massif, Austria. *Miner. Petrol.*, 58: 197-214.

LORENC M.W., 1998. Badania Izotopove Metoda Rb/Sr Skal Intruzyjnych Strefy Niemczy. *Arch. Mineralogizcne*, 51(1-2): 153-161.

OLIVER G. J. H., CORFU F. and KROGH T.E., 1993. U-Pb Ages from SW Poland: Evidence for a Caledonian Suture Zone between Baltica and Gondwana. *J. Geol.Soc.London*, 150: 355-369.

PUZIEWICZ J., 1992. Geneza Granodioritu z Kozmic. *Arch. Mineralogiczne*, 47(2): 95-141.

SCHARBERT S. and VESELA M., 1990. Rb-Sr Systematic of Intrusive Rocks from the Moldanubicum around Jihlava. Thirty Years of Geological co-operation between Austria and Czechoslovakia. CGU and GBA Prague, pp.262-272.

Palaeomagnetism and its Applications to Tectonics – a Brief Outlook

Marek LEWANDOWSKI

Institute of Geophysics, Polish Academy of Sciences, Ks. Janusza 64, 01-452 Warszawa, Poland

A primary objective of palaeomagnetic studies was to obtain a record of past configurations of the geomagnetic field. Extensive studies in early 50s on natural remanent magnetisation (NRM) recorded in the Icelandic lavas led to one of the most astonishing discovery in geophysics that geomagnetic field inverted its polarity in geologic time-scale. This facilitated an understanding of a nature of observed magnetic anomalies of the oceanic floor and triggered a sea-floor spreading concept, as well as a new discipline of magnetostrtigraphy. Parallel outcome of palaeomagnetic research was a concept of a palaeomagnetic pole, that, proving mobility of the continents in the geological past, made a basis for a plate tectonic theory.

These two most important contributions of palaeomagnetism to the Earth sciences do not exhaust variety of geologic applications. Tectonics can particularly benefits from palaeomagnetic outcomes. Using either palaeomagnetic direction-space or paleopole-space approaches, one can analyse vertical-axis and latitudinal motions of continents and/or tectonostratigraphic terranes. Deciphering relative movements of colliding blocks makes it possible to reconstruct a sense of shearing and a magnitude of associated rotations. Structural and palaeomagnetic data, if analysed collaboratively, enable determination of an Eulerian pole of rotation, contributing therefore to a quantification of relative block movements. Furthermore, palaeomagnetism can set up a time constraints on folding event(s), while anisotropy of magnetic susceptibility enables reconstruction of a palaeo-stress pattern.

Certainly, a fundamental for these applications is a quality of palaeomagnetic data, that depend on type of rock and its geological history. This does not mean, however, that only primary magnetisation is of the main concern in palaeomagnetic analysis. Secondary components of NRM, acquired due to metamorphic processes and often considered unwanted palaeomagnetic signature, may sometimes help in unravelling of a tectonic evolution. Equally important in a reliable interpretation of a palaeomagnetic record are tectonic data, particularly these related to a structural coherence of rocks in question and a paleohorizontal of plutonic rocks.

Strain Distribution and Fabric Development Modelled in Active and Ancient Transpressive Zones

Ondrej LEXA[1], Karel SCHULMANN[1], Alan Bruce THOMPSON[2] and Josef JE•EK[3]

[1] *Institute of Petrology and Structural Geology, Faculty of Science, Charles University, Prague, CZ - 128 43, Czech Republic*

[2] *Department Erdwissenschaften, ETH Zurich, CH - 8092, Switzerland*

[3] *Institute of Applied Mathematics and Computer Science, Faculty of Science, Charles University, Prague, CZ - 128 43, Czech Republic*

Transpressional models in general assume that a weak and deformable zone bounded by the rigid walls of adjacent lithosphere is progressively shortened in the course of convergence. In order to answer a question whether the measured internal (microscopic) parameters of ancient transpressional zones (e.g. orientation of lineation and foliation, K and D values) may be used to estimate the initial external (macroscopic) parameters (ratio of convergence velocity/initial width of zone = Rvd, rigid floor depth of transpressional zone = RFD and an angle of convergence = α) we developed the strain map, where isolines