

A-TYPE GRANITE MAGMATISM AT THE PERIPHERAL ZONE OF THE EASTERN GHATS MOBILE BELT, INDIA: PETROGENESIS AND TECTONIC SIGNIFICANCE

M.V. Subba Rao and V. Divakara Rao National Geophysical Research Institute,
Hyderabad - 500 007, India

Eastern Ghats Mobile Belt (EGMB) is one of the typical Proterozoic Mobile Belts of the world. The major lithologies of this belt viz. khondalites, basic granulites and charnockites apart from minor associations of alkaline plutons, leptynites and calc-granulites have been the subject of numerous studies in the recent times and a fairly clear picture of the origin and evolution of the protoliths of the lithological associations has emerged from these studies. The nature of the lithological associations bordering the mobile belt has not so far been studied in considerable detail. Granitic rocks occur towards the border zone of the mobile belt in Orissa. One such granite is encountered in the Kamakhya Nagar region in Orissa, which tend to be predominantly of quartz-monzonite (adamellite) composition with moderate levels of silica and Al_2O_3 with low $Fe_2O_3(T)$, MgO and CaO . These granitic rocks are characterized by moderate- to strong LREE enrichment ($LaN/SmN = 3.8-4.0$) and relatively flat HREE patterns ($GdN/YbN = 0.84-0.92$). Strong negative Eu anomalies are the characteristic feature of these granites and plot in the within plate granite field and exhibit an A-type granite character with elevated levels of incompatible elements like Zr, Ce, Nb and Y. They are of I-type granite in nature. These granites might have formed in an extensional setting coinciding with the initiation of the formation of the assemblages of the mobile belt in the Proterozoic which have formed part of the eastern Gondwana assemblage.