Metamorphism from ocean-floor to high-pressure conditions recorded in rodingite of the Xigaze ophiolite

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Rodingite is a CaO-rich, SiO_2-, Na_2O-, and K_2O-poor rock formed by metasomatic alteration (rodingitization) and mainly consists of various proportions of Ca and Ca-Mg silicates. In general, rodingitization is known to occur at ocean floor metamorphism at low P-T conditions. However, more recent studies show that rodingitization, although initiated at seafloor conditions, may still continue at high-pressure metamorphism during subsequent subduction (Zanoni *et al.*, 2016; Laborda-López *et al.*, 2018). Here, we report on a group of rodingites from the Xigaze ophiolites that occurs along the Yarlung-Zangbo suture zone, Southern Tibet and records metamorphism from ocean floor to high pressure and late exhumation-related conditions.

Two types of rodingite are distinguished based on field and textural relationships, mineral and bulk-rock compositions. Type I rodingite with a porphyroblastic texture occurs along tensile or extensional fractures within massive serpentinized peridotite. It is characterized by prehnite-bearing mineral assemblages and was formed at low PT-conditions. Type II rodingite associated with a foliated and partly serpentinized host is characterized by prehnite-absent mineral assemblages. It shows a fine-grained porphyritic to aphanitic texture and was formed at higher pressures and temperatures. Thermodynamic modeling shows that Type I rodingite crystallized at <~4 kbar and ~200–300 °C during limited desilification and calcium influx in a reducing ocean-floor environment. Type II rodingite formed during subduction contemporaneously with an intense desilification and calcium influx at highly oxidized conditions. Peak metamorphic conditions were ~13.5–21.5 kbar and ~450–550 °C. Hence, the rodingites of the Xigaze ophiolites represent important markers, recording sequential events of formation from ocean floor conditions to subduction-related conditions at high pressures and, finally, to conditions of late exhumation.

Zanoni, D., Rebay, G., Spalla, M. I., 2016. Ocean floor and subduction record in the Zermatt-Saas rodingites, Valtournanche, Western Alps. *J. Metamorph. Geol.*, 34(9), 941–961.

Laborda-López, C., López Sánchez-Vizcaíno, V., Marchesi, C., Gómez-Pugnaire, M. T., Garrido, C. J., Jabaloy-Sánchez, A., Hidas, K., 2018. High-P metamorphism of rodingites during serpentinite dehydration (Cerro del Almirez, Southern Spain): Implications for the redox state in subduction zones. *J. Metamorph. Geol.*, 36(9), 1141–1173.