
[JJ] Evening Poster | S (Solid Earth Sciences) | S-GL Geology

[S-GL30]Geochronology and Isotope Geology

convener: Takahiro Tagami (Graduate School of Science, Kyoto University), Yuji Sano (Division of Ocean and Earth Systems, Atmosphere and Ocean Research Institute, University of Tokyo)

Wed. May 23, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)

Reliable reconstruction of geohistory is of primary importance to better envision the present and future of the Earth. Geochronology and isotope geology play major roles in the reconstruction. This session offers an opportunity to present the results of fundamental studies, including the developments / improvements of analytical methods and age calibration, as well as applications to the Earth and planetary materials. We particularly focus on: (1) radiometric dating, bio-stratigraphy, magneto-stratigraphy and stable isotopic time series that provide the age information, (2) radioisotopes and stable isotopes widely employed for analyzing the Earth and planetary systems and (3) hypothesis and numerical modeling that utilize / assimilate the age and isotopic data. We also welcome contributions that integrate a variety of relevant disciplines.

[SGL30-P02] Zircon U-Pb dating and Fission track age of a Pliocene Ohta Tephra in the Tokai Group

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In Japan, tephrochronology is a powerful tool for dating of sediments because the Japanese Islands have many volcanos. As a result of a development of analytical methods and increase of field data of tephra, tephrochronology has been applied for Pliocene sediments as well as Pleistocene and Holocene.

The Ohta tephra in the Pliocene Tokai Group is one of representative tephra with widespread depositions in central Japan. Although age determination of the Ohta tephra is important for regional correlation of the Pliocene strata in Japan, the age had not been well-constrained by previous studies, showing a wide age range from 3.3 to 5.24 Ma by zircon fission track (FT) dating [1]. Thus, in this study, zircon U-Pb and FT double dating for single grain was newly applied for the Nakatsugawa I and II volcanic ash layers, which have been correlated to the Ohta tephra [2].

Two samples from the outcrop in the Nakatsugawa City, Gifu Prefecture were used for the dating. Weighted average U-Pb ages from measured grains except heterogeneous and discordant grains were 3.78 ± 0.10 Ma and 3.90 ± 0.11 Ma. Weighted average FT ages from the grains used for the U-Pb dating were 3.74 ± 0.24 Ma and 4.11 ± 0.27 Ma. Although the closure temperature of zircon is about 900 °C for U-Pb method [3] and about 240 °C for FT method [4], the U-Pb ages are included in the range of the error of the FT ages. This indicates that the zircons were crystallized at high temperature and then quenched, and that these ages correspond to the eruption age of the tephra. This result is consistent with the study by Satoguchi et al. (2005) [5] that estimated the 3.9 Ma as the age of the Ohta tephra based on the paleomagnetic and biostratigraphic correlations with the Miura Group. The zircon U-Pb and FT double dating for the Ohta tephra in this study will contribute to the regional correlation of Pliocene strata in central Japan.

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References: [1] Nakayama and Yoshikawa (1995), *Earth Sci* (Chikyu Kagaku), **49**, 406-418. [2] Todo Collaborative Research Group (1985), *Assoc. Geol. collab. Jpn.*, **29**, 101-117. [3] Cherniak and Watson (2001), *Chem. Geol.*, 172, 5–24. [4] Hurford (1986), *Contrib. Mineral. Petrol.*, 92, 413-427. [5] Satoguchi et al. (2005), *Jour. Geol. Soc. Jpn.*, **111**, 74-86.