

Abstract

The Cambrian Series 3 witnessed widespread development of microbial reefs after the first Phanerozoic reef crisis, which has largely been documented from Laurentia. This study reports various Cambrian Series 3 microbial-dominated reefs from the Daegi Formation of Korea toward comprehension of the regional variability of the Cambrian Series 3 reefs. The cumulative thickness of these reefs comprises over 20% of 180 m-thick carbonate-dominated Daegi Formation. The Daegi reefs are composed of prevailing thrombolite-siliceous sponge boundstone, subordinate *Girvanella* crust-*Epiphyton* boundstone, and minor stromatolites. Thrombolitesiliceous sponge boundstone is characterized by pervasive mesoclots and *Epiphyton* thalli, where interstitial space of the framework often contains siliceous sponges. The siliceous sponges are occasionally encrusted by mesoclots and *Epiphyton*, providing substrates for microbial attachments, hence interpreted as dweller and local frame-builder. *Girvanella* crust-*Epiphyton* boundstone is composed of vertical to laterally aligned, sheet-like to arcuate *Girvanella* crusts. The framework of boundstone is primarily constructed by Girvanella crust, where Epiphyton thalli and minor siliceous sponges attached on top of the crusts. Coalescing of columnar and upward-widening stromatolites constitute rare biostrome. The Daegi carbonate platform dominated by the thrombolitic and subordinate microbial reefs appears to have extensively developed on the eastern margin of Sino-Korean Block located at the peri-Gondwanan region, which are comparable to Laurentian counterparts with an exception of common metazoan incorporation into reefs. The current study suggests that Cambrian Series 3 carbonate platform was largely dominated by microbial reefs, and probably represents the peak of microbialites throughout the Phanerozoic.

1. Purpose

Re-assess contribution of siliceous sponges toward microbial reefs and middle Cambrian carbonate platform.



- A) Tectonic elements and Cambro-Ordovician outcrops of the eastern Asia. Modified after Woo et al. (2008).
- B) Geologic map of study area and distribution of the Daegi Formation. Studied section marked by a red rectangle. Modified after Chough (2013).

