
Abstract Isotopic geochronology, petrology and geochemistry of diorites containing mafic-ultramafic cumulate and basic granulate xenoliths from Harqin area of Inner-Mongolia have been studied. The results suggest that (1) K-Ar datings of whole rock and single mineral of diorites give ages of 218–223 Ma; (2) diorites have no genetic correlation with cumulate and granulate xenoliths; (3) these diorites in different lithologies are probably products of highly partial melting of Archean amphibolite; (4) the Early Mesozoic underplating lead to the formation of diorites, reflecting an extensional tectonic setting.

Key words Harqin, Early Mesozoic, Diorite, Geochemistry


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Key words Harqin, Early Mesozoic, Diorite, Geochemistry
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Table 2: Major element content (%), rare earth element and trace element (μg/g) concentration of the early Mesozoic diorites from Harqin area
Fig. 2  Harker diagram of major elements of the Early Mesozoic diorites from Harqin area

Fig. 3  (MgO + TFeO) - CaO - (K₂O + Na₂O) diagram of the diorites (after Lemaitre, 1976)

Fig. 4  Chondrite normalized REE patterns of the diorites
Fig. 5 Primary mantle normalized incompatible element patterns of the diorites.

Jahn et al. (1984) suggested that the diorites plot in a fractionation trend between the upper and lower crust. The diorites are characterized by high Sr and low Ba contents, indicating a subduction zone setting. The diorites are also enriched in LREE and depleted in HREE, consistent with a mantle source. The diorites are thought to have formed by partial melting of the mantle, indicating a subduction zone setting.

Fig. 6 (La/Yb)N vs (Yb)N plots of the Lower Mesozoic diorites from Harqin area.
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