

紀伊半島に分布する大峯酸性岩類の フィッション・トラック年代測定

W.S. Bambang**・長谷部徳子*・西村 進*

FT age determination on the Omime Acidic Rocks, Kii Peninsula, Southwest Japan

W.S. Bambang**, Noriko Hasebe* and Susumu Nishimura*

The Omime Acidic Rocks are one of the Tertiary intrusive rocks which occurred in the Outer Zone of the Median Tectonic Line, Southwest Japan. They consist of seven independent plutons that are distributed in the central mountainous land of Kii Peninsula in north-south direction. The plutons are Dorogawa, Shirakura, Kose, Tenguyama, Asahi, Shiratani and Katago-Mukuro Dike. The fission track (FT) dating has been done in order to assess the timing of intrusion of the plutons. From five plutons (Fig. 2), nine FT zircon (ZR) ages and one apatite (AP) age are obtained for granodiorite and granite, and four ZR ages for sandstone. Each pluton yields concordant ages within a body which represent the timing of intrusion. The zircon ages from sandstone are concordant with the nearest pluton. This phenomenon means that the ages of the Cretaceous Shimanto sedimentary rocks (~66-140 Ma) have been reset by the intrusion of the granite. The ages of plutons are classified into two groups statistically, suggesting that the Omime Acidic Rocks were formed by two intrusive events. The Dorogawa, Tenguyama, Shiratani and Katago-Mukuro Dike belong to the older group with the weighted mean age of 16.7 ± 0.7 Ma, and the Kose pluton belongs to the younger group with the age of 14.1 ± 1.7 Ma. The correlation of intrusive ages between the Omime Acidic Rocks and the other intrusive rocks in the Outer Zone indicates that the parts of Omime Acidic Rocks intruded earlier than other intrusive rocks.

*京都大学理学研究科地球惑星科学専攻 Division of Earth and Planetary Sciences, Graduate School of Science, Kyoto University, Kyoto 606, Japan

Present address: Indonesian Institute of Sciences, R&D Center for Geotechnology, Jl. Cisitno No. 21/154D, Bangdon40135, Indonesia

大峯酸性岩類は西南日本の中央構造線外帯に産する第三紀の貫入岩のひとつである。7つの独立した深成岩体から成り、それらは紀伊半島中部の山地に南北方向に分布する。深成岩体はそれぞれ、洞川、白倉、川迫、天狗山、旭、白谷、片川～棕呂岩体と呼ばれる。深成岩体の貫入の時期を評価するためにフィッシュトラック(FT)年代測定を行った。5つの岩体から花崗閃緑岩と花崗岩について9つのジルコンFT年代と1つのアパタイトFT年代、また砂岩について4つのジルコンFT年代を得た(Fig. 2)。それぞれの深成岩体中で貫入の時期を示す一致する年代を示した。砂岩の年代は最も近くに貫入

した深成岩体と一致した。このことは、白亜紀の四万十帯の堆積岩の年代値(~66-140 Ma)が花崗岩の貫入によりリセットしたことを意味する。深成岩類の年代値は統計的に2つのグループに分類され、それは大峯酸性岩類が2つの貫入イベントによって形成されたことを示唆している。洞川、天狗山、白谷、片川～棕呂岩体は、 16.7 ± 0.7 Maの加重平均年代値を持つ古いグループに属し、川迫は 14.1 ± 1.7 Maの年代値を持つ若いグループに属する。大峯酸性岩類とその他の外帯の貫入岩体の貫入年代を比較すると、大峯酸性岩類の一部はその他の貫入岩体よりも早期に貫入したことが示された。

