

Sapphire-bearing rocks as indicators of continent-to-continent collision events

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Corundum is a mineral frequently found in many magmatic and metamorphic rocks. Furthermore, its red variety ruby detected in orogenic belts is the rare but powerful indicators of plate collision events (Stern et al. 2013, Sorokina et al. 2017 etc.). Meanwhile, the genesis of sapphire and its accompanying minerals found *in situ* in primary bearing rocks in numerous deposits along the orogenic belts was still considered as magmatic.

The sapphire and associated minerals within syenite pegmatites are located in Ilmenogorsky alkaline complex of Russian South Urals. They were found in syenite host rocks in the exo-contact area of nepheline syenites (Sorokina et al. 2017)

In situ U-Pb LA-ICP-MS dating of zircons associated with a sapphire in syenite pegmatites of mines 298 and 349 from Ilmenogorsky complex showed the Concordia ages at 291 ± 2 Ma and 279 ± 2 Ma. These ages are in a good agreement with the ages of the last heating event of the Uralian orogeny in the area. Besides, Rb-Sr and Sm-Nd isotopy showed the formation of sapphire-bearing rocks with the significant influence of crustal fluids. Thus, sapphire-bearing rock likely formed as the result of anatectic melting during the Uralian orogeny.

References:

1. Sorokina E.S. et al. (2017) Can Mineral, 55, 823–843; 2.Sorokina E.S. et al. (2017) Miner Depos 52 (5), 641-649; 3. Stern R.J. et al. (2013) Geology, 41, 723-726