



Microfacies Analysis and Paleoenvironmental Interpretation of the Eocene Kohat Formation, Gumbat Section, Himalayan Fold and Thrust Belt, Northern Pakistan.

Kamran Mirza

Institute of Geology, Punjab University, Geology, Lahore, Pakistan (kamran.geo@pu.edu.pk)

Microfacies Analysis and Paleoenvironmental Interpretation of the Eocene Kohat Formation, Gumbat Section, Himalayan Fold and Thrust Belt, Northern Pakistan.

By

Kamran Mirza

Institute of Geology, University of the Punjab, Lahore-54590, Pakistan.

Email: kamran.geo@pu.edu.pk

A section of the Middle Eocene Kohat Formation has been measured and sampled systematically for the microfacies analysis and paleoenvironmental interpretation from the Gumbat Section, Kohat Basin, Himalayan Fold and Thrust Belt, Northern Pakistan. The section of Kohat Formation is 84 m thick in this area. A total number of 45 samples were collected from bottom to top in such a way that minor lithological variations were noticed and sampled. Out of these samples, 67 thin sections were made that were later on studied under the microscope for microfacies analysis and paleoenvironmental interpretation. Four microfacies and eight subfacies have been identified in the section. These microfacies and their subfacies are:

Lime Mudstone Facies

Benthic Foraminiferal Wackestone Facies

This microfacies is further divided into five subfacies:

Nummulites-Milliolid Wackestone Facies, Nummulites-Alveolina-Milliolid Wackestone Facies, Nummulites-Alveolina Wackestone Facies, Alveolinid Wackestone Facies, Nummulites-Coskinolina Wackestone Facies,

Benthic Foraminiferal Packstone Facies

This microfacies is again divided into three subfacies namely:

Nummulites-Alveolina Packstone Facies, Milliolid-Peloid Packstone Facies and Nummulites-Assilina Packstone Facies.

And Milliolid-Peloid Grainstone Facies.

These microfacies indicate some interesting results about the paleoenvironments at the time of deposition of the Kohat Formation in this area. The larger benthic foraminifera of different groups have been used for the interpretation of paleoenvironments. These micro organisms show a great susceptibility to the minor changes in climate, depth zone and the nature of substrate. These can safely be used for the paleoenvironmental interpretation of any carbonate system deposited in the marine realm. On the basis of above mentioned microfacies, it can be concluded that the Kohat Formation in Gumbat area was deposited in low to moderate energy conditions, open marine, shallow shelf environments.