

Effect of hydrothermal alteration processes on the chemical composition of the extrusive section of the Marivan-Palangan ophiolite complex, Zagros, West of Iran

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(Received: 2/11/2017, in revised form: 4/7/2018)

Abstract: One of the most prominent cases of the study of alteration processes and their effect on geochemistry is the ophiolite investigation. The Marivan-Palangan ophiolite (MPO) complex is a part of the Neotethyan ophiolites, which situated in the Kurdistan Province, western Iran. The studied samples reveal the occurrence of the secondary minerals such as epidote group, chlorite, zeolites, and less calcite and iron hydroxides in the form of veins, vesicles and fractures infilling, and replacement phases. The element concentration variation versus Loss on ignition (LOI), normalization of the samples as to fresh sample in the study area and standard sample, and immobile element modeling indicate that element contents changes vary depending on the degree of alteration so that the concentration of Large-Ion Lithophile Elements (LILE) such as Rb, Cs, K, Ba, and Na shown a significant increase. CaO and FeO oxides are relatively depleted. Light Rare Earth Elements (LREE) display slight enrichment, while Middle Rare Earth Elements (MREE) and Heavy Rare Earth Elements (HREE) are almost constant. Therefore, in evaluation of the geochemical characteristics of extrusive section of the MPO complex, the effect of alteration on the changes in the concentration of elements, in particular LILEs, CaO, FeO and also LREEs should be considered.

Keywords: *alteration; basalt; modeling; mid ocean ridge; Tethys; ophiolite; Zagros.*

متن فارسی اصل مقاله از صفحه ۹۰۱ تا ۹۱۴ در این شماره به چاپ رسیده است.

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