

## Conjugate Shear Fractures in Galgoda Charnockite, Balangoda

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Conjugate Shear fractures are pair of fractures which were developed during brittle failure of rocks. Presence of shear fractures signs faulting or relative movement of rocks in a particular area. This study aimed at investigating the shear fractures present in the Charnockite at Galgoda, Balangoda in order to understand the sense of slip and brittle deformation history in the area. Orientation data of fractures (n=136) and slickenside striations were collected using geological compass. Samples were collected from selected locations for laboratory studies. Fracture orientation data were plotted and analyzed using Rock Ware Stereo Stat software. Poles plot for shear fracture planes were contoured and best fit great circles were constructed. Principal compressive stresses ( $\sigma_1$ ,  $\sigma_2$ ,  $\sigma_3$ ) were then calculated using the software. A thin film of fault gouge is present in the shear fractures. Slickenside striations are distinct in some planes while slickenside striations in some planes with moderate plunge seem to have overprinted. Steps are also visible in some planes. A vertical to near vertical shear fracture is present where slickenside striations are parallel to the strike of the shear plane. These, slickenside striations show moderate to horizontal plunge with NW, W-NNW and NNW-N trends. Orientation of shear fractures shows four directions showing presence of two generations of conjugate fault systems. The principal stress directions of one conjugate fault system are  $\sigma_1$ (089°/63°),  $\sigma_2$ (282°/26°) and  $\sigma_3$ (189°/06°). The principal stress directions of the other conjugate fault system are  $\sigma_1$ (170°/74°) and  $\sigma_2$ (329°/15°) and  $\sigma_3$ (060°/06°). Because the  $\sigma_1$  direction is nearly vertical, the sense of slip on both conjugate faults is dominantly vertical. The sense of shear in vertical to near vertical shear fractures could indicate strike-slip on tensile fracture. Thus, the Galgoda Charnockite shows at least two generations of normal faulting and a subsequent strike-slip suggesting change of the stress regime acting on these rocks.

**Keywords:** *Charnockite, Conjugate shear fractures, Fault gouge, Slickenside, Tensile fracture*