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Kalaymyo Peridotite Massif in the Indo-Myanmar Ranges (Western Myanmar): Its Mineralogy and Petrology

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1 Abstract

Mesozoic ophiolites crop out discontinuously in the Indo-Myanmar Ranges in NE India and Myanmar, and represent the remnants of the Neotethyan oceanic lithosphere (Sengupta et al., 1990; Mitchell, 1993). These ophiolites in the Indo-Myanmar Ranges are the southern continuation of the Neotethyan ophiolites occurring along the Yarlung Zangbo Suture Zone (YZSZ) in southern Tibet farther northwest (Mitchell, 1993; Fareeduddin and Dilek, 2015), as indicated by their coeval crystallization ages and geochemical compositions (Yang et al., 2012; Liu et al., 2016). The Kalaymyo ophiolite is located in the central part of the eastern Indo-Myanmar Ranges (Fig. 1).

composition of these ophiolites from the central Tibetan Plateau (CTP) is dominated by MORBs and minor OIBs and a distinct lack of IATs and BONs, which is inconsistent with most ophiolites worldwide (Robinson and Zhou, 2008; Zhang et al., 2008). But the generation and tectonic nature of these ophiolites are still controversial.

The Kalaymyo peridotites consist mainly of harzburgites, which show typical porphyroclastic or coarse-grained equigranular textures. They are composed of olivine (Fo = 89.8–90.5), orthopyroxene (En86-91Wo1-4Fs8-10; Mg# = 89.6–91.9), clinopyroxene (En46-49Wo47-50Fs3-5; Mg# = 90.9–93.6) and spinel (Mg# = 67.1–78.9; Cr# = 13.5–31.5), and have relatively homogeneous whole-rock compositions with Mg#s of 90.1–90.8 and SiO_2 (41.5–43.65 wt.%), Al_2O_3 (1.66–2.66 wt.%) and CaO (1.45–2.67 wt.%) contents.

They display Light Rare Earth Element (LREE)-depleted chondrite-normalized REE patterns with $(La/Yb)_{CN}$ = 0.04–0.21 and $(Gd/Yb)_{CN}$ = 0.40–0.84, and show a slight enrichment from Pr to La with (La/Pr)CN in the range of 0.98–2.36. The Kalaymyo peridotites are characterized by Pd-enriched chondrite-normalized PGE patterns with superchondritic (Pd/Ir)CN ratios (1.15–2.36). Their calculated oxygen fugacities range between QFM–0.57 and QFM+0.90.

These mineralogical and geochemical features collectively suggest that the Kalaymyo peridotites represent residual upper mantle rocks after low to moderate degrees (5–15%) of partial melting at a mid-ocean-ridge (MOR) environment. The observed enrichment in LREE and Pd was a result of their reactions with enriched MORB-like melts, percolating through these already depleted, residual peridotites. The Kalaymyo and other ophiolites in the Indo-Myanmar Ranges hence represent mid-ocean ridge (MOR)–type Tethyan oceanic lithosphere derived from a downgoing plate and accreted into a westward migrating subduction–accretion system along the eastern margin of India.

References

Fareeduddin, and Dilek, Y., 2015. Structure and petrology of the Nagaland-ManipurHill Ophiolitic Mélange zone, NE India: AFossil Tethyan Subduction Channel atthe India-Burma Plate Boundary. *Episodes,* 38: 298–314.

Liu, C.Z., Chung, S.L., Wu, F.Y., Zhang, C., Xu, Y., Wang, J.G., Chen, Y., and Guo, S., 2016. Tethyan suturing in Southeast Asia: Zircon U-Pb and Hf-O isotopic constraints from Myanmar ophiolites. *Geology,* 44: 311–314.

Mitchell, A.H.G., 1993. Cretaceous-Cenozoic tectonicevents in the western Myanmar (Burma)-Assamregion. *Journal of the Geological Society, London,* 150: 1089–1102.

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Mitchell, A.H.G., Ausa, C.A., Deiparine, L., Tin Hlaing, Nyunt Htay, and Aung Khine, 2004. The Modi Taung-Nankwe gold district, Slate belt, central Myanmar:mosothermal veins in a Mesozoic orogeny. *Journal of Asian Earth Sciences,* 23: 321–341.

Mitchell, A.H.G., Myint Thein Htay, Kyaw Min Htun, Myint Naing Win, Thura Oo, and TinHlaing, 2007. Rock relationships in the Mogok Metamorphic belt, Tatkon toMandalay, central Myanmar. *Journal of Asian Earth Sciences,* 29: 891–910.

Sengupta, S., Ray, K.K., Acharyya, S.K., and de Smeth, J.B., 1990. Nature ofophiolite occurrences along the eastern margin of the Indian plate andtheir tectonic significance. *Geology,* 18: 439–442.

Yang, J.S., Xu, Z.Q., Duan, X.D., Li, J., Xiong, F.H., Liu, Z., Cai Z.H., and Li, H.Q., 2012. Discovery of a Jurassic SSZ ophiolite in the Myitkyina region of Myanmar. *Acta Petrologica Sinica,* 28: 1710–1730 (in Chinese with English abstract).

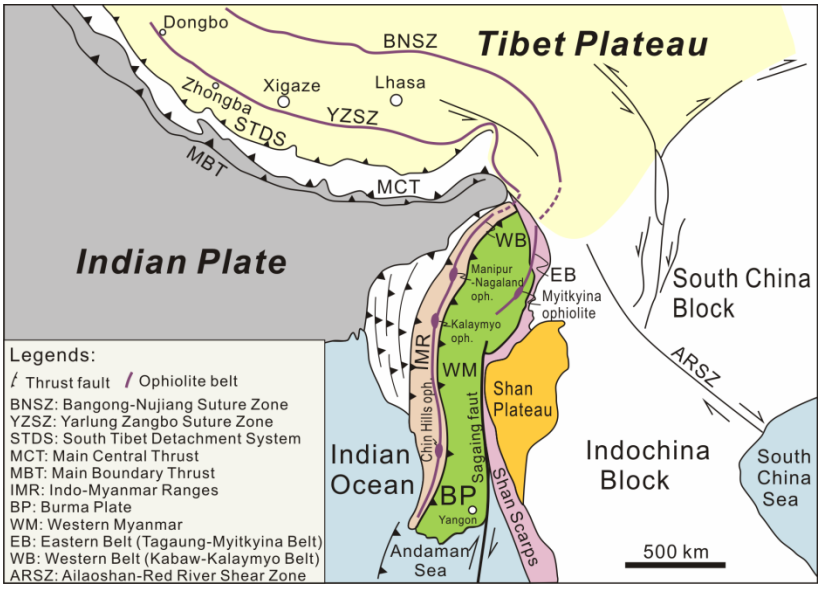


Fig. 1. Simplified tectonic map of the Tibetan Plateau and Southeastern Asia (modified from Mitchell et al., 2004, 2007 and Liu et al., 2016), showing the distribution of Tethyan ophiolite belts and suture zones.