Structural Anatomy and Deformation Pattern of the Palghat-Cauvery Shear Zone in the Central Sector, Tamil Nadu, Southern India

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Abstract : The central sector of Palghat-Cauvery Shear zone Tamil Nadu, India, had been studied with reference to development, mode of occurrence, interrelationship and variation of structural elements. The litho assemblages of the study area include gneisses migmatites granites and bear signature of multistage deformation patterns. The early deformation D1 is characterized in migmatites and gneisses by the development of tight to isoclinal, recumbent to reclined folds within the compositional bands that are refolded subsequently to produce D2 deformation structures ranging from type-II to type-III superposed geometry. The granite, in general, is undeformed, save a few places where strong mylonitic foliation developed with stretching lineation on it. The D1-D2 structures of gneisses and migmatites were affected by a D3 stage- E-W trending shear zone (Palghat-Cauvery Shear zone) that dips steeply towards north. The shear zone is characterized by the development of shear induced folds and foliations. Several anastomosing lenses of shear zones define the larger Palghat-Cauvery Shear zone. The orientation of the shear induced folds and foliations and deflections of earlier foliation and folds within the Palghat-Cauvery shear zone indicate an oblique-slip thrust-shear with north-towards-east sense of displacement. The E-W trending shear zone is further openly folded along N-S in the D4 stage of deformation.

Keywords : deformation, migmatites, mylonites, shear zones

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