# Microstructural evolution of mineral vins observed in on-land accretionary complexes

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Fluid migration around subduction zone is significant to understand diagenetic process, mass and heat transfer, rock-fluid interaction, and microbial processes. In oceanic accretionary prism, cold seepages along faults are found and it has a methane conduit for sells. In addition, chloride anomaly along shallow subduction interface indicates dehydrated pure water migration, and negative polarity of reflected wave may also indicate presence of fluid along fault zone such as OST and DSR.

On the other hands, in on-land accretionary complex, mineral veins are examined as fossil fluid conduits. Fluid inclusion analysis within the mineral veins in on-land accretionary complexes estimate the P-T condition about 200C/200MPa. Major components of fluid are water and methane with minor carbon dioxide. The origin of fluid is dehydrated water from mineral and thermally broken methane from hydrocarbon on the basis of isotope characteristics.

Moreover, higher temperature of fluid than that of paleo maximum temperature of host rocks are reported, and fluid temperatures estimated form isotope thermal equilibrium differ between close located veins, indicating that the deep high temperature fluid migrated to shallow part.

When we discuss about the fluid migration from on-land accretionary complex, however, there is little consideration on precipitation process. In fact, we observe the precipitated mineral veins. Therefore, it is important to consider the precipitation process with the discussion of fluid migration. In this study, I will introduce about precipitation process of mineral veins discussed from on-land mineral veins.

Quartz and calcite are main component of mineral vein in on-land accretionary complexes. Solubility of quartz reduces with reduction of pressure and temperature. Therefore, quartz can be precipitated by upward fluid migration with reduction of pressure and temperature. On the other hands, calcite has reverse characteristics of solubility to quartz. Calcite can not be precipitate by the simple upward fluid migration, although much amount of calcite is observed in on-land accretionary complex. Wavy change in pressure and/or increment of carbon dioxide pressure are proposed to effect the precipitation of calcite. However, no evidence has been reported such data from natural environments so far.

Relationships between vein texture and fluid migration are well reported by Nicholas et al.(2001). Vein textures in on-land accretionary complexes are classified into two types as blocky and elongate blocky. According to Nicholas et al.(2001), block texture is formed by fluids originated from close rocks and small distance of migration. On the other hands, elongate blocky texture indicates advective transfer of fluid. So, this texture should be identified to discuss about fluid migration from deep to shallow.

Christoph et al.(2004) experimented precipitation of alum from migrated fluid. This study suggests that the number of mineral growing from host rock to center of conduit is reduced by time. This time is depended on fluid velocity. Small sizes of minerals along host rocks are defeated minerals in the growth competition process. The number of small size of minerals may be a parameter to understand relative fluid velocity.

Distribution of homogenized temperature of fluid inclusion in a vein is reported from open clack veins and shear veins. Pressure reduction form host rocks is reported from open clack, and temperature and pressure increment form host rock to center of vein is observed in shear vein. The number of such report is so small. The relationships between vein texture, distribution of P-T conditions at the time of fluid inclusion trapping may provide much information about microstructural evolution of mineral veins, which help us to understand the fluid migration along subduction interface more detail.