

bite. Complex Y-HREE-Nb-Ta oxides, most probably *polycrase-(Y)* and *uranopolycrase*, were detected as up to 50  $\mu\text{m}$  irregular grains in silicified phyllite and in quartz albite vein from exocontact aureole of the Dlhá Valley granite.

SGG granites show isotopical and geochemical S-type characteristics. The enrichment of these granites in several rare elements was followed by precipitation of the described special primary and secondary mineralisation. This resulted in their classification as specialized S-type granites.

## The high-pressure granulites of the Złote unit: Sm-Nd and single grain U-Pb zircon ages from the Rychleby Mts.

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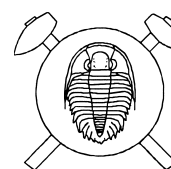
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At the NE margin of the Bohemian Massif, granulites occur in the Złote unit which is exposed in the border region between Poland and the Czech Republic (Pouba et al., 1985; Bakun-Czubarow, 1992). This tectonic unit belongs to the Orlica-Śnieżnik dome (OSD) which is mainly composed of amphibolite-facies orthogneisses. Granulite occurrences (with very small eclogite domains) are restricted to the Złote unit; eclogite blocks and lenses, but no granulites, are also found in other tectonic units of the OSD. On the Polish side, outcrop conditions in the Złote unit are rather poor. Besides some isolated blocks, granulites are mainly restricted to a very small occurrence near Stary Gierałtów. This exposure has attracted much attention due to findings of presumed coesite pseudomorphs, as inferred from radial fractures around polycrystalline quartz inclusions in garnet (Bakun-Czubarow, 1992). Peak metamorphic conditions were estimated between 21 and 28 kbar at 800 to 1000 °C (Kryza et al., 1996; Klemd – Bröcker, 1999). Previous geochronology indicated metamorphic ages of c. 350–340 Ma for an eclogite (Brueckner et al., 1991) and mafic granulites (Klemd – Bröcker, 1999), collected at the Stary Gierałtów key location. Additional outcrops of the Złote unit are found on the Czech side in the Rychleby Mts (Pouba et al., 1985) and the focus of this study is on the geochronology of these occurrences. By means of the Sm-Nd method (garnet, cpx, whole rock) and single grain U-Pb dating of zircon, we have studied felsic and mafic granulites collected near the location Červený Důl near Javorník.

First results can be summarized as follows: A felsic granulite yielded a Sm-Nd age of  $337 \pm 4$  Ma (two grain-size fractions of garnet, whole rock). Two mafic granulites provided Sm-Nd ages (two grain-size fractions of garnet, cpx and/or whole rock) of  $357 \pm 10$  Ma and  $351$

### References

- Broska, I. – Kubiš, M. – Willimas, C. T. – Konečný, P. (2002): Bull. of the Czech Geol. Survey, 77, 5, 147–155.  
Finger, F. – Broska, I. (1999): Schweiz. Mineral. Petrogr. Mitt., 79, 439–443.  
Jakabská, K. – Rozložník, L. (1989): Geol. Zbor. Geol. Carpath., 40, 141–159.  
Johan, V. – Johan, Z. (1994): Mineral. Petrol., 51: 323–343.  
Poller, U. – Uher, P. – Broska, I. – Plašienka, D. – Janák, M. (2002): Terra Nova, 14, 41–48.  
Uher, P. – Broska, I. (1996): Geol. Carpath., 47, 113–121.  
Yang, G. – Wang, S. – Peng, Z. – Bu, J. (1988): Am. Mineral., 73, 1497.



$\pm 10$  Ma, respectively. The new Sm-Nd results are in good agreement with metamorphic ages reported for other Bohemian granulites and further document the significance of high-pressure/high-temperature metamorphism at c. 350–340 Ma.

Single-grain zircon dating of air-abraded grains provided concordant U-Pb results. Zircons from a mafic granulite yielded ages between 415–343 Ma, but mostly cluster at  $362 \pm 1$  Ma. A similar age (360–369 Ma) was previously reported for a mafic granulite from Stary Gierałtów, based on conventional multigrain analyses of zircon (Klemd – Bröcker, 1999). This age is considered to approximate the timing of crystallisation from a melt. However, it still remains unclear whether this process took place before or during early stages of high-pressure metamorphism. The studied felsic granulite yielded a range in zircon ages between 396 to 328 Ma, recording magmatic inheritance and subsequent metamorphic overprints. Of special interest is the age cluster at  $328 \pm 2$  Ma which is interpreted to document anatectic processes post-dating the pressure peak. Published geochronological information related to the HP granulites from the Złote unit is based on a limited dataset from a single outcrop at Stary Gierałtów. The results presented here provide additional constraints for the timing of metamorphism/magmatic activity and thus help to substantiate regional geologic considerations.

### References

- Bakun-Czubarow (1992): Arch. Mineral. 48, 3–25.  
Brueckner, et al. (1991): N. Jahrb. Mineral., Abh., 163, 169–196.  
Klemd, R. – Bröcker, M. (1999): Contrib. Mineral. Petrol. 136, 358–373;  
Kryza, R. – Pin, C. – Vilzeuf, D. (1996): J. metamorphic Geol. 14, 531–546.  
Pouba, et al. (1985): N. Jahrb. Mineral., Abh. 151, 29–52.