



A review of the Permian foraminiferal faunas and petrography of carbonate rocks in Kanchanaburi, Western Thailand

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ABSTRACT

The Permian Ratburi Group in Kanchanaburi province, western Thailand, is dominated by carbonates with minor siliciclastic rock sequences. The terrain is considered to be located along the eastern margin of the Sibumasu block and bounded by two main active strike-slip fault zones; the Sri Sawat and the Three Pagodas fault zones. The Permian carbonate sequences crop out on both sides of these faults but are more extensively exposed in the western part of the Three Pagodas fault zone.

Our recently obtained carbonate rock materials from six localities approximately 50 to 70 kilometers from the city of Kanchanaburi have yielded fusulinoideans of 12 species of 6 genera. However, the lowermost part of the group, Muang Krut Formation has based on fossils brachiopods at the type location where no fossil fusulinoidean was observed. The sublitharenite sandstone, which yielded *Monodioxodina shiptoni* of Early Permian were mostly reworked during the Triassic period. The presence of this Early Permian fauna may support that the Sibumasu block belonged to the Cimmerian continent during the Early Permian Bolorian. The covering unit, the Sai Yok limestone formation contains several species of fusulinids such as *Pseudofulina*, *Eopolydioxodina*, *Schwagerina*, *Rugosofusulina*, and *Yangchinia*, which indicate the Murgabian to Midian (late Early to Middle Permian) age. The uppermost part of the Sai Yok limestone formation is represented by the occurrence of smaller foraminifers such as *Hemigordiopsis*, *Pachypholoia*, and *Globivalvulina*, which indicate Dzhulfian (Late Permian) age. Moreover, the fusulinoidean and smaller foraminifers belong to the Eastern Tethyan fauna and are not diversified in genus and species. The petromicrographs of limestone display that bioclastic packstone, grainstone, and crystalline are dominated. The faunal assemblages of the Permian siliciclastic and carbonate rock facies indicate that these rocks have been deposited in a shallow marine and cool water environment.

In addition, it is worth noting that based on our recent discovery of small foraminiferal fossils, numbers of the carbonate rocks that were previously regarded as the Permian Sai Yok formation are proved to be much younger. Two of the main areas include: a) Khao Sam Chan, Khao Ma, and Khao Kwang areas at Sai Yok district, the grey to light grey thin-bedded to thick-bedded dolomitic limestone and dolomite should be Middle Triassic (Anisian) and b) the areas between Sai Yok and Tha Sao sub-districts, a relatively thin-bedded calcareous mudstone conformable underlain grey to dark grey, bedded to massive limestone with a small number of chert nodules and partially dolomitized should be Late Triassic (Norian to Rhaetian).

Moreover, the lithological features and fossil assemblages together with the presence of Middle Triassic radiolarian, thin-bedded chert, and siliceous shale at Ban Khao Kaeng Riang Bon, 16 Km. EastNortheast of the Tha Sao sub-district may imply that the marine regression was spreading from the Middle Triassic to the latest or end of the Triassic.

Keywords: Sai Yok Formation, fusulinoidean, Western Thailand, Sibumasu terrane, Permian, Triassic