Geochemistry characteristics of extremely high maturity Longmaxi shale gas in southern Sichuan Basin, China

ZIQI FENG*, DAN LIU, CE LIU, YUWEN CAI, PENG JIA AND KUI MA

PetroChina Research Institute of Petroleum Exploration & Development, Beijing 100083, China (*correspondence: ziqi0314@163.com)

Revolutionary New Method

As one of the largest production of shale gas block in China, the Changning Gasfield is also the area with the heaviest δ13C1 values among the published data in the world [1-2].

Figure 1: Relationship of δ13C1 and wetness of shale gas

Discussion of Results

The molecular composition of Longmaxi shale in Changning Gasfield is mainly hydrocarbon, in which the methane accounts for 97.11% to 99.8%, and with no butane, no or only trace propane (0–0.03%) and small amounts of ethane ranging from 0.09% to 0.59%; the average gas wetness is 0.49% that represent typical dry gas.

The carbon isotopic values are characterized by δ13C1>δ13C2>δ13C3, and the δ13C1 values range from -31.3‰ to -26.7‰, with an average of -28.2‰ that is one of the heaviest δ13C1 values among the published data in the world; when the wetness around of 8% and 4.8%, ethane and propane appear the first time rollover, and at the 1.4% the second rollover occur, and the δ13C1 and δ13C3 evolve along a parabola at the stage of post-rollover zone[1, 3].