Geochemical characterstic of Proterozoic source rock in ORDOS Basin, CHINA

NINGXI LI*, ZHENYU ZHAO, WEI SONG, YUEQIAO ZHANG

The Research Insititute of Petroleum Exploration and Development, 20# Xueyuan Road, Beijing, China (*correspondence: liningxi@petrochina.com.cn)

Precambrian petroleum system are discovered worldwide. AnYue gas field which reservoir in Sinian-Cambrian system are discovered in SICHUAN Basin, SW China. Therefore, the potential of Proterozoic (Changchengian system) source rock in ORDOS Basin needs to be concerned. The outcrop and drilling samples of Changchengian system are analyzed in organic matter abundance, type, maturity and biomarkers in this research.

The Changchengian system in Bayannuorigong field profile in north part of ORDOS Basin developed dark shale, which show high TOC value(1.39-2.48%, average1.83%). The Changchengian system shale samples from LUONAN field profile in south part of ORDOS Basin show lower TOC value(0.08-1.44%，average 0.39%). GT1 well in center of Basin had drilled dark shale of Changchengian system, the TOC of debris samples show average value of 0.8%, and Tmax are all over 455℃, which suggest high mature stage. Saturate hydrocarbon TIC of LUONAN Changchengian system source rock sample shows single peak and n-C_{18} dominate, Pr/Ph <1. Hopane/Sterane ratio is relative high suggest bacteria material dominate. The biomarkers overall reflect marine depositon characterstic[1].

The quartz sandstone reservoir of Changchengian system drilling sample developed bitumen and hydrocarbon inclusion, which proved the validity of Changchengian system source rock.

[1]Summons, R.E et al. (1988). Distinctive hydrocarbon biomarkers from fossiliferous sediments of the Late Proterozoic Walcott Member, Chuar Group, Grand Canyon, Arizona. Geochim. Cosmochim. Acta 52. 2625–2637.