The 1.86-1.84 Ga magmatism in the Western East European Craton (Lithuania): Implications for a convergent continental margin

G. SKRIDLAITE[1]*, M. WHITEHOUSE[2], S. BOGDANOVA[3] AND L. TARAN[4]

[1]Nature Research Centre, Vilnius, Lithuania (*correspondence: skridlaite@geo.lt)
[2]Swedish Museum of Natural History, Stockholm, Sweden
[3]Department of Geology, Lund University, Sweden
[4]Belarussian Research and Geological Exploration Institute

The East European Craton in western Fennoscandia was mostly formed by the accretion of distinct terranes at c. 1.8 Ga. TTG magmatic rocks in the age range 1.86-1.84 Ga are abundant in the crystalline crust of S, central and NW Lithuania. In the south, TTG rocks compose the large Randamonys massif. A Zm347 tonalite yielded an 1859±5Ma concordia age, while a Vr268 diorite was dated at 1848±6 Ma. A strongly deformed 7Gr granitic rock in adjacent NW Belarus gave a similar 1844±8 Ma igneous age. In central Lithuania, the Glv99 igneous mafic granulites display magmatic 1839±15 Ma and metamorphic 1809±9 Ma ages. The nearby Grz105 gneissic granite was intruded at c. 1837±6 Ma, while the Kz65 granite further north was emplaced at 1844±5 Ma [1]. The area to the south and west of the above described rocks in Lithuania and in N Poland is dominated by younger c. 1.83-1.79 Ga magmatic rocks. The fragments of a c. 1.83-1.82 Ga volcanic island arc in Sweden [2], N Poland and Lithuania [3] compose a considerable part of this younger domain.

The distribution of 1.86-1.84 Ga magmatic arc-related rocks in Lithuania likely delineates fragments of a convergent continental margin. It continues northwestwards across the Baltic Sea into south-central Sweden, and southwards to N Poland and NW Belarus.

[1] Motuza *et al*. (2008) *Geologija* 1(61) 1–16. [2] Mansfeld *et al*. (2005) *GFF* **127**, 149–157. [3] Wiszniewska *et al*. (2005) *Min. Soc. of Poland- Special Papers* **26**, 104–108.

Abnormal (Y+REE)-enriched zircon from the pegmatite dike (Gridino, the Belomorian province, Fennoscandian shield)

S.G. SKUBLOV[1]*, O.L. GALANKINA[1] AND S.G. SIMAKIN[2]

[1]Institute of Precambrian Geology and Geochronology, Russian Academy of Sciences, St. Petersburg 199034, Russia (*correspondence: skublov@gmail.com)
[2]Jaroslavl Branch of Institute of Physics and Technology, Russian Academy of Sciences, Jaroslavl 150055, Russia (simser@mail.ru)

Zircon can contain naturally U and Th up to 10 wt% and several thousands of ppm of REE. The maximum known contents of REE (up to 98, 154 ppm) was found in zircons from Bidoudouma stream close to Oklo, Gabon [1].

We found abnormal (Y+REE)-enriched zircon in the thin pegmatite dike cutting precambrian eclogites (village Gridino, the Belomorian province, Fennoscandian shield, see outcrop photo in [2]). Zircon core ($^{207}Pb/^{206}Pb$-age 2685 Ma) is captured eclogite protolith with regular REE distribution. Rim is characterized by high contents of REE (61, 280–96, 760 ppm), Y (55, 360–84, 800 ppm) and distinctly positive Ce anomaly. U and Th contents are not so high – maximum 2230 and 90 ppm, respectively.

Age of rim crystallization is svecofennian (1875 Ma) following high-pressure metamorphism event

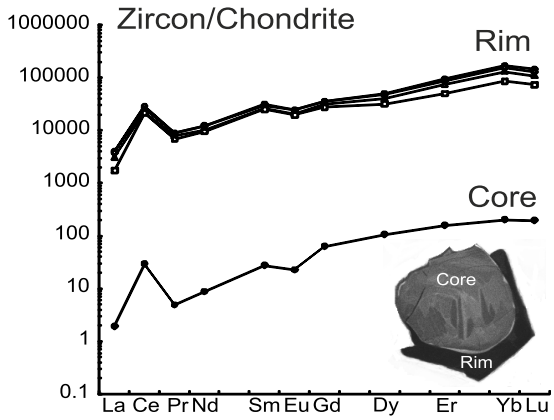

Figure 1: REE patterns for zircon core and rim (insert is CL image)

[1] Horie *et al*. (2006) *Phys. Chem. Earth* **31**, 587–592. [2] Hölttä *et al*. (2008) *Episodes* **31**, 13–19.