

ZHOU Wenda, YANG Jingsui, ZHAO Junhong, XIONG Fahui, LIANG Fenghua and LIU Fei, 2015. Mineralogy of Purang Ophiolite Peridotites, Western Part of Yarlung-Zangbo Suture Zone (YZSZ), Southern Tibet. *Acta Geologica Sinica* (English Edition), 89(supp. 2): 124.

Mineralogy of Purang Ophiolite Peridotites, Western Part of Yarlung-Zangbo Suture Zone (YZSZ), Southern Tibet

ZHOU Wenda^{1,2}, YANG Jingsui^{2*}, ZHAO Junhong^{1,3}, XIONG Fahui², LIANG Fenghua² and LIU Fei²

1 Institute of Earth Sciences, China University of Geosciences, Wuhan 430074, China

2 State Key Laboratory for Continental Tectonics and Dynamics, Institute of Geology, Chinese Academy of Geological Sciences, Beijing 100037, China

3 State Key Laboratory of Geological Processes and Mineral Resources, Wuhan 430074, China

The Purang ophiolite is a large mantle peridotite massif ca. 600 km² in area. The mantle peridotite is composed dominantly of harzburgite, lherzolite and minor dunite. The Fo and NiO contents of olivine in the peridotites are in the range of 89.5~92.8 and 0.23~0.44 wt.%, respectively; both of these parameters increase gradually from lherzolite to harzburgite. The orthopyroxene porphyroblasts are enstatite (En=85.1~90.1), with Mg#s of 87.6 to 92.0 and Al₂O₃ contents of 0.9 to 5.2 wt. %, whereas the clinopyroxenes are endiopsidite and diopsidite with low Al₂O₃ (1.2~6.0 wt. and high Mg#s (89.5~94.5). Spinels in the lherzolites have much lower C#s (18.5~31.5) than those in the harzburgites (25.0~71.7), but all of the spinels have very low Ti contents (max. 0.1 wt.%). The modal mineralogy and mineral compositions

change both gradually and abruptly across the ophiolite, within and between the various lithologies, indicating a complex origin for the body. These variations cannot be explained simply by variable degrees of partial melting and strongly suggest refertilization of the depleted peridotites. Thus, this body, like others along the Yarlung-Zangbo suture zone has had a two-stage evolution; initial formation by partial melting of MORB-like upper mantle, followed by modification by suprasubduction zone (SSZ) fluids/melts. On the basis of the spinel-olivine-clinopyroxene mineral chemistry, we calculate that the lherzolites are the residues of 5~12% partial melting of the mantle source, whereas the harzburgites formed by 12~32% partial melting.

* Corresponding author. E-mail: yangjsui@cags.ac.cn