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The first finding of Th-rich peraluminous alaskitic granite in Western Anatolia

Ömer Kamacı, Ali Tugcan Ünlüer, Alp Ünal, Zeynep Doner, Şafak Altunkaynak, and Mustafa Kumral

Geological Engineering, Istanbul Technical University, Istanbul, Turkey (kamaciom@itu.edu.tr)

Peraluminous alaskites are a common phenomenon in the migmatitic domes with anatectic cores. They are geochemically unique in terms of the U-Th mineralization and present critical significance in order to better understand the orogenic crustal processes. Western Anatolia was an orogenic welt in the latest Eocene, following the continental collision between Sakarya Continent and Tauride-Anatolide platform along the Izmir-Ankara-Erzincan suture zone. Çataldağ metamorphic core complex (ÇMCC) is located on the immediate north of the Izmir-Ankara-Erzincan suture zone, in Sakarya Continent. ÇMCC consists of Eo-Oligocene peraluminous anatectic leucogranites, corresponding to the partial melts of the young orogenic crust with a thickness of ≥ 50 km. Some of these leucogranites can be classified as alaskitic granite due to the presence of high Th content, from 12.5 to 113 ppm and relatively high ionizing radiation dose, up to 0.35 $\mu\text{sv/h}$. These alaskitic granites made up of quartz (30-35%) + plagioclase (25-30%) + K-feldspar (20-22%) + muscovite (5%) + biotite (5-3%) + monazite ($\leq 1\%$) \pm garnet. Th content in the alaskitic granites increases with increasing degrees of partial melting. Th enrichment in Çataldağ alaskitic granites is possibly hosted by monazite with high saturation temperature ($\geq 770^\circ\text{C}$). Th-rich alaskitic granites in ÇMCC were derived from the partial melting of the Tauride-Anatolide Platform (Pan-African crust) underthrust beneath the Sakarya Continent.