

Classification, mineralogical, and geochemical variations in pegmatites of the Bas Draa inlier, Western Anti-Atlas, Morocco.

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Pegmatites are important sources of critical metals and their study has been the subject of intense research in recent years. Despite this, their petrogenesis remains a topic of debate. A conspicuous swarm of aplitic and pegmatitic dykes cross cuts Precambrian intrusions and metasedimentary rocks of the Bas Draa Inlier in the western Anti Atlas of Morocco. Their width and length vary from a few centimeters to several kilometers. They are composed of abundant quartz, muscovite, feldspars, tourmaline, petalite, apatite, zircon, garnet and gahnite. The strongly peraluminous nature, low total REE content (<500 ppm), mineral assemblage of petalite, tourmaline, garnet and gahnite, and enrichment of Pb, Rb, Cs and depletion of Ba and Nb in primitive mantle normalized multi-element plot suggest that Bas Draa pegmatites belong to the LCT (Li-Cs-Ta) pegmatite family. The highly mafic tourmaline compositions (Schorl-Foitite), the presence of epidote, and field relationships precluding the possibility that these pegmatites are derived from neighboring granite all support a crustal anatexic origin from the host metasedimentary rocks.