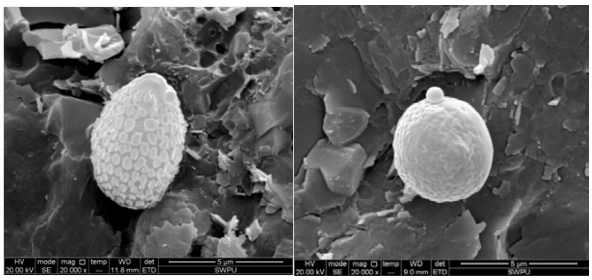
The early cambrian microbial-like fossils: New insights from their potential for hydrocarbon-generation

TINGSHAN ZHANG[1]*, ZHAO GUOAN[2] AND LIU ZCHENG[3]

[1].State Key Lab.of Oil&Gas G&E Engineering,Chengdu,China (zts_3@sina.com) (* presenting author)
[2].State Key Lab.of Oil&Gas G&E Engineering,Chengdu,China (zhaoga@petrochina.com.cn)
[3]. State Key Lab.of Oil&Gas G&EEngineering,Chengdu,China (rex_swpu2005@126.com)

The well-preserved Early Cambrian in the southern Sichuan,China consists mainly of two lithological associations including dark to black shales and dark silty shale, with a total thickness of up to300 m. Some microbial-like fossils(they are similar to the present-day picoplankton and cyanobacteria found in the oceans) have been identified in it. The well-preserved microbial-like structures consist of spheroids about 1.0 μm diameter resembling picoplankton forms (Fig.1).



According to Agawin etc(2000) , more than 90% of all production DOC is the largest reservoir of organic carbon in marine system, even more important is the most of which come from the releasing of picoplankton. The dark to black shales have been recognized under anoxic conditions. Warm climate and anoxic conditions in the Early Cambrian oceans may have facilitated high microbial productivity and organic burial in sediments. Abundant microbially induced organic carbon is from 3 to 7% in ϵ_1. and their potential for hydrocarbon-generation (shale gas) have been recognized.

[1] Agawin N S R , Duarte C M , Agustí S . Nutrient and temperature control of the contribution of picoplankton to phytoplankton biomass and production[J] . **Limnology and Oceanography**, 2000, 5**:** 591-600 .

Large perturbations of the carbon cycle during the middle-late Ordovician in Southeastern Poland

TONGGANG ZHANG[1]*, YANAN SHEN[2] AND WIESLAW TRELA[3]

[1]State Key Laboratory of Petroleum Resource and Prospecting, China University of Petroleum at Beijing, Beijing 102249, China (* Correspondence: zhang.tonggang@cup.edu.cn)
[2]CAS (Chinese Academy of Sciences) Key Laboratory of Crust-Mantle Materials and Environments, School of Earth and Space Sciences, University of Science and Technology of China, Hefei 230026, China
[3]Polish Geological Institute-National Research Institute, Holy Cross Mts Branch, Zgoda 21, 25-953 Kielce, Poland

It is a puzzle that a major glaciation occurred in the Late Ordovician when greenhouse climatic conditions were prevailing on the Earth. The Late Ordovician glaciation resulted in significant changes in global environment as well as the biosphere. Many reports focused on the environmental changes and the great mass extinction associated with the Late Ordovician glaciation. However, debate still remains in the timing and causes of the transition to the icehouse climate from greenhouse conditions in the Late Ordovician. To investigate the Late Ordovician carbon cycle, we conducted detail analyses of carbon isotopic compositions of organic carbon, TOC, and trace elements in the Ordovician sediments from Poland.

No correlations between TOC and $\delta^{13}C_{org}$ values , low thermal maturity, and global correlations indicate that the primary signal of carbon isotopic compositions were well preserved in the Polish sediments. The Caradocian sediments show low $\delta^{13}C_{org}$ values, rich in TOC, and high V/(V+Ni). In contrast, the Ashgill samples show high $\delta^{13}C_{org}$ values, depleted in TOC, and low V/(V+Ni). Two positive excursions of $\delta^{13}C_{org}$ occurred in the Middle Caradoc and in the Latest Ashgill, respectively. We suggest that anoxic environment developed in the Caradoc Stage have contributed to the burial of organic carbon. Elevated primary productivity indicated by the Ba/Al ratios resulted in positive shift in $\delta^{13}C_{org}$ values of Ashgill sediments those were deposited in an oxic environment. Carbon isotopic records suggest that the transition to an icehouse climate possibly occurred in the Early Ashgill Epoch of Late Ordovician.

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