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Petrology and Tectonic Environment of the Dehshir Ophiolite, Central Iran

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The Dehshir ophiolite as a tectonic slice of the Nain-Baft ophiolitic melange is distributed around the Nain-Dehshir ophiolite at the northwestern part of the Lut block.
This ophiolitic massif is composed of several tectonic slices, consisting of mantle tectonites, pegmatite gabbros, isotropic gabbros, basaltic flows, pillow lavas, metamorphic rocks and upper Cretaceous sediments.
Petrographically the mafic rocks are characterized by crystallization of plagioclase and then clinopyroxene typical of MORB materials. Amphibole in these rocks is pale-green fibers of actinolites as a secondary, last-stage crystallized phase.
Geochemically the some of mafic rocks are represented by enrichment in heavily mobile large ion lithophile elements and depletion in least mobile high field strength elements. On the other hand some rocks are geochemically similar to MORB materials. These geochemical properties are consistent with derivation of these rocks from an arc-related environment.
We can suggest an intra-oceanic arc environment between the Sanandaj-Sirjan zone and the Lut block for the genesis and evolution of the Dehshir ophiolite during lower to upper Cretaceous. This arc-related setting can explain the occurrence of mafic rocks with depletion in HFSE and/or MORB-like basaltic rocks. The presence of Upper Cretaceous limy sediments is evidence suggesting the initiation of intra-oceanic subduction in the Dehshir basin at least during middle Cretaceous.

Keywords: Dehshir ophiolite; Nain-Baft ophiolitic melange; Lut block; intra-oceanic arc; Iran