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Anisotropy of Magnetic Susceptibility, Palaeomagnetism and Rock magnetic studies on the mafic intrusives along Kaddam Fault: Implications to Godavari rift related magmatism

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Godavari graben is the Proterozoic rift system occupied by basin sedimentation; and any major magmatic episode is so far unreported. The Kaddam fault (Kf) representing a conjugate fault system of the Godavari rifting is marked by mafic intrusive across the fault as well as along the fault within the granite-granulitic basement. The rock magnetic study shows ferrimagnetically rich assemblage with variety of domain size dominance from Single Domain (SD) to Multi Domain (MD). Oriented samples were analysed for palaeomagnetic study using alternating field demagnetization and for Anisotropy of Magnetic Susceptibility (AMS) analysis to infer the petrofabrics. The characteristic mean palaeomagnetic directions (ChRM) for the dykes along and across the Kaddam fault shows two different temporal events or phases of intrusion. Further the AMS too shows a well clustered vertical K_{max} with flattening parallel to the dykes trending across the Kf. Whereas the dykes along Kf although are well clustered at sample level, shows at least two sets of K_{max} and K_{min} directions depicting internal deformation in response to strike slip movement reported based on field studies of Sangode et al. [1]. Thus we infer significant strike slip component as well as pervasive intrusive magmatism related to rifting in support of the Godavari as failed rift of ancient geological time.

References:

[1] Sangode, S.J., Meshram, D.C., Kulkarni, Y.R., Gudadhe, S.S., Malpe, D.B. and Herlekar, M.A. (2013) Neotectonic response of the Godavari and Kaddam Rivers in Andhra-Pradesh, India: Implications to Quaternary reactivation of old fracture system. Jour. Geol. India 81(4), 459-471.

