

Argon-Argon Dating of Camptonite Dikes of the Sangilen, Southeastern Tuva, Russia

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An accretionary-collisional stage of the history of the Central-Asian fold belt took place in the Cambrian-Ordovician, at 510-440 Ma. In southeastern Tuva, the Sangilen upland, arc-microcontinent collision processes resulted in the formation syn-folding and synmetamorphic low-alkaline layered intrusions at 507 Ma, subalkaline gabbro-monzodiorite massifs at 475 Ma, and various granitic assemblages, including late alaskites, at 460-455 Ma. Camptonite dikes are the youngest magmatic entities in the region under consideration. By analogy with lamprophyre dikes in Gorny Altai and Central Sangilen they were regarded Early Mesozoic.

In the Sangilen camptonites occur as thin dikes cutting monzodiorite, layered gabbro and alaskite. Although quench zones are found in all varieties, the mingling, in places, with granites indicates a short time gap between their formation. A typical feature of camptonite dikes is the presence of the megacrysts of kaersutite, anorthoclase, biotite, apatite, and titanomagnetite.

Olivine and Ti-augite are less abundant. The groundmass consists of clinopyroxene, plagioclase, amphibole, biotite, apatite, and magnetite. Some dikes contain the xenoliths of spinel lherzolites, Ga-, Sp- and Pl-pyroxenite, various gabbros and eclogite-like rocks.

Petrochemically the camptonite dikes are alkaline basaltoids. High Ba and Sr contents agree well with biotite megacryst composition, thus allowing us to suggest their crystallization from the same deep melt source.

New Ar-Ar ages of biotite (441.1 (1.1 Ma) and amphibole (447.6 (1.7 Ma) megacrysts from one camptonite dike show that alkaline basaltic volcanism was related to the final stage of Ordovician collisional orogeny. Thus, various ultramafic and mafic xenoliths illustrate the composition of Ordovician mantle.

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