

# The hydrothermal mineralization sequences during the faulting of serpentinite and crustal collision in Fengtien area, eastern Taiwan

\*Huei-Fen Chen<sup>1</sup>, Kuan-Ho Wu<sup>1</sup>, Agustinus Kabelen<sup>1</sup>, Yu-Ho Li<sup>1</sup>, En-Chao Yeh<sup>2</sup>, Yoshiyuki Iizuka<sup>3</sup>, Pei-Lin Wang<sup>4</sup>

1. Institute of Earth Sciences, National Taiwan Ocean University, 2. Department of Earth Sciences, National Taiwan Normal University, 3. Institute of Earth Sciences, Academia Sinica, 4. Institute of Oceanography, National Taiwan University

Serpentinite from the oceanic plate collided with pelitic schists to form a serious hydrothermal mineralization along the fault zones in Yuli belt of eastern Taiwan. In the north part of Yuli belt, the uplift fault zone induced Ca-rich fluids undergoing metasomatism to form the nephrite and diopside vein. In the south part of Yuli belt, blue and green schists contacted with serpentinite undergoing Mg- and Na-metasomatism. The hydrothermal mineralization of green color nephrite and diopside vein in Fengtien area are related to the oceanic serpentinite in exhumation zone. We found the fluid composition rich in Ca and Si during mineralization in the order of nephrite, diopside, grossular, calcite and quartz in vein system, besides the crystallization temperature decrease from 420°C to below 100°C based on homogenization temperature of diopside and clumped isotope of calcite. Isotope of  $d^{13}C$  and  $d^{18}O$  also reveal the source of fluid mixing the metamorphic and meteoric water in calcite. The variations of opaque oxide minerals such as spinel, chromite and magnetite also indicate the nucleation and dissolution process in the order of peridotite, serpentinite, nephrite and diopside. It interprets the Fe, Cr and Al involved the mineral reaction in sequences. We will combine the tectonic measurements to understand the uplift process in Fengtien area in future.

Keywords: serpentinite, nephrite, hydrothermal, fluid temperature, Taiwan

