

Pseudotachylytes from Langhovde and Skarvsnes in the Lützow-Holm Complex, East Antarctica, and their conditions of formation

Tsuyoshi Toyoshima¹, Masahiro Ishikawa², Ippei Kitano³, Takuma Katori¹ and Tomokazu Hokada⁴

¹*Niigata University*

²*Yokohama National University*

³*Kyushu University*

⁴*National Institute of Polar Research*

Pseudotachylytes were found north of Mt. Futago (Futago-yama) of northern Langhovde and north of Lake Naga (Naga-ike) and Lake Kikuno (Kikuno-ike) of southwestern Skarvsnes in the Lützow-Holm Bay region. They are called Futagoyama PST, Naga-ike PST and Kikuno-ike PST, respectively. We preliminarily report field observation of the PSTs.

The Naga-ike PST is associated with an ENE-WSW trending main fault (Naga-ike Fault) that steeply dips north and a length of more than 300 m. The Kikuno-ike PST is associated with an NNW-SSE trending main fault (Kikuno-ike Fault) that moderately dips east and a length of more than 100 m. The Naga-ike and Kikuno-ike Faults, which cut gneissose structures of surrounding rocks, consist of pseudotachylytes, cataclasites, brittle fractures, echelon faults and spray structures. Field observation of the Naga-ike Fault and PST indicates that dextral faulting earthquakes occasionally occurred. Field observation of the Kikuno-ike Fault and PST also indicates that other dextral faulting earthquakes occasionally occurred under a different stress field from the Naga-ike faulting. Two faultings appear to have resulted from different earthquakes under different tectonics. Part of pseudotachylytes and cataclasites of the Naga-ike and Kikuno-ike Faults have a reddish color. The field evidence suggests that the Naga-ike and Kikuno-ike Faults and PSTs were formed under oxidizing conditions at shallow depths.

The Futago-yama PST is associated with an NNE-SSW trending main fault (Futago-yama Fault) that moderately dips east and a length of more than 660 m. The Futago-yama Fault is parallel to gneissose structures of surrounding rocks. The Futago-yama Fault and PST are alongside the eastern margin of a NNE-SSW trending granitic mylonite zone (Futago-yama mylonite zone). The Futago-yama mylonite zone has been derived from a granitic sheet. The Futago-yama Fault consists of pseudotachylytes, mylonites, foliated cataclasites and echelon faults. Field observation of the Futago-yama Fault and PST indicates that normal faulting earthquakes occasionally occurred on faults dipping $<42^\circ$ in the brittle-ductile (frictional-to-viscous) transition.