

## **Paleoenvironmental and diagenetic study of Cambrian dolomite, Ambar Formation, Peshawar Basin, Swabi**

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### **Abstract**

The Cambrian Ambar Formation is exposed in north-east Peshawar Basin in Turlandi and Swabi areas. The formation was studied at outcrop level and under the polarizing microscope along with the X-ray diffraction (XRD) analysis.

At the outcrop level, the Ambar Formation consists of dolomitic limestone, limestone, sandy limestone to calcareous sandstone. Algal laminated beds at outcrop level are prominent. The following three microfacies were identified; a-Algal laminated burrowed sandy dolosparite (MAF-1), b-sandy dolomitized peloidal packstone (MAF-2) and c-fractured stylolitic sandy dolosparite (MAF-3). Based on the integration of both petrographic and outcrop data, high energy shallow marine environment ranging from intertidal to supratidal is interpreted as depositional environment for the Ambar Formation.

Based on the XRD analysis four different, major mineral phases were identified including; calcite, quartz, ankerite and dolomite. The smaller intensity value of XRD peaks show that dolomite crystals are not well developed. The stoichiometry for dolomite was found by putting the value of major peak of dolomite (d104) in Lumsden (1979) equation. The ordering for dolomite rhombs was found from the intensity ratio of two other dolomite peaks i.e. d110 and d015. The data obtained from ordering and stoichiometry of dolomite rhombs were combined in the form of graph, from which environment of deposition is determined. This result shows that the dolomite was deposited in intertidal to supratidal environment which was later replaced by spary calcite, this interpretation is in agreement with the interpretation based on petrographic data.