

# **Kinematic history of the Day Nui Con Voi Metamorphic Complex, Northern Vietnam**

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## **Abstract**

3-D microstructural analysis of 19 oriented samples from the DNCV metamorphic complex in northern Vietnam has revealed 4 generations of matrix foliations ( $S_{0/1}$ ,  $S_1$ ,  $S_2$  and  $S_3$ ) and 2 sets of matrix foliations Intersection axis (FIA) with distinctive geographic trends and relative timing. The observed microstructural fabrics correlate to the three macroscale ductile deformation events of this region since the Indosinian Orogen.  $S_{0/1}$  fabrics are preserved as crenulated cleavages with sigmoidal shapes striking E-W and shallowly dipping ( $8^\circ$ - $34^\circ$ ) toward N. Steeply E dipping  $S_1$  fabrics are axial planar to macroscopic upright NE-SW trending folds ( $F_1$ ).  $S_2$  fabrics are generally sub-horizontal, axial planar to the macroscopic subhorizontal folds ( $F_2$ ) dipping both towards NE and SW.  $S_3$  fabrics are a weak crenulation cleavage which lies axial plane to macroscopic upright NW-SE trending folds ( $F_3$ ). The collected microstructural data indicate moderate preferred vertical ( $S_1$  and  $S_3$ ) and horizontal ( $S_{0/1}$  and  $S_2$ ) orientation of matrix foliations. This probably reflected a dynamic equilibrium between tectonic forces and gravity during different periods of crustal shortening. All FIAs are sub-horizontal trending N-S direction. The orientational consistency of these matrix foliations and FIAs throughout the DNVC region indicates the DNCV region experienced the same deformation history and was deformed by E-W bulk shortening since the Late Triassic time.