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Sedimentary environment of the Middle Permian Gufeng Formation in the Chaohu area, Anhui Province, China

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Petrographical and geochemical studies of sedimentary rocks from the Middle Permian Gufeng Formation in the Chaohu area, Yangtze Platform, China, have been carried out.

The Gufeng Formation is subdivided into the Phosphate nodule-bearing mudstone Member (PNMM) and the Siliceous rock Member (SRM). The basal part of the PNMM consists of mudstone including pellets of glauconite, which shows the deposition under aerobic shallow marine conditions. The upper part of the PNMM consists of phosphate nodule-bearing mudstone. The presence of phosphate nodules suggests the deposition under slightly deep marine (e.g. outer shelf) and anoxic conditions. These anoxic conditions possibly caused by the upwelling. The SRM consists of alternating beds of chert and mudstone, including abundant radiolarians and organic matter.

Cherts from the SRM have high SiO2 contents (average 96.6wt%), high Mo, Ni, Cu and Zn, high concentrations of normal paraffin. These results suggest that the chert deposited under sulfate reducing conditions.

The location of the Chaohu area has been suggested by the paleomagnetic data, was northwestern part of the Yangtze Platform around the equatorial area and faced to the Paleotethys in the Permian time. The upwelling occurred around the eastern margin of the Paleotethys, and it brought about high biogenic activities in the sea surface. The results of investigation suggest that the origin of chert in the Gufeng Formation is biogenic, and sedimentary rocks of the Gufeng Formation deposited under anoxic conditions.