

ORGANIC GEOCHEMICAL APPRAISAL OF HYDROCARBON POTENTIAL AND THERMAL MATURITY OF LOWER PALEOGENE COAL DEPOSITS OF MEGHALAYA, INDIA

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Abstract

The hydrocarbon potential and thermal maturity of the Lower Paleogene coal deposits of Meghalaya Shelf in North-East India was evaluated by Rock-Eval pyrolysis, elemental and biomarker analyses. The Jaintia Group is the coal bearing horizon in this region, deposited in a shallow marine to deltaic or lagoonal environment in a stable platformal setting and exhibits rapid lateral and vertical lithofacies variation. The Jaintia Group shows a different lithological succession in the eastern and western half of the Meghalaya Shelf. The Rock-Eval pyrolysis and elemental analysis of coal and the associated carbonaceous shale samples of the Jaintia Group shows that they contain very high amount of organic matter and possess excellent generative potential. The organic matter is composed of Type-III kerogen, which is gas and oil. However, from maturity parameters of Rock-Eval pyrolysis and biomarker analysis, it is seen that the organic matter is thermally immature for generating petroleum. Therefore, the petroleum potential of the Meghalaya Shelf is a remote possibility. However, the coal deposits of eastern Meghalaya Shelf are found to be slightly more mature than those of the western Meghalaya Shelf, possibly because of their older age.

Keywords: Meghalaya Shelf, Jaintia Group, Rock-Eval pyrolysis, elemental analysis, biomarker analysis, hydrocarbon generation potential.