tion temperature. The compositional isopleths in pseudosections also point to temperature decrease, corroborated by average PT calculations (800 => 650 °C/6kbar).

There is no direct evidence of the composition of involved melt, apart from the mineral compositions with which it equilibrated. A melt composition that is in equilibrium with plagioclase-K-feldspar-quartz-sillimanite-garnet-biotite in the NCKFMASH system can be calculated if X_{An} and the P-T conditions are fixed. With a melt composition derived in this way we calculated T-x pseudosections for a bulk composition line between K-feldspar (or plagioclase) and melt in order to understand bulk composition changes. When in a K-feldspar layer, plagioclase starts to crystallize above the temperature of muscovite stability only if melt: rock is 9:1. Similarly, in the plagioclase layer, the K-feldspar crystallizes if more then melt: rock is 8:1. Such a high melt proportion is reasonable only if the edges of grains of solid phases are considered to be in equilibrium with melt covering the grain boundaries. Thus, a small proportion of melt is present in the whole rock at one time. In order to change the whole rock composition in such a way, a large, but currently unidentified quantity of melt must have passed through the rocks along the grain boundaries.

The observed compositional changes in individual layers as well as bulk rock chemistry changes are driven by equilibration with large quantities of infiltrating haplogranitic melt of unknown source. Such a process of a large quantity of melt passing through rocks at grain scale without any important signs of segregation might be an important mechanism for melt transport in a migmatitic crust. As the Gföhl gneiss appears as hundreds of km^2 bodies, the process of penetrative melt flow through the orogenic crust would be a crucial process for crustal differentiation and also for crustal rheology during orogeny.

New Seismo-Tectonic Activity near Zakopane (Poland) – Events Recorded by Broad-Band Stations Operated by IPE

Josef HAVÍŘ, Jana PAZDÍRKOVÁ, Zdeňka SÝKOROVÁ, Petr ŠPAČEK and Jan ŠVANCARA

Institute of Physics of the Earth, Masaryk University, Tvrdého 12, 602 00 Brno, Czech Republic

During the end of the year 2004, the seismo-tectonic activity in the Polish part of the Vysoké Tatry region was newly detected. This activity continued also during the year 2005. The broad-band stations operated by the IPE (Institute of Physics of the Earth, Masaryk University, Brno – stations JAVC, KRUC, MORC and VRAC) in the eastern part of the Czech Republic registered 25 events with local magnitude ML from 1.1 to 4.6.

The new exhibitions of the seismo-tectonic activity have started by the strongest event (local magnitude ML = 4.6) on 30. 11. 2004, which was macroseismically observed. The historical macroseismic observations are known in this region. But during about ten years long continuous registration of broad-band stations operated by the IPE, before 30. 11. 2004, these stations had not recorded any tectonic event with epicentre situated in the Polish part of the Vysoké Tatry region. In contrast to situation before the strongest event, the significant seismo-tectonic activity was observed during first three days of the December 2004 (13 recorded events with local magnitude ML from 1.1 to 3.5). Less intensive activity continued up to the August 2005 (11 recorded events with local magnitude ML from 1.5 to 3.4).

Using other stations operated by Polish, Slovak, Czech and Hungarian seismological institutes, 13 events were reliably located by program LocSAT. In the case of other 12 events, only approximate locations were possible due to small number of reliable records by accessible broad-band stations. Epicentres are situated near Zakopane, on the northern margin of the Central Western Carpathians. This region represents the NE prolongation of the significant seismoactive zone passing from the Mur-Mürz fault system in the Eastern Alps through the southeastern part of the Vienna basin into Western Carpathians and continuing along the Pieniny Klippen Belt to NE.

Seismo-Tectonic Activity in the NE Part of the Bohemian Massif – New Records in the Period 2004–2005

Josef HAVÍŘ, Jana PAZDÍRKOVÁ, Zdeňka SÝKOROVÁ and Petr ŠPAČEK

Institute of Physics of the Earth, Masaryk University, Tvrdého 12, 602 00 Brno, Czech Republic

In the NE part of the Bohemian Massif, the weak recent seismo-tectonic activity occurs. Micro-earthquakes are concentrated in numerous epicentral areas. During the period 2004–2005, more than 250 tectonic events were detected (more than 60 events were located)

in the NE part of the Bohemian Massif by the seismological stations operated by IPE (Institute of Physics of the Earth, Masaryk University Brno).

