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The Characteristics of Yongzhu–Guomang Lake Ophiolitic Melange in Bangong–Nujiang Suture, Xizang(Tibet), China

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Yongzhu–Guomang Lake ophiolitic melange exposed about 100 km with large scale and complete ophiolitic unit in Xainza County, Xizang(Tibet). It is connected with Nam Lake, Kaimeng ophiolitic mélangé to the east, and connected with Asuo ophiolitic mélangé to the west in Shiquanhe–Yongzhu–Jiali Suture. Synthesis of its field geological observation, combined geochemistry and geochronology, tectonic setting discrimination of the ophiolite, we come to the preliminary understanding:

2. The ophiolitic fragments in Yongzhu–Guomang Lake formed in back-arc basin, composed of metamorphic harzburgites, gabbros, basalts and island arc basaltic andesite.

The serpentinized ultramafic body is composed of harzburgite with typical characteristics of depleted mantle peridotite. The metamorphic harzburgites are high Mg content, and lower in Ti and $\sum\text{REE}$, and belong to the depleted oceanic lithosphere mantle. It is mainly composed of olivine, enstatite, and a small amount of spinel. Olivine in harzburgite containing 40.96 - 44.50% SiO₂, 37.89 - 50.84% MgO, and 3.4 - 8.2% FeO. The value of Fo is 91 - 93, some as high as 95. Enstatite in harzburgite is 89-91, Mg[#] is 92-93, SiO₂ content was 58.20 - 33.89%, MgO, Cr₂O₃, Al₂O₃ and TiO₂ contents are 0.45 - 0.58%, 34.74% - 1.04, 1.48% - 0 and 0.03% - 92, respectively. The spinel is chrome spinel. Cr₂O₃ content is 57.51 - 58.38%, Al₂O₃ content is 11.30 - 13.17%, MgO content is 8.97 - 11.20%, TiO₂ content is 0 - 0.03%. Its

Mg[#] is 44 - 59, Cr[#] is 64-73, showing the ophiolite may be formed in a subduction zone.

The diabbases and basalts are the transitional MORB / IAB-type basalt. According to the trace elements in the ophiolite, the gabbros and basalts show the same characteristics as the island arc basalt, for the depletion elements of Nb, Ta and its relative enrichment of Rb, Sr and Ba. According to the REE distribution patterns with no Eu anomaly, the gabbros and basalts are similar to mid-ocean ridge basalt.

2. Yongzhu–Guomang Lake ophiolite age is possibly from early Jurassic to Cretaceous.

Zircons from Shesuo metagabbro with typical magmatic characteristics in Yongzhu–Guomang Lake ophiolitic melange yield an average U–Pb age of 161±1.0 Ma. Measuring point ²⁰⁶Pb/²³⁸U ages are relatively concentrated, from 157 ± 1.6 Ma to 164 ± 1.8 Ma, distribution based on harmonic curve, suggesting formation Jurassic. The grain size of zircon in gabbro is 200-300µm, with a ring structure or stripe like structure. Th/U ratios of zircon is 0.70 - 1.18 as magmatic zircon. The age may represent the gabbro formation age, may also represent the formation age of Yongzhu–Guomang Lake ophiolite. Meanwhile, arc basaltic andesite with an age of 113.5±5.7Ma crops out north of Yongzhu–Guomang Lake ophiolite, which most likely formed during continent-arc collision or during closure of the Paleo-Tethyan Ocean.

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