Microtextural and microchemical features of mineral veins in subduction thrusts

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As many workers have been pointed out, fluids play important roles in mechanics of faulting (e.g. Sibson et al., 1988; Cox et al., 1995). Fluids increase their pressure and decrease effective stress on fault plane both in static and dynamic aspects. They also produce precipitation of hydrothermal minerals as veins. Veins seal fluid conduit system along fault zone and maybe control the fluid pressure, therefore the mechanics of faulting should be affected by the timescale of vein formation. Although it still remains unclear because of the lack of high-resolution chemical and textural analyses of veins.

The Shimanto belt in Japan, Cretaceous to Tertiary subduction complex, contains a lot of mineral veins especially along fault zones. Fluid inclusion and isotopic study of veins in the Nobeoka thrust and the Mugi melange shows that they are formed 150 to 300 degrees C and both of the sources are metamorphic fluid (Kondo et al., 2005; Ujiie et al., 2008; Yamaguchi et al., submitted). In this presentation, we show the high-resolution microtextural and microchemical observations of fault-fill veins of the Nobeoka thrust and the Mugi melange, and then discuss the sealing process of subduction thrusts.