

biomarkers and REE values indicative of sub-oxic conditions. These are consistent with their autochthonous clotted-peloidal crusts and the more muddy low energy conditions under which they formed. Their small growth cavities that apparently favored formation of clotted-peloidal sediments resemble those of present-day autochthonous reef crusts induced by sulfate reducing bacteria.

The division of the morphological groups of the Li Mei calcareous algal bioherms, Western Hunan, China

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In the late Early Cambrian, during deposition of the Qingxudong Formation, a homoclinal carbonate ramp was developed over what is now Li Mei village, Western Hunan Province. The ramp comprised three different sedimentary facies associations, which are referred to as the inner, mid- and outer ramp zones. A series of calcareous algal bioherms were developed in the mid-ramp zone.

The bioherm contains nineteen species of calcareous algae. The major constituent algae in the bioherm facies are *Epiphyton*, *Renalcis*, *Botomaella*, *Razumoviskia*, *Proaulopora*, *Batinevia*, *Chabakovia*, *Bija*, *Nicholsonia*, and *Girvanalla*.

The bioherm algae can be divided into four groups and seven sub-groups based on comparative morphology: (1) botryoide group; (2) dendritic group (sub-groups: i. short and small dendritic, ii. Cluster and ball-shaped dendritic, iii. Dendritic); (3) tubiform group (sub-groups: i. fan-like tubiform, ii. Isolated and loosely associated tubes, iii. Cluster tubiform, iv. Tangled, coiled and mass-like tubiform); (4) blanket hair-like group.

Since morphological groups can be environmental indicators, one or several algal morphological groups and/or sub-groups can be assigned to either of four algal environment zones in the bioherm: (1) low-energy zone-developed at the bottom and periphery of the bioherm; (2) & (3) relatively high-energy zone-located in the middle part of the bioherm; (4) very high-energy zone-developed on the top of the bioherm.

The division of the morphological groups of the Li Mei calcareous algal Bioherms are of great importance in determining sedimentary microfacies, and analyzing the correlations between algae morphology and sedimentary environment.