

Late Ediacarian Adakites from the Yenisey Ridge orogen, western framing of the Siberian craton: Petrology and Tectonic setting

A.E. VERNIKOVSKAYA^{1,2},
V.A. VERNIKOVSKY^{1,2}, N.YU. MATUSHKIN^{1,2},
P.I. KADIL'NIKOV^{1,2}, I.V. ROMANOVA^{1,2}

¹ Institute of Petroleum Geology and Geophysics SB RAS, Novosibirsk, Russia (VernikovskayaAE@ipgg.sbras.ru)

² Novosibirsk State University, Novosibirsk, Russia

This study provides first evidence on the formation of adakites in the Yenisey Ridge orogen, western framing of the Siberian craton, and discusses their association with the Nb-enriched rocks. Studies on this orogen suggest that the western framing of the Siberian craton was an active continental margin in late Neoproterozoic [1]. Development of the active continental margin setting at an earlier stage of the Yenisey Ridge evolution, 711–629 Ma, is marked by emplacement of the Tatarka complex, which contains Nb-enriched igneous rocks, including trachybasalts, gabbroids, granitoids, alkaline syenites and carbonatites. A later stage of the Yenisey Ridge formation in Neoproterozoic is associated with the emplacement of adakites at ca. 576–552 Ma and gabbro-anorthosite intrusions at ca. 546 Ma and formation of the Nb-enriched metabasites potentially by metamorphism of the Tatarka complex rocks. The Yenisey Ridge adakites are intermediate and acid rocks of calc-alkalic and calcic magmatic series, characterised by elevated La_N/Yb_N (18–41) and Sr/Y (130–405) ratios along with the absence of Eu anomaly. Adakites and gabbro from the Yenisey Ridge show negative Nb anomalies, which is typical to subduction-related complexes. Isotope data for adakites varies for $\epsilon Nd(t)$ from -8.6 to -1.3 and for $^{87}Sr/^{86}Sr(t)$ within 0.7045–0.7030, suggesting transitional mantle-crustal sources. These rocks are probably formed by melting of young subducting oceanic lithosphere and metasomatized mantle wedge with a minor input of mantle component. Additionally, presence of Nb-enriched zircons in adakites implies melting of the continental crust material, likely Nb-enriched metabasites. We assume that the late Ediacarian adakites from Yenisey Ridge formed as a result of transform sliding of tectonic plates after the subduction processes ceased, similar to the Cenozoic magmatic complexes from the active margins of eastern Eurasia.

[1] Vernikovskiy *et al.* (2008) *Doklady Earth Sciences* **419**, 226–230.