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Petrology and geochemistry of pillow lavas and mafic rocks in the middle part of the fault zone Nosratabad-Kahurak, East of Iran

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Abstract: The mafic rocks from Nosratabad-Kahurak fault zone, located 100 km to the west of Zahedan east Iran, belong to peridotite, gabbro, diabase, pillow basalt and radiolarite association, indicative of their ophiolitic nature. Thus, the mafic rocks in this area represent a part of a fossilized oceanic crust and chemically are comparable with mid-ocean ridge basalts. The rocks consist of plagioclase, pyroxene, chlorite, calcite and magnetite, with only trivial amount of olivine. Average Mg# of 52, average amounts of MgO = 6.24wt%, Ni = 109 ppm, and Cr = 371 ppm indicate that the magma has not been primary and somehow has undergone fractional crystallization. The relatively high amounts of Na_2O are due to seawater-magma interaction and spilitization of the rocks. Low LILE/HFSE ratios are indicative of the geochemical affinity of the magmas to the Mid-Ocean Ridge Basalts (MORB), while their similarities to the N-MORB is discernible from gentle slopes of the spider and REE diagrams as well as low LREE/HREE ratios. It is therefore concluded that Nosratabad-Kahurak fault zone was initially acting as an oceanic rift.

Keywords: *MORB; mafic rocks; ophiolite; Nosratabad-Kahurak shear zone.*

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