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Synthesis on the Metamorphism along Chingshui River Deciphering the Geologic History of Yuli Belt, Taiwan

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Taiwan is known to be the site of the arc-continent collision between two (2) plates: The South China Sea oceanic crust (Eurasian Plate) and the Philippine Sea plate, which resulted in the formation of the Yuli Metamorphic Belt. Within this belt, the tectonic blocks and metasediments have undergone a profound transformation through high-pressure and low-temperature conditions, creating an intriguing puzzle for geologists to unravel.
Zircon is a resilient silicate mineral that emerges as a valuable tool for investigating multiple geological processes because of its abundance and resistance. Moreover, discerning the differences between an igneous and a metamorphic zircon in terms of the textures, U-Pb ages, and Th/U ratios; identifying the minerals present and their textures; delineating macro- and micro-structures; and measuring the temperatures of the metamorphic rocks along Chingshui River will help to establish a vital link to the pressure-temperature conditions, ultimately deepening our understanding of the possible mechanisms that underlie the metamorphic transformation of the ultramafic-mafic tectonic blocks and the surrounding metasedimentary unit of the Yuli Belt from subduction to exhumation.
The U-Pb ages of the igneous and metamorphic zircons are approximately 16-17 Ma and 3-8 Ma, respectively. Furthermore, the metamorphic temperatures are relatively higher, ranging around 400-500° C.

Keywords: Chingshui River, metamorphic temperature, structure, texture, Th/U ratio, U-Pb ages, Yuli Belt, zircon