

GEOLOGICAL STUDIES OF IRON ORE IN BAYYARAM AREA, KHAMMAM DISTRICT, TELANGANA STATE, INDIA

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Abstract

The present study deals with field, geological studies of iron ore in Bayyaram area in the Proterozoic Pakhal Basin situated in the northern part of Eastern Dharwar Craton (EDC), which extends through the state of Telangana, Madhya Pradesh, and Maharashtra in a NW–SE direction along the Pranhita-Godavari (PG) Valley. In the study area, iron ore occurs as haematite and is associated with sedimentary rocks, such as ferruginous sandstones and feldspathic shales. These iron ore bearing arenaceous sequences of the Bayyaram area form a part of the Bollapalli Formation, a lower unit of the Mallampalli Group is the Proterozoic Pakhal Supergroup. As part of the present work, an area of about 100 sq. km. was studied around the Bayyaram area to collect data from field observation and interpret the mineralogical and textural characteristic of the rocks. Petrographic studies of the iron ore samples reveal the presence of predominantly quartz clasts along with subordinate K-feldspar and chert fragments. The clasts are essentially bound by iron oxide cement indicating that the host rock for the iron ore in the study area is arenite. The ratio of iron oxide to detrital quartz in the rock is sub-equal. Well-rounded quartz clasts together with zircon grains with partially preserved crystal faces and twinned microcline indicate a granitic provenance. However, the presence of chert indicates derivation of the lithofragments from a non-clastic sedimentary source. Based on the composition of the clasts, mainly two types of iron oxide-bearing arenaceous rocks are noticed. (i) Quartz arenite predominantly composed of quartz clasts with ferruginous material filled in the interspaces of the clasts and (ii) Sub arkosic arenite with >5 % microcline clasts along with few grains of quartz and chert. The textural characteristics of these rocks reveal the presence of Fe oxide as the binding material occupying the intergranular space between the detrital clasts in ferruginous sandstone and feldspathic sandstone indicating that Fe oxide is diagenetic and post-depositional.

Keywords: Petrography, Pakhal Basin, Bayyaram, Iron oxide, Southern India