Pressure-temperature-time path of Permian high-temperature and high-pressure metamorphism in the Kontum massif, central Vietnam

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The high-grade metamorphism of the Kontum massif is recently considered to be related with formation of Asian continent and its growth. The characteristics of the metamorphism are thus important to realize the tectonic evolution. In this presentation, we discuss P-T-t path of UHT mafic granulite (Grt-Opx-Cpx granulite) from the Kontum massif. The granulite occurs as blocks within felsic gneiss (Grt-Opx-Bt gneiss) in the western Kontum massif, and the metamorphic evolution of the rock is divided mainly into following three stages.

1. HP to UHP metamorphic stage (M1: 900 C at 2.8 GPa?)
2. UHT metamorphic stage (M2: 1050 C at 1.3 GPa)
3. Cooling with decompression stage (M3: 850 C at 0.8 GPa ~ 700 C at 0.6 GPa)

The SHRIMP Zrn ages of host felsic gneiss show 300 to 280 Ma at the mantle part surrounding inherited core and 270 to 250 Ma at the rim, which could indicate metamorphic ages at M1 and M2 stages, respectively. Sm-Nd internal isochron ages of the mafic granulite and the felsic gneiss show 240 and 247 Ma, respectively. Considering of the closure temperature of this system, obtained ages represent cooling ages at M3 stage.

Above mentioned metamorphic evolution of the Permo-Triassic high-grade rocks would be key issue to understand tectonic evolution of East Asia including Indochina.