

Intraplate magmatism in South Mongolia

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Alkaline intrusions and bimodal volcanic associations represent widespread in south Mongolia intraplate magmatism of late Paleozoic and Mesozoic ages. Late Carboniferous-early Permian (282-249 Ma by Rb-Sr age) bimodal volcanics (basalt-trachyrhyolite, basalt-comendite) with intrusive peralkaline granites and syenites occur within the latitudinal troughs controlled by deep faults of the Main Mongolian lineament corresponding the late Paleozoic subduction zone. LILE, REE, Nb, and Zr enrich these rocks. Next cycle includes mainly late Mesozoic. Based on geological evidence and K-Ar dating the following stages have been determined: early Cretaceous (135-110 Ma), latest-early Cretaceous (105-94 Ma), late Cretaceous (91-78 Ma) and Miocene (20-14 Ma) and Quaternary (1.9-0.14 Ma). Temporal chemical variation shows the evolution from alkaline to subalkaline rocks: from nephelinites and phonolites through shoshonites to trachybasalts. Intrusive rocks vary from nepheline syenites to syenites and quartz syenites and granites. Alkaline intrusions and volcanic rocks are enriched by LILE, LREE, Ba, and Sr with $\text{Sr}^{87}/\text{Sr}^{86}$ ratio varies from 0.705-0.706 for early Cretaceous volcanic rocks to 0.704-0.7048 for late Cretaceous, and from 0.706 to 0.709 for alkaline intrusive rocks. Geochemical features show close genetic relation between volcanic rocks and alkaline intrusions. Miocene and Quaternary basalts are slightly enriched by LILE, LREE, and Ba, Sr and P.

There is a systematic change in the composition of magmatic rocks with time, which is probably related to mantle source from lithospheric mantle to the asthenospheric plume source.