

## Fission-track dating of pseudotachylyte-current progresses

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Pseudotachylyte is a product of frictional fusion associated commonly with fault movement in brittle regime of the granitic crust. The accurate dating of pseudotachylyte is significant to determine a paleo-seismic event of fault activities. Murakami et al. (2006a) performed short term annealing experiments for zircons, and the fission tracks were erased within only four seconds at the temperature higher than 900C. Thus the zircon FT dating is a good tool for age dating of pseudotachylyte. We review several published data on the FT dating of pseudotachylyte from the Nojima Fault (Murakami and Tagami, 2004), the Asuke Shear Zone (Murakami et al., 2006b), and of landslide-generated pseudotachylyte from Langtang, Nepal (Takagi et al., 2007).

Recently we determined FT ages for pseudotachylytes found from two locations along the MTL and also from the Atotsugawa Fault. We present the results and their significance for the history of the MTL activities.

### (1) MTL-Seiwa-Taki interchange outcrop, Mie Prefecture

The pseudotachylyte was found from the MTL zone firstly from this outcrop (Shimada et al., 2001). In this pseudotachylyte, the melting temperature was assumed to be more than 1100C (Spry,1992) from the occurrence of decomposition textures of feldspar fragments. 27 zircon grains from the pseudotachylyte injection vein (7 cm thick) and 30 zircon grains from protolith cataclastic tonalite 10cm apart from the pseudotachylyte border were determined to be 60.0 +/- 3.5 Ma and 70.2 +/- 2.7 Ma, respectively.

### (2)MTL-Harinoki outcrop, Oshika Village, Nagano Prefecture

The pseudotachylyte was found in the cataclastic mylonite from the outcrop 120m west from the MTL. It occurs as thin fault veins with some injection veins (Yasuhara et al., 2007). It contains amygdale texture and partial fusion of quartz fragments suggesting the melting temperature was at least more than 1000C. 17 zircon grains from the thin pseudotachylyte vein and 30 zircon grains from protolith tonalitic mylonite 20m apart from the pseudotachylyte vein were determined to be 62.3+/-3.0 Ma and 63.6+/-2.0 Ma, respectively.

The FT ages of pseudotachylytes from the two outcrops was about 60 Ma. This age also coincides with the K-Ar ages (63-58Ma) of fine fractions of fault gouges from the MTL in Shikoku. This age group corresponds to Ichinokawa Phase, the oldest record of the history of the MTL activity in brittle regime (Takagi and Shibata, 1992). The similar ages of pseudotachylytes from Mie and Nagano prefectures are significant to consider the early movement history of the MTL in brittle regime.