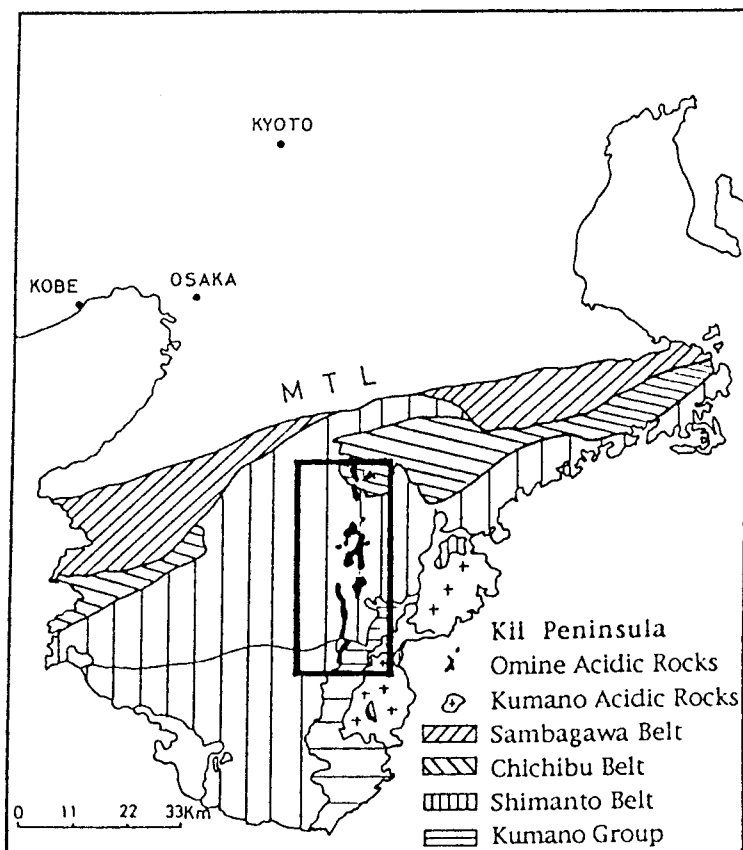


Fig.1 Geological map of the Outer Zone in Kii Peninsula. Solid parts are the Omine Acidic Rocks.

Fig.2 Radiometric ages on granite and granitoid of Omine Acidic Rocks. Underlined are the names of granitic plutons. All ages are described in Ma. Ages without references are new data obtained in this study. Abridgements of mineral names are as follows: bt = biotite, hbl = hornblende, Kf = K-feldspar and AP = apatite, respectively.

