

Significance of Lower Carboniferous Radiolarian chert from Langkap, Negeri Sembilan

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The study area comprises metamorphic rocks which belong to the Bentong Group (Khoo, 1975). The oldest rock unit is the Pilah Schist which is older than Early Silurian, probably Ordovician (Foo, 1983). The Pilah Schist consists mainly of quartz mica schist, graphitic schist, metaquartzite and phyllite with minor serpentinite and chert bodies. The serpentinite, which has been considered an ophiolite (Hutchison, 1989; Tjia, 1987, 1989) represents an extension of the Bentong-Raub suture zone. The schist is unconformably overlain by the Permian Kepis Formation. The chert sequence near Langkap does not belong to either the Pilah Schist or Kepis Formation. Discovery of Late Devonian to Early Carboniferous radiolarian faunas by Spiller and Metcalfe (1995b) proved that the chert is a different formation. In this study, the chert is informally called the Langkap chert.

The Langkap chert consists of thinly bedded chert interbeds with mudstone. The chert forms a narrow ridge and the total thickness is estimated to be about 150 m. It is underlain by the Pilah Schist. The contact between the two formations is not exposed. The chert is overlain by the Kepis Formation. The presence of mudstone in the chert sequence indicates that the depositional environment was very close to a continental margin. The chert-mudstone association is considered as a continental margin chert association by Jones and Murchey (1986).

The Langkap chert is well-exposed at a road cut near Kampung Langkap (02°38'N, 102°21'E). A thick chert sequence totalling 105 m was measured. The chert strikes 60° and dips 50°. The chert is faulted and sheared. There are five shear-zones observed at the outcrop. The colour of the chert varies from black to dark grey. The bottom part of the section comprises chert interbeds with thinly bedded siltstone which has thickness ranging from 4–10 cm. The beds are folded due to slumping. The upper part exhibits 1–2 cm thick parallel bedding with a slight variation in grain size from silt to clay.

The radiolarian chert at Langkap has been studied by Spiller and Metcalfe (1995a, 1995b). They have identified several radiolarian faunas indicating an age of Famennian, Late Devonian and Tournaisian, Early Carboniferous. Recently, a detailed study of the outcrop of the chert sequence was made and 25 samples were collected. Only one sample yielded very high specific diversity of well-preserved radiolarian faunas. The other samples were crystallised and yielded very poorly-preserved radiolarian specimens.

Most of the chert that have crystallised yielded radiolaria that are damaged. At the top of the sequence, an approximately 2 cm thick thinly laminated black mudstone yielded some quite well-preserved specimens of radiolarian fauna. A total of 34 radiolarian taxa were identified. This assemblage is slightly different in composition from those described by Spiller and Metcalfe (1995a, 1995b). The aim of the paper is to discuss the presence of a younger radiolarian assemblage which represents the *Albaillella deflandrei* Zone, and to determine the stratigraphy, depositional environment of the chert and the palaeogeography
