

Reappraisal of plagiogranites associated with a Mesozoic ophiolite sequence, Vizcaíno Peninsula, Baja California Sur, Mexico

MANUEL CONTRERAS-LÓPEZ, PHD¹, VANESSA COLÁS², LUIS J. GUTIÉRREZ-TREJO¹ AND ELISA FITZ-DÍAZ¹

¹Instituto de Geología, Universidad Nacional Autónoma de México

²IUCA-Universidad de Zaragoza

The Vizcaíno peninsula, in the western margin of the Baja California Peninsula, exposes a dismembered suprasubduction Mesozoic ophiolite along ~130 km. The ophiolite sequence is built, from base to the top, by: i) a serpentinite mélange with exotic blocks, including plagiogranites (Punta Quebrada locality); ii) the mafic-ultramafic section, including gabbros intruded by plagiogranites with an inferred Late Triassic age (San Cristobal locality); and i) pillow lavas overlain by a Late Triassic-Lower Jurassic sedimentary rocks (San Hipolito locality). Here, we focus on the plagiogranites, which have been interpreted as evolved melts derived by fractional crystallization of the gabbroic rocks, which were used to constrain the timing of the ophiolite. However, there is no geochemical or isotopic data to support comagmatic relationships with the mafic members of the ophiolite.

Our whole-rock geochemical results suggest that plagiogranites show intermediate and evolved compositions (Nb/Y vs. Zr/Ti). Based on their Yb and Ta content, plagiogranites from the mélange show a volcanic arc signature, whereas those from San Cristobal suggest an ocean ridge origin. This difference is also evident in a multielement NMORB-normalized diagram, where Punta Quebrada samples show a negative Nb-Ta anomaly, whereas those from San Cristobal do not. The chondrite-normalized REE patterns of Punta Quebrada plagiogranites are fractionated with enrichment in light REE. In contrast, the plagiogranites from San Cristobal show subfractionated patterns with depletion in the light REE, parallel to the gabbroic rocks from this locality, suggesting a comagmatic link between them. The origin of the pillow lavas at San Hipolito is cryptic since its trace elements suggest an EMORB composition, which differs from the subduction-related mafic-ultramafic rocks. Additionally, we will present the results of ongoing geochronological studies on these samples to provide a temporal framework for the tectonic evolution in the area.