# Melt-rock interaction in plagioclase peridotites from the southern Palawan Ophiolite, Philippines

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This work presents new petrographic and geochemical data on the plagioclase peridotites and the spinel harzburgites of the mantle section of the southern Palawan Ophiolite. The plagioclase peridotites show peculiar textures evident of melt-rock interaction as indicated by: (1) interstitial clinopyroxene and subhedral orthopyroxene around plagioclase, and (2) plagioclase blebs within the peridotite matrix. The spinel harzburgites display protogranular to porphyroclastic textures and dominantly composed of olivine, orthopyroxene, and small amounts of clinopyroxene and spinel. These minerals show kink banding and bent lamellae which are indicative of plastic deformation. Major element geochemistry of the spinel harzburgites reveals high Cr# (0.53-0.78) and Mg# (0.40-0.51) in spinel, and high NiO wt.% (0.40-0.43) and Fo contents (89.9-90.5) in olivine reflecting residual origin. Their geochemical composition is comparable to the residual peridotites in arc settings. Consequently, the plagioclase peridotites have lower Mg# (0.23-0.34) and relatively high Cr# (0.60-0.61) in spinel, as well as lower Fo (83.3-85.9) contents in olivine. Spinel and clinopyroxene in the plagioclase peridotites have higher $TiO_2$ contents compared with those of the spinel harzburgites. Clinopyroxene in plagioclase peridotites are marked by strong depletion in LREE and flat MREE to HREE with significant negative Eu and Sr anomalies. In contrast, the spinel harzburgites have lower REE abundances which suggest higher degrees of partial melting. We propose that the spinel harzburgites of the southern Palawan Ophiolite are residual peridotites formed by high degrees of partial melting above a subduction zone and were subsequently infiltrated by melts leading to the formation of the plagioclase peridotites.

Keywords: Palawan Ophiolite, plagioclase peridotites, melt-rock interaction

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