

## New evidence of high-pressure metamorphism in the Wanjung tectonic block, eastern Taiwan: petrologic characterization and tectonic implications

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The Wanjung tectonic block mainly consists of serpentinite, mafic schist, and metagabbro, with rare metarodingite and blackwall-zone rocks. We discovered a new occurrence in which omphacitic rock co-exists with serpentinite. The representative omphacitic rock contains omphacite, diopside, Mg-rich chlorite, zoisite, albite and titanite, but lacks quartz. Rare rutile and ilmenite are included in titanite. Microscopic imaging and element mapping reveal that omphacite always contains patchy diopside, implying replacement of diopside by omphacite. Whole-rock composition and rare earth element pattern of the omphacitic rock show characteristics of an ultrabasic cumulate, probably of troctolitic protolith origin. Some mafic schist samples contain amphibole which shows compositional zoning with a barroisitic core and an actinolitic rim, indicating an intermediate high-pressure (HP) pre-cursor stage overprinted by regional greenschist-facies metamorphism during exhumation. For the first time, glaucophane is discovered in an albite chlorite schist in the Wanjung block. The chlorite schist appears to be a hybrid rock, probably formed from metasomatism between serpentinite (or precursor peridotite) and surrounding metasediments. Considering the new observations of field occurrence and HP minerals with whole-rock compositions, we interpret that the Wanjung block represents a *mélange*-like mixture of materials from a subduction channel and a mantle wedge, where HP metamorphism, hydration, and metasomatism had occurred.

Keywords: high-pressure metamorphism, subduction, glaucophane, omphacite, *mélange*