CHEMICAL AND ISOTOPIC ALTERATION TRENDS PRESERVED DURING SUBDUCTION ZONE METAMORPHISM

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Analyses of the halogen and cation concentrations in fluid inclusions and stable isotopic composition (O, N) of eclogitic rocks revealed that subduction zone metamorphism in cold slab environment had little effects on the chemical and isotopic trends acquired prior to subduction. PHILIPPOT et al. (1998) showed that chlorine variability along a typical oceanic section charaterized by high-salinity brines in the gabbroic layer and relatively diluted aqueous fluids in the low-temperature basaltic layer have been preserved in HP and UHP metaophiolitic sequences from the Alps. More recently, BUSIGNY et al. (2003) showed that the HP and UHP coesite-bearing metasedimentary rocks of the Schistes Lustrés Nappe of the western Alps preserved the same N content and isotopic composition as their unmetamorphosed pelagic sedimentary protoliths. In this study, we present new results on the composition of individual salt-bearing inclusion fluids present in HP and UHP rocks of the Alps (Italy) and Dabieshan (China). The highly-saline brines were investigated for their trace element and halogen content using high-resolution synchrotron analysis at the European Synchrotron Research Facility (ESRF) following the experimental protocol developed by PHILIPPOT et al. (1998), MENEZ et al. (2002) and CAUZID et al. (2004). We show that the inclusions fluids preserve chemical patterns characteristic of hydrothermal or magmatic environments and therefore reamined essentially unmodified by subduction zone metamorphism. These results are discussed in light of the oxygen stable isotope data of the host rocks preserving $\delta^{18}O$ values inherited from meteoric water infiltration (Dabieshan) or oceanic hydrothermal alteration (Alps).

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