

PETROLOGY AND GEOCHEMISTRY OF SYENOGRANITES FROM SITARAMPALLY AREA, EASTERN DHARWAR CRATON

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Abstract

This paper presents the petrology and geochemistry of syenogranites that occur around Sitarampally area, NW of Narsapur in Medak district of Telangana within Eastern Dharwar Craton. Geologically, Sitarampally region is dominated by granitic rocks of Precambrian age. The lithological variants in the study area include granodiorite and monzogranite grading through syenogranite, granite to alkali feldspar granite-quartz syenites. The syenogranite is medium to coarse grained, inequigranular, porphyritic in texture and composed of K-feldspar (microcline perthite; 42-53% by volume), quartz (21-25%) and plagioclase (14-20%) in the order of decreasing abundance. Mafic minerals include amphibole (4-9%) and biotite (2-8 %) while the accessories are magnetite, titanite, calcite and apatite. Presence of discrete plagioclase grains in substantial proportions suggests sub-solvus conditions of crystallisation of the parental magma. The syenogranite has high SiO₂ (70.77-73.86 wt. %), high K₂O (6.11-7.11wt. %) and low Na₂O (2.78- 3.40 wt.%). The rock is hypersthene-normative and calc-alkaline with low iron enrichment. The chondrite normalised REE patterns of syenogranite display LREE-enriched and HREE-depleted patterns with negative Eu anomaly. The syenogranites show high LREE/HREE ratio that hints at either fractional crystallisation or an LILE-enriched source. The negative Eu anomaly indicates the role of feldspar in the genesis of the syenogranites. The syenogranites of Sitarampally conspicuously display an A-type character and warrant detailed investigations.

Keywords: Geochemistry, Petrology, Syenogranite, A-type, Sitarampally, Eastern Dharwar Craton.