Subduction Zone Influence in Manipur Ophiolite Complex, Indo-Myanmar Range: Constraints from $^{143}Nd/^{144}Nd$ and elemental concentrations.

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Origin of the Manipur Ophiolite Complex (MOC), Indo-Myanmar Range remains contentious. The existing petrogenetic models attribute it to a variety of sources and processes related to the mid oceanic ridge (MOR), suprasubduction zone, and/or the plume settings. We measured elemental abundances and Nd isotopic ratios in whole-rock samples of the serpentinized peridotites and mafic rocks. Spinels from some selected samples were also analysed by EPMA to address the outstanding issue of the tectonic setting and the mode of origin of the ophiolite suite in the MOC.

Nd isotope ratios in the serpentinized peridotites and mafic rocks range from -7.2 to +9, and +2.7 to +8.0 in epsilon units, respectively, indicating subduction zone influence. The elemental concentration and Nd isotope data are consistent with a two stage model. Non-modal dynamic melting in the mantle-wedge, on addition of fluids derived from subducting slab, gives rise to the mafic rocks, while the solid residue is represented by the serpentinized peridotites. Nb and Th abundances in mafic rocks are also explained by this model without invoking different sources for different rock types in the MOC. High Cr# (0.22 -1.154) and low to medium Al_2O_3 (0.021 to 46.12 wt.%) in spinels of serpentinized peridotites support subduction zone influence in the MOC. We, therefore propose that peridotites in the MOC are dominantly originated as residue in the fore-arc-mantle-wedge whereas some rock-components, present in MOC, would have been derived from the subducted slab during the terminal stage of subduction of Neotethys below the Burmese plate.