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Deformation ages within the Klong Marui continental wrench fault, southern Thailand

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The Klong Marui Fault is a ductile to brittle dextral strike-slip shear zone characterized by strong NNE-SSW geomorphic ridges trending up to 150 km. from Thai Gulf to Andaman Sea. At it southern part in the Phung Nga region, the ductile core forms a 40km long ridge. The geology within this wrench zone consisted of steep strongly deformed layers of migmatitic gneisses, mylonitic granites/pegmatites and phyllonitic metapelites. Brittle cataclasitc zones were localized in the eastern and western margin of this ductile core zone.

The first deformation stage was dextral ductile strike-slip movement at mid to upper crustal levels and formed the main mylonitic foliation (c), secondary synthetic foliations (c'), and lineation in the migmatitic gneisses, mylonitic granites and metapelites. Locally sillimanite-clasts in high-temperature recrystallization quartz fabric fabric suggest deformation at amphibolite facies condition. More typically, quartz dynamically recrystallize by subgrain rotation and grain boundary migration under greenschist facies conditions. Microstructure of myrmekite and "V"-pull-apart clearly indicates dextral sense of shear. Pegmatites cross-cut the main mylonitic foliation but were sheared at the rims indicating syn-kinematic emplacement. Dynamically recrystallizing quartz mainly by basal gliding, bulging and low-temperature subgrain rotation record the latest stage of ductile dextral strike-slip deformation during decreasing temperature conditions. The NNE-SSW trending dextral strike-slip deformation accommodated the E-W transpression as a result of the differential movement of the northward drifting Indian craton and Asia. The brittle/ductile deformation produced cataclasites and minor faults which overprint the higher temperature fabric causing exhumation and juxtaposition of fault rocks developed under different metamorphic conditions in a positive flower structure.