

Age and depositional environment of the strata-bound manganese deposits in the Jurassic accretionary complex in southwest Japan.

*Yuki Tomimatsu¹, Tetsuji Onoue¹

1. Graduate school of Science and Technology, Kumamoto University

Stratiform manganese deposits have been known to occur from the Triassic to Jurassic bedded chert successions in the Chichibu, Mino-Tamba, and Northern Kitakami belts, which are considered to have accumulated in a mid-oceanic basin of the Panthalassa Ocean (Sato and Kase, 1996; Nakamura, 1990). To constrain the age and depositional setting of these manganese deposits, we investigated the field occurrence, stratigraphy, age, and geochemistry of chert-hosted manganese deposits in the following two areas; (i) the Takahira, Takahama, and Kubodomari in the Saiki area, Chichibu Belt, and (ii) the Tamaiwa in the Yotsuya area, Tamba Belt. We also performed XRF analysis to infer the origin of manganese deposits.

The stratiform manganese deposits range in thickness from 30 to 150 cm, and occur intercalated within the bedded cherts. The red-bedded chert above the Takahira manganese ores and gray-bedded chert above the Tamaiwa manganese ores contain Late Triassic (Carnian) radiolarians *Trialatus longicornutus* and *Trialatus megacornutus*. In contrast, radiolarian fossils from the Takahama and Kubodomari deposit indicate Early Jurassic age (possibly Toarcian), based on the occurrence of *Parvicingula nanoconica* with *Parahsuum* and *Trillus* species. These results show that two manganese ore forming events occurred in the pelagic Panthalassa Ocean during the Late Triassic and Early Jurassic.

Chemical compositions of the Upper Triassic manganese deposits are characterized by the enrichments in Mn and the depletions of Co, Ni and Zn. These geochemical features are similar to those in modern submarine hydrothermal manganese deposits. In contrast, the enrichments in Cr, Ni and Zn were recognized just below the Lower Jurassic manganese deposits, suggesting an anoxic depositional environment. It is likely that the Lower Jurassic manganese deposits were formed by an oceanic anoxic event in the Early Jurassic.

Keywords: Jurassic accretionary complex, stratiform manganese deposits