



Using pressure shadows to analyze the deformation history in the subduction-collision conjunction, Taiwan

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Since the geometries of syn-tectonic fibers in pressure shadows are considered to be closely related to the deformation paths which host rocks underwent, syn-tectonic fibers have been used to determine fold kinematics and the kinematics of deformation in accretionary prism and fold-and-thrust belt. This study is using pressure shadows to analyze the rock deformation in five outcrops of folds with flat-lying foliation (S_h) at Taimali, Taiwan. The study region located at the subduction-collision conjunction, southeastern Taiwan is consisted of overturned Miocene deposits suffered lowest-grade metamorphism and ductile-brittle deformation during the Late Cenozoic Penglai Orogeny. There are a set of flat-lying foliation (S_h), the other set of axial-plane foliation (S_v) and ESE-trending stretch lineation (L) in here. The deformation history was evaluated using incremental strain indicators and microstructures.

Observed phenomena are described as follows: (1) the antitaxial overgrowth of fibrous quartz are developed in pressure shadows of pyrite object; (2) non-coaxial strain was indicated by fibers on both cleavage plane (XY) and cleavage-perpendicular plane (XZ); (3) in XY plane, the radial fibers over the pyrite are prominent and are of the last deformation stage; (4) the rotation directions of pressure shadows in rocks of different limbs were the same on XY plane that indicated the pressure shadows have not been affected by folding; (5) the deformation recorded by pressure shadows on YZ plane in rocks of different limbs of the Jinlun antiform was symmetrical with respect to the fold axial plane. These results illustrate the deformation history was triclinic

deformation and vertical flattening is strong during exhumation in this region.