

Sinistral sense of shear deformation under prelithification: Mélange in the upper Cretaceous Shimanto Belt, the Kii Peninsula, Southwest Japan.

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Detailed analysis of sedimentary facies and structures in mélange, the upper Cretaceous, Shimanto Belt, together with regional field mapping, provides to understand the primitive shear deformation during sediments were poorly lithified condition. The Cretaceous to Neogene sediments of the Shimanto Belt is distributed along outer zone of SW Japan. It represents that is preserved earliest deformation of accretion process due to oceanic plate subduction. The three study sites in the Kii Peninsula of Wakayama Pref. are selected: two coastal areas of Shiohuki-iwa, Karakozaki (Miyama accretionary complex) and one inland area of channel of the Hidaka river in the western Ryujin village (Ryujin accretionary complex). Brittle-ductile deformations which were formed by later faulting were also studied.

The mélanges are characterized by sheared argillite matrix which wrap various sizes of tectonic lenses. Tectonic lenses are of intensely disrupted sandstone and varicolored mudstones, which are dominated by asymmetric structure. Based on observation in the investigation outcrops, mélange is structurally separated into Y-shear zone (YSZ) and P-foliation zone (PFZ). The YSZ comprise thick lenticular sandstone (trends subparallel to a direction of shear), intense shear band (thin layer with concentrated prelithification shear deformation) and mudstone dominant mélange. The PFZ comprise lenticular sandstone (trends slightly oblique to a direction of the YSZ) and mudstone dominant mélange (associated with foliations which slightly oblique to a direction of the YSZ). The intense shear band separates the YSZ and the PFZ. Preserved radiolarian fossils in mélange supports that the deformation was formed under a prelithified state.

A significant fact is that all studied mélanges in the investigation area underwent sinistral sense of shear during sediments were prelithified. Consequently, sinistral sense of shear under prelithification shear deformation extensively penetrate throughout the upper Cretaceous Shimanto Belt.

Keywords: Shimanto Belt, Mélange, Sinistral sense, Prelithification