Zircon SHRIMP U-Pb dating from the Horoman perdiotite –age constraint for tectonic juxtaposition of peridotite body into granulite in Arc-Arc collision zone-

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Hidaka metamorphic belt, Hokkaido, Japan is known as youngest arc-arc collision in the world. It is composed of medium pressure type metamorphic rocks and felsic to mafice intrusions. It also includes the youngest granulite and the Horoman peridotite complex in the highest grade zone. Age of these rocks have been determined by various methods (K-Ar, U-Pb, Rb-Sr). However, the age of Horoman peridotite complex has not been determined yet. Only Yoshikawa et al 1993) reported the cooling age of the complex as 23 Ma according to whole rock Rb-Sr isochron. This study has performed U-Pb dating of zircons from the Horoman peridotite, and from the paragneiss surrounding the peridotite xcomplex in order to determine the intrusive age of the Horoman peridotite complex into the lower crustal conditions. Several zircon grains were separated from the peridotite. All zircons are homogeneous exhibiting different age group; 267–278 Ma, 33-40 Ma and 18-20 Ma. As a result of this measurement, rims of the zircons from the gneisses show that ^{238}U-^{206}Pb ages are 20 Ma and detrital cores are rangin from 580-510 Ma, 60-50 Ma, 46-40 Ma and 27 Ma. The rim ages are from the gneiss suffered amphibolite facies and granulite faices, and there is a consistancy with zircon rim ages (19 Ma) from the granulite (Kemp et al 2007, Usuki et al 2006 and so on). That is, granulite faices metamorphism was coeval to regional metamorphism in the lower crust at 20 Ma. The zircon ages from the peridotite was probably related to local hydration related to precipitation of phlogopite at 20 Ma, I type magma infiltration at 40 Ma and lithosphere formation at 270 Ma. It is considered that the Horoman peridotite complex was part of the lithosphere at 270 Ma, and the joined as subarc mantle prior to I type magma activity at 40 Ma, aud suffered local hydration and regional metamorphism at 20 Ma.

Keywords: Horoman peridotite, zircon , multiple history of melt infiltration and hydration

