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The layered anorthosite from Siripuram of Khammam district, Telangana, India: Insight of petrogenesis and tectonic Settings

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Anorthosites are one of the rare rocks on this earth but dominant on moon because of which they created interests in the petrologists. The anorthosite – gabbro banded dyke occurs towards southern part of Khammam schist belt and stretches about 800 m long and 30 m wide. The dyke trends in N-S direction and is emplaced at the contact between the granulite on the eastern side and Khammam schist belt on the western side. The major structural trend in the Khammam schist belt is NE-SW along which are emplaced not only the enormously sized Chimalpahad. On the contrary the Siripuram anorthosite is a dyke which clearly cuts across the local NW-SE foliation trends in the schist belt.
The medium to coarse grained equigranular anorthosite is composed of mainly euhedral plagioclase and amphibole as primary phase and pyroxene, epidote and sphene as minor phase. The gabbroic bands are composed of subhedral pyroxenes and amphibole minerals.
Geochemically, the anorthosite is silica under saturated and shows high $Al2O_3$, CaO and low MgO content. The anorthosite is derived from both LREE and HREE depleted Fe tholeiitic basaltic magma. The Anorthosite shows positive Eu anomaly which reveals that it existed as a mixture of cumulate plagioclase plus trapped liquid. The mafic rocks like supercrustal amphibolite, amphibolite dyke and meta-gabbro are recognised as belonging to Fe-tholeiitic basalt composition. The presence of hornblendite fragments within the anorthosite elucidates the hydrous conditions of magma at the earlier stage of crystallization.