

## Sedimentological Studies of Lameta Sediments around Nagpur, Central India

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### Abstract

The limestones under study are mainly arenaceous and contain significant amount of detrital rounded sand size quartz and micritic calcite, which at the top becomes pebbly limestones and exhibit coarsening upward sequence. The microfacies identified include arenaceous micritic limestones, arenaceous pelmicrites showing fenestral fabric and pseudo-brecciated limestones. In these limestones, though micritic calcite is present in large amount (55% to 65%), at places, small patches of thoroughly intermixed primary micritic dolomite (12%) with micritic calcite is also reported. Rarely bivalve bioclasts are noticed. These aspects indicate that the limestones are mainly deposited in freshwater oligotrophic lacustrine environment. Limeclast breccias indicate exposure to atmosphere and mechanical erosion of lithified limestone deposited in the intertidal or supratidal zone. These represent local phenomenon within the basin of deposition and are formed by autocannibalism. The alternate detrital quartz rich and micritic calcite rich layers observed in the lower part of the lithosections that represent seasonal varves. The quartz rich layers have been produced by high detrital influx from the rivers draining into lakes during rainy season, while calcite rich layers represent summer period, when the solubility of calcite is low. The pebbly micritic limestones commonly observed in the upper part of the lithosections, represents ancient lacustrine shoreline. The overlying marl consist of fine grained quartz, clay aggregates, micritic calcite, illite in which worm burrows are frequently developed and considered to be deposited on the upper portion of lake mainly on the mud flats. Petrographic studies of sandstones suggest that these contain unstable rock fragments of Gondwana sandstones, siltstones and Precambrian granites. The sandstones contain unstable heavy minerals like staurolite, garnet and zoisite in large amount (~ 45%) and low percentage of zircon, tourmaline and rutile (~ 43%) along with occasional detrital biotite flakes. These properties indicate short distance of transport, and near source deposition.

**Keywords:** Sedimentology, Lameta sediments, Detrital framework, Nagpur, Central India