

Geochemistry and tectonic setting of volcanic rocks in Nehbandan, Eastern Iran

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Cenozoic basic to intermediate lavas from southeast of Nehbandan city, northern part of Sistan suture zone consist of basalt, trachy-basalte, basaltic tracy-andesite, trachy- andesite and basaltic andesite which characterized by microcrystalline to glassy groundmass and porphyritic texture. The phenocrysts are plagioclase, clinopyroxene (augite), olivine, amphibole (hornblende) and opaque minerals. Fine minerals in the groundmass are plagioclase, clinopyroxene (augite), opaques and olivine. On the basis of geochemical data the lavas are calc? alkaline in magmatic series. The SiO₂ content of selected samples varies from 47.8 to 57 wt %. The Al₂O₃ content is about 16 wt %, may indicating a relatively high pressure for the crystallization of mafic minerals in the magma chamber. The primitive mantle normalized rare elements contents show that the lavas are enriched in LREE and depleted in HREE. The elements of Nb, Ti, Rb, P and Zr show negative anomaly and Pb, U, Th, K, Ba and Sr show positive anomaly in the primitive mantle normalized spider diagrams. The REE pattern, the spider diagram characteristic and LILE/HFSE and LREE/HREE ratios of the Nehbandan lavas are similar to those of subduction volcanic rock suites. The subduction processes has usually litte effect on the oncentration of Sm, Y, Zr and Eu, while it may have strong influence on concentration of U, La, Th and Hf. Ratio Y/Zr in these rocks are similar to those of continental arc volcanic rocks. Distribution of samples on the tectono-magmatic discrimination diagrams also show that these rocks have been formed in an active continental margin.

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