The most frequent occurrence of the micro-earthquakes is observed in the area northwards of Šternberk. In the period 15. 11. to 19. 11. 2005, new swarm-like sequence of the tectonic events was observed in the area NW of Šterberk. The stations of IPE detected 33 events (the local magnitude ML of strongest events was 1.4) belonging to this sequence. Seismo-tectonic activity occurred also in some other areas near Šternberk, the sequence of micro-earthquakes including the event with local magnitude ML = 2.2 was detected in December 2005 in the area eastwards of Šternberk.

Significant seismo-tectonic activity was observed in the Hronov region. In this region, the strongest micro-earthquake (local magnitude ML = 2.8) occurred on 25. 10. 2005. The swarm-like sequence of weak events (five registered events with local magnitudes ML varying from 1.0 to 2.2) observed on 10. 8. 2005 represents another occurrence of the relatively significant seismo-tectonic activity detected in the Hronov region during the year 2005.

Other relatively significant exhibitions of the seismo-tectonic activity occurred in the areas near Bruntál, Budišov n. Budišovkou, Opava, and Hranice na Moravě in the period 2004–2005. Epicentres of 15 micro-earthquakes recorded in the period 20. 8. to 29. 8. 2004 and located into area near Hranice na Moravě (the local magnitude ML of strongest events was 0.9) are situated in the Western Carpathian flysh nappes, close to the front of these nappes. But, in respect of the depth of hypocenters which exceeds 10 km, the seismic activity occurs in the units of Bohemian Massif forming the basement of the Western Carpathian nappes, which have thickness of only 1–2 km in this area (for instance Menčík et al. 1979).

Also seismo-tectonic activity newly observed in the Vizovice region (18 events detected in the period 14. 3.–6. 7. 2004, the local magnitude ML of strongest events was 1.3) is probably connected with the faulting in the units of the Bohemian Massif under the Western Carpathian flysh nappes. The thickness of the Western Carpathian nappes reaches about 6 km in this region (for instance Menčík et al. 1979). The calculated depths of the located hypocentres vary from 12 to 16. These depths correspond to the hypothesis, that the hypocentres are situated in the basement formed by the Bohemian Massif, close to the base of the Western Carpathian nappes. But the determination of the depth is less accurate in comparison with determination of other coordinates.

References

MENČÍK E., PESL V. and PLIČKA M., 1979. Příspěvek k poznání tzv. prohybu epivariské platformy v podloží vnějších Karpat. In: M. MAHEĽ (editor), Tektonické profily Západných Karpát, pp. 15-24.

Geodynamic Implications of Flattened Equigranular Textured Peridotites from the Central Part of the Carpathian–Pannonian Region

Károly HIDAS[1], György FALUS[2], Péter János SZABÓ[3], Tamás FÖLDES[4], István KOVÁCS[5] and Csaba SZABÓ[1]

[1] Lithosphere Fluid Research Lab, Department of Petrology and Geochemistry, Eötvös University Budapest, Pázmány P. stny. 1/C, H-1117 Budapest, Hungary
[2] Eötvös Loránd Geophysical Institute of Hungary, Kolumbusz u. 17-23, H-1145 Budapest, Hungary
[3] Department of Materials Science and Engineering, Budapest University of Technology and Economics, Goldmann Gy. tér 3., H-1111 Budapest, Hungary
[4] Institute of Diagnostic Imaging and Radiation Oncology, University of Kaposvár, Guba S. u. 40., H-7400 Kaposvár, Hungary
[5] Research School of Earth Sciences, The Australian National University, Building 61 Mills Road, Canberra ACT 0200, Australia

Peridotite xenoliths showing unusual tabular equigranular texture (addressed as flattened equigranular) were found in Neogene alkali basalts from the Bakony-Balaton Highland Volcanic Field (BBHVF), in the central part of the Carpathian-Pannonian Region. In this study we present a basic (major and trace element) geochemical, detailed fabric (polarized light microscope and computer tomography /CT/) and EBSD analysis of CPO of both olivine and orthopyroxene in three flattened equigranular textured peridotite xenoliths selected for this study.

Macroscopic foliation and mineral lineation in the studied upper mantle rocks are visible in hand specimens being defined by flattening and stretching of all mineral phases, respectively. On the CT images, foliation is also shown in 3D by the olivines. Regarding their textural type, the studied xenoliths are not common in the BBHVF and were reported extremely rarely among the worldwide-studied upper mantle peridotites. The petrographic features and uniqueness of the observed texture inspired us to address it flattened equigranular texture.

As a geochemical summary of the studied peridotites, based on their major element composition, they went through high degree partial melting (20–25 %), which is higher than the usual observed in common upper mantle peridotites of the BBHVF