

Precise U-Pb (ID-TIMS) and SHRIMP ages on single zircon for Achaean TTG rocks on Baltic Shield

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Voche-Lambina polygon lies on the boundary between Belomorian mobile block and Central –Kola domain (Morozova *et al.*, 2011). New neorhaean U-Pb data on single zircon from TTG of international polygon named of the Voche-Lambina yielded 3158.2 ± 8.2 , which are situated on Central-Kola block in the Baltic Shield. Zircon are characterized by low concentration U and Pb, low U/Th ratio with 0.2. REE diagrams of grey gneisses reflect high fractionation $La/Yb > 30$, enriched by light REE and depleted by heavy $Yb < 0.6$ ppm. Model Sm-Ng ages on the rocks have protolith from with the ages 3.4 to 3.2 Ga, positive ϵNd from +1.29 to +3.3, ISr equals 0.702. Precise age of amphibolites metamorphism has been dated on single zircon with 2704.3 ± 5.9 Ma. In the frame of the Central-Kola domain there is an Ingosersky TTG complex. Firstly U-Pb dating on single zircon from Bt-gneisses reflects 3149 ± 49 Ma. Metamorphic alterations were in 2725.2 ± 2.5 Ma and connected with origin of Amf-Bt gneisses and 2733.6 ± 6.6 with Bt-Amf gneisses. (Nitkina *et al.*, 2012). Achaean gneisses in Monchegorsk ore region were firstly dated in the Central-Kola domain and near Murmansk. Single zircon from gneisses in Monchegorsk region which are the basement for Paleoproterozoic PGE layered intrusions with U-Pb ages on zircon and baddeleyite from 2.4 to 2.5 Ga (Bayanova *et al.*, 2009) has 3.16 Ga and single zircon with 2776 ± 3 Ma is considered as amphibolites metamorphism. New U-Pb (ID-TIMS) data on single zircon from high alimunia gneisses near Murmansk in the Central-Kola domain gave 3.17 Ga, core from these zircon population has the age 3695 ± 5 Ma by SHRIMP. Time of amphibolites metamorphism was dated with 2753 ± 3 Ma. Therefore based on the new data on single zircon from TTG and gneisses from Central-Kola domain leads to the long history of continental crust origin in the Baltic Shield from 3.16 to 3.7 Ga.

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Improvements of the coherent and precise ice core dating tool Daticc: new data and parameterization

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Recently, we published the new ice core reference chronology AICC2012 common for 5 ice cores (EDC, EDML, Vostok, TALDICE and NorthGRIP) back to 800 ka (thousand of years before 1950) [1, 2]. To construct this optimized chronology we used the “Daticc” Bayesian tool [3], using a background chronology and data constraints (absolute and orbital age markers, stratigraphic links between the ice cores) for both the ice and gas phases.

One of the limitations of AICC2012 was the lack of a good characterization of variance associated with the thinning background scenario respecting the deformation history. We thus propose a new definition of this variance using numerous data of microstructure and fabric for the EDC ice core [4].

A second limitation of AICC2012 was the lack of orbital constraints on the long EDC ice core. We present a new high-resolution record of $\delta^{18}O_{atm}$ and $\delta O_2/N_2$ between 100-800 ka obtained on EDC ice of high quality exempt of gas loss. Together with the complete record of air content [5], another orbital dating tool, we provide an important step for improving the reference ice core chronology for Antarctic ice cores.

[1] Veres *et al.* (2012) *CPD* **8**, 6011-6049. [2] Bazin *et al.* (2012) *CPD* **8**, 5963-6009. [3] Lemieux-Dudon *et al.* (2010) *QSR* **29**, 8-20. [4] Durand *et al.* (2007) *CP* **3**, 155-167. [5] Raynaud *et al.*, in prep.