

# Lithology and zircon U-Pb geochronology of Paleoproterozoic and Paleozoic granitic complex in Maizuru Terrane from Tsuwano area, Shimane Prefecture, SW Japan

\*Kosuke Kimura<sup>1</sup>, Yasutaka Hayasaka<sup>1</sup>, Tomoyuki Shibata<sup>1</sup>, Kenta Kawaguchi<sup>1</sup>, Hiroshi Fujiwara<sup>1</sup>

1. Hiroshima University

Maizuru Terrane is geographically distributed from Oshima Peninsula of Fukui Prefecture to western Shimane Prefecture, Southwest Japan. Maizuru Terrane is divided into three subzones, the Northern zone, Central zone, and Southern zone. Northern zone is mainly composed of granitic rocks and metamorphic rocks that derived from continental crust, and Siluro-Devonian granitoids have been reported from Maizuru-Oe area which is the type locality of the Maizuru Terrane (Fujii et al., 2008; Tsutsumi et al., 2014). Recently, Kimura et al. (2018) reported granitic complex from Tsuwano area, Shimane Prefecture. This complex contains not only Paleozoic granitoid that show same age of the Maizuru granite but also the late Paleoproterozoic granitoid and orthogneiss those are unreported so far from the basement rock distributed in Honshu island.

The granitic complex occurs in Tsuwano area is distributed discontinuously along with the northern margin of Maizuru Terrane, and about 2 km long. This complex occurs as lenticular blocks in a narrow zone of several hundred meters in width. This complex is mainly composed of granitic rocks and mafic rocks that intruded into granitic rocks, and suffered cataclasis in the major part. From the viewpoint of their age and lithology, this granitic complex could be divided into three groups, which are as follows:

1) early Paleoproterozoic metaquartzite: Quartz completely recrystallized and doesn't show the dust rim. Grain boundary shows sutured texture. Detrital zircon grains show reddish brown color and rounded shape. Zircon U-Pb concordant ages are only older than 2.4 Ga, and the probability density curve shows two large peaks around 2.5 Ga and 2.7 Ga.

2) late Paleoproterozoic granitoids and orthogneiss: These rocks are most common in the granitic complex. These rocks show various lithology. Orthogneiss show banded structure and granoblastic texture. Zircon grains show reddish brown color and core-rim structure, and zircon U-Pb ages range 1.85-1.83 Ga. Furthermore, 2.8-2.05 Ga inherited ages are also yielded.

3) early Paleozoic rocks: These Paleozoic rocks are less in amount than Paleoproterozoic rocks in Tsuwano area. Paleozoic rocks are subdivided into plutonic rocks and volcanoclastic rocks. Plutonic rocks are leucocratic granodiorite and metagabbro. Their zircon U-Pb ages range from 423-411 Ma. On the other hand, volcanoclastic rock is felsic tuff that shows light brown to light greenish gray color, and this lithology varies from glassy to crystalline. Zircon U-Pb ages range from 424-413 Ma.

Metaquartzite have only older than 2.4 Ga concordant ages in spite of 1.85 Ga rocks are most common in this granitic complex. Therefore, the sedimentation age of metaquartzite is considered to be between 2.4

to 1.85 Ga. On the other hand, detrital monazite and zircon ages reported from orthoquartzite pebble that occur in the conglomerate layer of Tetori and Muro groups show 1.8 Ga peak (Yokoyama et al., 2002; Hisada et al., 2010). Therefore, metaquartzite occur in Tsuwano area have a different origin that of these orthoquartzite pebbles.

Ages of 2.7, 2.5 and 1.8 Ga that measured from metaquartzite and late Paleoproterozoic rocks are consistent with similar rocks reported from North China Craton.

Zircon U-Pb ages of early Paleozoic rocks range from ca. 424-411 Ma. These ages and occurrence of this granitic complex are consistent with that of Northern zone from Maizuru-Oe area. Therefore, the granitic complex of Tsuwano area can be compared with Northern zone of Maizuru Terrane.

Reference: Fujii et al. (2008) *Island Arc*, 17, 322-341. Tsutsumi et al. (2014) *JMPS*, 101, 289-298. Kimura et al. (2018) 125th Annu. Meet. Geol. Soc. Japan, Abstr, R5-O-23. Yokoyama et al. (2002) *Research Report of the Mesozoic Tetori Group in the Tedori River Area, Ishikawa Prefecture*, 57-70. Hisada et al. (2010) *JpGU Meeting 2010 Abstr.*, SGL046-03.

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