

Structural evolution of brittle fault rocks with pseudotachylyte in the western marginal fault zone of the Budo granite, NE Japan

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Brittle faults with fault rocks in the Budo granite, northern Niigata Prefecture, were formed through four stage deformations (D1 to D4) during late Cretaceous to Tertiary. The D1, D2, D3 and D4 faults result from NNE-SSW, N-S to NNE-SSE, NE-SW to ENE-WSW and ENE-WSW to NE-SW compressions respectively. Foliated cataclasites were formed in the initial phase of each D1, D2 and D3 faulting. The foliation is defined either by the alignment of elongated biotite fragments or by the alignment of elongated lens made of the same kind of mineral fragments, such as quartz or feldspar. The fault zone originated from the former cataclasite has widened in thickness during faulting, but the latter not. The former cataclasite is associated with pseudotachylyte, indicating that seismic faulting occurred.