

# **GEOCHEMICAL STUDY OF LIMESTONES OF SHELLA FORMATION OCCURRING IN AND AROUND SHELLA-ISHAMATI AREA, EAST KHASI HILLS DISTRICT, MEGHALAYA, INDIA**

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## **ABSTRACT**

Geochemical studies were carried out from the three Limestone Members (Lower Tertiary) of Shella Formation, Jaintia Group occurring around Shella-Ishamati area of East Khasi Hills District of Meghalaya. For this purpose, major, minor and trace elements were determined by XRFS from the limestone samples. Variation of CaO content with other oxides is attributed to the fluctuation in the physico-chemical condition throughout the period of deposition. Higher percentage of Ca with the presence of Fe<sub>2</sub>O<sub>3</sub> indicates a closed basin under reducing environment. Presence of iron oxide also indicates reducing environment. Ca / Mg ratio was used to determine the salinity and evaporation condition. The higher percentage of Ca / Mg ratio in the limestones signifies lower salinity in the area of deposition near to the shore line. MgO against Fe<sub>2</sub>O<sub>3</sub>, Al<sub>2</sub>O<sub>3</sub> shows negative correlation against CaO. SiO<sub>2</sub> shows positive correlation with MgO and Fe<sub>2</sub>O<sub>3</sub> while that of CaO shows negative correlation. Increase of SiO<sub>2</sub> content with the influx of terrigenous material indicates change of depositional environment. The limestones of different units are categorized as Magnesium and Pure Limestones on the basis of high Ca / Mg ratio. Presence of phosphate and manganese in the limestones is indicative of warm and humid climate. The higher amount of Fe<sub>2</sub>O<sub>3</sub> in limestones lowers the absorption capacity with lowers the rate of ignition. The trace elements data indicate the formation of the limestones in the proximity of the shoreline.

**KEYWORDS:** Geochemistry, Limestone Members, Shella Formation, Shella, Ishamati (Meghalaya)