Magmatic and Post-Magmatic Signatures of Chromian Spinels in Podiform Chromitites from the Cheshmeh-Bid Chromitite Deposit, Khajeh-Jamali Ophiolitic Massifs, Iran

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Resumen

Podiform bodies of high-Cr chromitite in the Cheshmeh-Bid chromitite deposit are located at the mantle-lower crust transition zone (MTZ) of the Late Cretaceous Khajeh-Jamali ophiolitic massifs, Iran. The unaltered core of chromian spinels has retained their magmatic composition but post magmatic sub-solidus re-equilibration changed significantly minor and trace elements (Ga, Ti, Ni, Zn, Co, Mn, V and Sc) composition. Minor disseminated chromites also occur and show lower chromite/silicate ratios than massive chromitites and were much more affected by the subsolidus mobility of minor and trace elements. Using the composition of the unaltered chromites preserved in the cores we have estimated the Al content and Fe/Mg ratios of their potential parental melts. The results of our computations show that Cheshmeh-Bid massive chromitites were crystallized from supra-subduction zone melts with boninitic affinity, consistent with the fact that minor and trace elements distributions in the studied chromite match well with that of chromian spinel from boninite lavas. The chromitites would have formed as a result of the reaction of migrating boninitic melts within host peridotite close to the MTZ in a supra-subduction zone setting. Post-magmatic processes (i.e., serpentinization) have only partially obliterated the magmatic fingerprints in some of the chromite grains.

Palabras clave

Palabras clave de autor: Trace and minor elements; chromitite; Cheshmeh-Bid ore deposit; Late Cretaceous; Khajeh-Jamali ophiolitic massifs. Iran
KeyWords Plus:SISTAN SUTURE ZONE; NORTHERN OMAN OPHIOLITE; MELT-ROCK INTERACTION; OIB-TYPE COMPONENTS; BELT EASTERN CUBA; NEO-TETHYS OCEAN; UPPER-MANTLE; SUBDUCTION ZONE; CR-SPINEL;GEODYNAMIC EVOLUTION

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