Zircon U-Pb ages of Cretaceous granitic rocks and the Ryoke metamorphic rocks from Southwest Japan

Takashi Nakajima[1]; Yuji Orihashi[2]; Tohru Danhara[3]; Kazuhiro Miyazaki[4]

[1] GSJ; [2] ERI, Univ. Tokyo; [3] Kyoto Fission-Track; [4] GSJ/AIST

Zircon U-Pb ages of some Cretaceous granitic rocks and the Ryoke metamorphic rocks from eastern part and western part of Southwest Japan were measured using LA-ICP-MS for examining the systematic along-arc age variation of those Cretaceous granitic magmatism and high temperature metamorphism. All the granitic rocks show good concentration on the Concordia line, giving the following ages.

–western part–
Older Ryoke granite : Kita-Oshima granodiorite 93.0+/-2.1Ma
Younger Ryoke granite : Tajiri granite 92 - 94Ma
San-yo granite : Sera granite 92.9+/-1.6Ma
–eastern part–
Older Ryoke granite : Kamihara tonalite 97.6+/-1.3Ma
Younger Ryoke granite : Busetsu granite 70.9+/-1.7Ma
San-yo granite : Agematsu granite 68.9+/-1.8Ma

It is concluded that, 1) The Younger Ryoke granites and the San-yo granites have similar ages, 2) The ages of the Older Ryoke granites from the western and eastern parts of Southwest Japan are not so much different, while the Younger Ryoke granites and the San-yo granites from the eastern part have distinctly younger ages than those from the western part, 3) In the western part, all of the Older and the Younger Ryoke granites and the San-yo granites have similar ages.

The Ryoke metamorphic rocks from both western and eastern areas were examined. They all have abundant inherited zircons, forming discordia with upper intercept of 1900Ma. On the other hand, it is difficult to determine the lower intercepts because many data are plotted from 250Ma to 80Ma on the Concordia line. The data of the migmatites from the eastern area show a cluster at around 80-90Ma, the youngest group of data which came from the rim of zircon grains. It may imply the age of the peak metamorphism.

This age is younger than CHIME monazite age of ca.100Ma from the similar area (Suzuki & Adachi, 1998). Furthermore, that cluster age is younger than the Kamihara tonalite of 97.6+/-1.3Ma and similar to the SHRIMP zircon age of the Tenryukyo granodoirite of 86.1+/-1.4Ma (Nakajima, 1996). In the eastern part of Southwest Japan, magmatism of the Older Ryoke granites commenced prior to the Ryoke metamorphism and had continued as the regional metamorphism was going on.