

PETROLOGY AND GEOCHEMISTRY OF THE MANTLE-SEQUENCE PERIDOTITE OF THE DARVEL BAY OPHIOLITE, SABAH, MALAYSIA

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The mantle-sequence peridotites of the Darvel Bay Ophiolite are represented predominantly by depleted harzburgites. These rocks are characterised by mineral chemistry of spinel $X_{Cr} = 39$, $X_{Mg} = 61$; olivine Fo = 90 and orthopyroxene (Opx) En = 88-90, $Al_2O_3 = 3.4$ wt.%, CaO = 1.8 wt%, suggesting a mantle residue which has undergone a moderate to high degree of a previously depleted source (oceanic upper mantle). Composition of spinel X_{Cr} , Opx (Al_2O_3) and bulk-chemistry indicate ~20% partial melting of this source. The Darvel Bay harzburgites are less depleted (refractory) mantle than the harzburgites of Oman, Papuan and Halmahera Ophiolites. The Darvel Bay harzburgites represent a supra-subduction zone (SSZ)- ophiolite type, supported by bulk-rock chemistry of TiO_2 contents. The tectonic evolution model of the Darvel Bay Ophiolite is much easier to explain using a model of supra-subduction zone (SSZ) ophiolite accreting new material in a forearc region.
