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Zircon U-Pb geochronology of Triassic granite gneiss from the central Yeongnam massif, South Korea and its tectonic implications.

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During the latest Permian to early Triassic, Asian continent was assembled from various continental fragments and individual continental blocks experienced various kinds of tectonic events, including magmatism, high-pressure (HP) and even ultra-high pressure (UHP) metamorphism. Continental collision between the North and South China blocks is surely one of the most interesting events even now. The discovery of ultrahigh-pressure metamorphic rocks from the Sulu Belt, Eastern China (Zhang et al., 1990; Enami and Zang, 1990), brought debates about possibility of extension of the continental collision belt between North and South China blocks toward Korean Peninsula (e.g., Yin and Nie, 1993; Liu, 1993; Ree et al., 1996; Oh et al.,2006). The location of such collision boundary within the Korean Peninsula has remained unsolved yet.

In this study we report the results of Sensitive High-Resolution Ion Microprobe (SHRIMP) zircon U–Pb dating of the early Triassic granitic gneiss from the cenral Yeongnam massif and dicuss its tectonic implications. The zircons separated from the granitic gneiss which has been considered as Precambrian orthogneiss so far display concordia ages from the latest Permian (254.4±2.8 Ma) to early Triassic (232.6±8.3 Ma) and they have occasional Paleo-proterozoic (1881±29 Ma) inherited cores and younger rims of 235.5±1.8∼239.3±1.9 Ma. Such age data reveal not only the earliest Triassic magmatism (ca. 250 Ma) in South Korea, but also shows evidence of early Triassic metamorphism (ca. 230 Ma) shortly after emplacement, approximately matching the period of continental collision between South and North China blocks and opposing to no trace of metamorphism among nearby late Triassic to Jurassic granitoid bodies. Geochemistry along with age data of this granite gneiss indicates that subduction-related magmatism and associated metamorphism occurred in southern Korea, especially in the central Yeongnam massif, during the collision time of Chinese blocks.