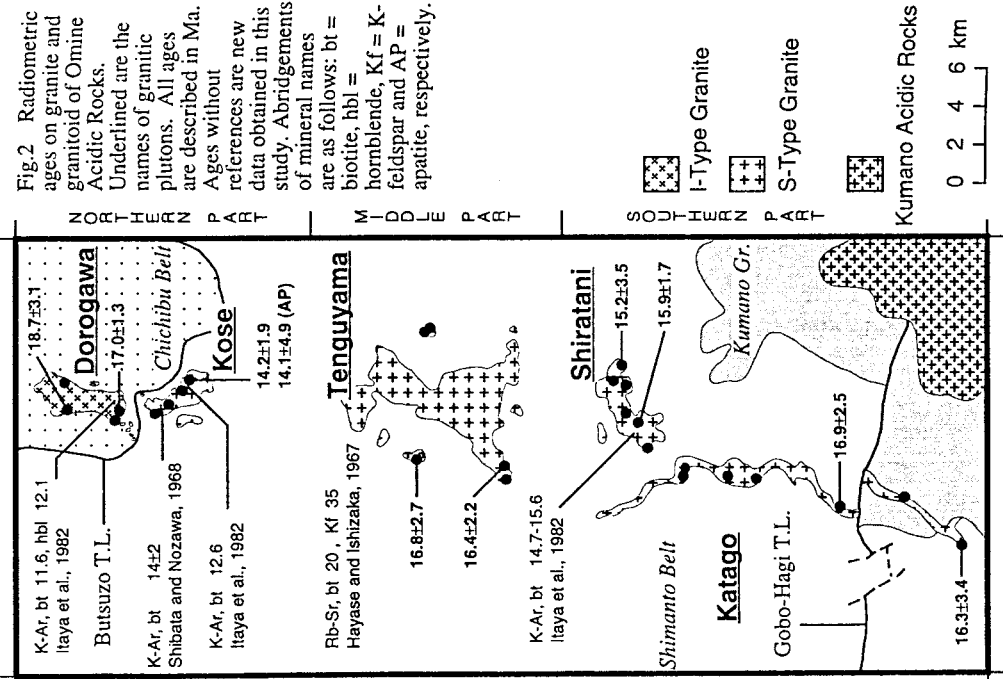


Table 1 The radiometric ages of granitic intrusions in the Outer Zone, Southwest Japan. The age data of Omine Acidic Rocks (OAR) are restricted those obtained in this study (see Fig. 2 for other data). See the cited references for the detailed description of *stages* of Cape Ashizuri.

Pluton	Dating method	Age (Ma)	References
Kii Peninsula			
OAR without Kose	FT; zr	16.7±0.7 (2σ)	This work
Kose, OAR	FT; zr	14.1±1.7 (2σ)	This work
Kumano Acidic Rocks	FT; zr; ap K-Ar; bt	14.3±0.5 (2σ) 14±2	Hasebe et al, 1993 Shibata and Nozawa, 1967
Shikoku			
Omogo	K-Ar; bt	14±2	Shibata and Nozawa, 1967
Takaisukiyama	FT; zr K-Ar; bt	14.6±0.9 (2σ) 12±2	Shimada, 1994 Shibata and Nozawa, 1967
Cape Ashizuri			
<i>stage II</i>	FT; zr FT; zr K-Ar; bt	15.2±2.8 (2σ) 16.1±0.7 12.9±0.6	Shimada, 1994 Murakami et al, 1989 Murakami et al., 1989
<i>stage IV</i>	FT; zr	11.9±0.9 (2σ)	Shimada, 1994
<i>stage IV?</i>	FT; zr K-Ar; bt	11.3±0.4 (2σ) 13±2	Murakami et al., 1989 Shibata and Nozawa, 1967
Kashiwajima	Rb-Sr; wr	16±2	Dai et al., 1993
Okinoshima	FT; zr	14.6±1.6 (2σ)	Shimada, 1992
Kyushu	K-Ar; bt	15±2	Shibata and Nozawa, 1967
Osuzuyama			
	FT; zr K-Ar; wr	14.9±0.7 (1σ) 15±2	Iwaya and Mimura, 1992 Shibata and Nozawa, 1967
	FT; zr	14.9±0.7 (1σ)	Iwaya and Mimura, 1992
	K-Ar; bt, wr	(15.1-16.6)±0.8 (1σ)	Iwaya and Mimura, 1992
Okueyama	K-Ar; bt	13.8±0.9	Shibata, 1978
Mihami Osumi	K-Ar; bt	14.4±0.7	Shibata, 1978

Note: zr = zircon; ap = apatite; bt = biotite; wr = whole rock

References:

Hasebe, N. et al., 1993. Tectonophysics, 224: 327-335.
 Hayase, I. and Ishizaka, K., 1967. J. Japan. Petrol. Min. Econ. Geol., 58: 201-212.
 Iwaya, T. et al., 1982. Abstract in Fifth ICOG, 164-165.
 Iwaya, T. and Mimura, K., 1992. Bull. Geol. Surv. Japan, 43: 565-572.
 Murakami, N. et al., 1989. Ass. Geol. Coll. Japan. Monograph, 36: 115-142.
 Shibata, K., 1978. Bull. Geol. Surv. Japan, 29: 551-554.
 Shibata, K. and Nozawa, T., 1968. Bull. Geol. Soc. Japan., 19: 7-10.
 Shibata, K. and Nozawa, T., 1967. Geochemical J., 1: 131-137.
 Shimada, C., 1994MS. Master thesis of Dept. Geology and Mineralogy Kyoto University.
 Shimada, C., 1992MS. Graduate thesis of Dept. Geology and Mineralogy Kyoto University.