Deformation conditions inferred from microstructures in quartz: application to exhumation tectonics in the Sambagawa belt

Toru Takeshita[1]

[1] Dept. Earth and Planet. Sys. Sci., Hiroshima Univ

Deformation microstructures in quartz is a good indicator of physical conditions for deformation. Metamorphic rocks which formed at high-temperature conditions at depth underwent a large amount of strain during the exhumation stages, and microstructures formed at lower temperatures than peak metamorphic ones are recorded in the constituent quartz. In the Sambagawa belt, central Shikoku, microstructures formed at intermediate temperatures (400-500 oC) are preserved in quartz from a structurally upper part, while those formed at low temperatures (300-400 oC) are recorded in quartz from a structurally lower part. This fact suggests that the structurally upper part was exhumed more rapidly than the structurally lower part, and hence the intermediate temperature microstructures were frozen in.