

Geochemistry and petrology of the Harsin-Sahneh ophiolitic complex (NE Kermanshah-West of Iran): Implication for the tectonic of Southern Neo-Tethys

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(Received: 15/2/2014, in revised form: 11/8/2014)

Abstract: Ophiolites of the Zagros orogenic belt are part of the Tethys ophiolites, because of their geographical locations and link the Middle East ophiolites and other Asian ophiolites (e.g. Pakistani and Tibetan) to the Mediterranean ophiolites (e.g. Troodos, Greek and East European). The nature of the Harsin-Sahneh ophiolite (Kermanshah) traditionally identified as one of the Mesozoic southern branch of the Neo-Tethys Ocean and remnants of the Peri-Arabic ophiolite system obducted onto Arabian shield (Gondwana) that is reinvestigated in this study. Petrographic evidence indicates that this ophiolitic sequence consists of both mantle and crustal suites. In general lithologies in this complex include harzburgitic and lherzolitic peridotites, cumulate, pegmatoidic and mylonitic gabbros, dyke complex and basaltic pillow lavas. Mineral chemistry of Harsin mafic rocks indicating island arc setting for this part of complex and geochemistry of mafic and ultramafic rocks of Sahneh region displaying P-type MORB nature. Presence of basalts with different composition in this region can be interpreted as the interaction between MORB-type and OIA-type asthenosphere. Field relationships and geochemical evidence indicate that involved ophiolites were part of a rifted basin at the ocean-continent transition zone, which formed in the south of the Neo-Tethyan Ocean. The break-off of Neo-Tethyan slab and subduction of this slab branch itself during Cretaceous led to cessation of Neo-Tethyan subduction branch Sanandaj-Sirjan block, and forming arc-back arc basin and related rocks in the Kermanshah ophiolite and MORB magmatism occurred in response to slab retreat in the Eurasian continental margin.

Keyword: *Tethyan ophiolites; Arc magmatism; P-type MORB; Zagros; Iran.*

متن فارسی اصل مقاله از صفحه ۳۳۱ تا ۳۴۴ در این شماره به چاپ رسیده است.

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