

SHRIMP U-Pb dating of zircons related to the partial melting in deep subduction zone ?case study from the Sanbagawa quar

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Dehydrated fluid from the subducting cold slab is considered to cause deep focused earthquake and Island Arc volcanism. The Sanbagawa high P/T metamorphic rocks have been considered as typical cold subducted oceanic material at Cretaceous. However, we have discovered an eclogite outcrop exhibiting partial melting texture from the Sanbagawa high P/T metamorphic belt in Central Shikoku, Japan. The discovery is significantly important because the melt may play an important role in deep focused earthquake and the melt itself directly may contribute to the origin of Island Arc magma. In order to confirm the age of partial melting of Sanbagawa metamorphic rocks, we had separated zircons from both the melted portion and the host eclogite and dated U-Pb age using the SHRIMP at the Korean Basic Science Institute.

The zircons from the melted portion (SHT16&75) are rounded and have sector zoning. The core and mantle yield U-Pb age in the 130-113 (120 in average) Ma range, and the rim ages are in the 115-104 Ma range. The zircons from the eclogite (SHT15&76) have homogenous core with thin mantle and rims. The U-Pb ages are concentrated to 123 - 112Ma. The ages are identical to the zircon U-Pb ages (120-110 Ma) reported by Okamoto et al (2004). Above these evidences suggest that eclogite metamorphism was occurred at 120Ma. Subsequent partial melting was happened at 110Ma.

Keywords: Sanbagawa high P/T metamorphic rocks, eclogite, partial melting, zircon U-Pb age, Zircon REE, subduction zone