

Sedimentologic study of the Jelai Formation with emphasis on facies analysis, Kuala Lipis, central basin of Peninsular Malaysia

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A sedimentologic study of the Jelai Formation in the central basin of Peninsular Malaysia indicated that deposition took place in a shallow water environment.

This is supported by the occurrence of *Costatoria* sp (myophoria facies) which is a bivalve of shallow water marine zone. Field study showed that it was difficult to provide a complete type section of the Jelai Formation on a wider scale due to advanced weathering and urban construction. Scanning electron microscopy of clay samples indicated that quartz (SiO_2), orthoclase (KAlSi_3O_8) and zircon (ZrSiO_4) are major components associated with the clay minerals. Fluorine, titanium, carbon are accessory chemical elements. Iron oxide is also present.

X-ray diffraction revealed the following main clay minerals: illite, montmorillonite and kaolinite whereas gypsum and pyrite are also present. Petrographic study of arenite (sandstone) showed two distinct facies:

1. Medium to coarse-grained sandstone, ferruginous, poorly sorted with abundant rock fragments, containing quartz, trace of mica, plagioclase grains which are mostly altered, and trace of orthoclase. Grain size varying from 0.25 to 1 mm.
2. Fine to medium-grained sandstone, argillaceous, moderately to well sorted, containing quartz, muscovite, trace of orthoclase, little amount of plagioclase and biotite, iron oxides, and rock fragments. Grain size varying from 0.12 to 0.5 mm.

Petrographic study of rudite (conglomerate and breccia) indicated two distinct facies:

1. Sheared sedimentary breccia, containing fragments cemented by iron oxides. Mineralogy showed the presence of quartz, feldspar, altered mica, and abundant rock fragments.
2. Conglomerate, containing quartz, altered muscovite, rock fragments cemented by iron oxides. Facies distribution shows that sandstone facies occurs in the central and northeastern part of the study area. Conglomerate appears in the northeastern part whereas breccia is seen in the southwestern part of the study area. Oxidizing conditions prevailed during deposition of the Jelai Formation with variable energy conditions seaward.

Paleocurrent study showed sense of paleoflow as trending WNW-ESE within the study area.