

High-pressure epidote-amphibolites in the Yuli belt, eastern Taiwan: new thermobarometric constraints and petrological implications

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Recent studies on Tamayen glaucophane schists show that metamorphic conditions of the Yuli belt might have been underestimated previously (Baziotis et al., 2017). Epidote amphibolites are closely associated with glaucophane schists, but P-T conditions of the former are less certain. We investigated a suite of Tamayen epidote amphibolites by computing equilibrium assemblage diagrams with the THERIAK/DOMINO software package. Peak mineral assemblage is garnet ($\text{Alm}_{61-63}\text{Grs}_{17-18}\text{Prp}_{14-16}\text{Sps}_{03-05}$) + amphibole (pargasite) + epidote + paragonite + rutile + quartz. In rare cases, glaucophane rims on pargasite locally. The computed phase diagrams show that paragonite-in fields represent high-pressure conditions, although paragonite is not commonly considered as a high-pressure index mineral. Based on petrographic features, mineral compositions and computed equilibrium assemblage diagrams, peak P-T conditions are constrained as 13-15 kbar and 530-570 °C, which are compatible with those of Tamayen glaucophane schists. Both rock types represent metamorphic products in a subduction zone setting and were exhumed from depths of 40-50 km.

Keywords: equilibrium assemblage diagram, subduction zone, paragonite