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The post-collisional stage of the Yenisey Ridge orogeny (Siberia): geological, geochemical, geochronological and paleomagnetic data

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The Yenisey Ridge is an ancient orogen of the collisional-accretionary type, located in the south-western framing of the Siberian platform. It is roughly N-S trending along the Yenisey River for 650 km, while being 50–180 km wide. Its formation took place during the collision of the Central Angara terrane with the Siberian craton (760–720 Ma) and the subsequent accretion of terranes (700–630 Ma) from the west, composing the Yenisey island arc and ophiolite belt. In the Late Neoproterozoic during the orogen formation the emplacement of syn-collisional 760–750 Ma Ayakhta granites took place, and following them 750–720 Ma – the emplacement of the multiple plutons of the post-collisional Glushikha granites. The Ayakhta granites are confided to the Tatarka-Ishimba suture zone, which frames the Central Angara terrane from the east and consists of upthrows and thrusts fault systems, while the Glushikha granites are widely distributed in the western part of the terrane. We show the particularities of the formation of the granitoids on the post-collisional stage on the example of the Strelka pluton leucogranites. They were formed on the closing stage of the Central Angara terrane – Siberian craton collision, which took place 719–718 Ma according to zircon geochronological data. These rocks are geochemically classified as oxidized A-type leucogranites, whose magmatic source was mainly continental crustal. We observed schlieren-like structures in the leucogranites and consider them as products of early magmatic differentiates of the Strelka pluton. Their structural characteristics (morphology and orientation) indicate the direction of magma movement at the moment of emplacement. Our thermochronological model for the post-collisional leucogranites of the Yenisey Ridge [Vernikovskaya et al., 2009] that uses a combination of methods for the modelling of heat transfer and of the behaviour of the K-Ar isotopic system shows that the cooling of the pluton took place $\sim$710 Ma. The last tectonic-thermal events for the pluton, registered in Ar-Ar data took place 687 Ma and were due to the accretion of the Yenisey island arc system from the western margin of the craton. The endocontact of the pluton intruding deformed sedimentary host rocks is vertical and submeridional as are the schlieren structures, which indicates that the pluton did not change its vertical position. This makes it a favourable object of paleomagnetic investigations. Magnetite is the main magnetization carrier in the leucogranites and their endo- and exocontact zones, while pyrrhotine is the one in the host limestones as well as in the farthest parts of the exocontact zones. The paleomagnetic pole calculated for the Strelka pluton is in good accordance with the apparent polar wander path for Siberia proposed to this day [Metelkin et al., 2007]. It is located between the paleomagnetic pole of the Nersa complex of the Prisayan basin (741 Ma) and the pole of the Yenisey island arc complex of the Yenisey Ridge (637 Ma). Therefore we can affirm that when the Strelka pluton was emplaced the Central Angara terrane was already a part of the Siberian craton.