

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 $\delta^{13}\text{C}_1$ values among the published data in the world [1-2].

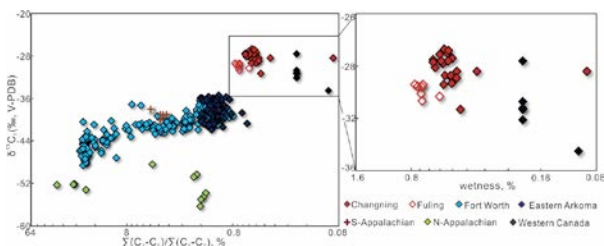


Figure 1: Relationship of $\delta^{13}\text{C}_1$ and wetness of shale gas

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% on average that represent typical dry gas.

The carbon isotopic values are characterized by $\delta^{13}\text{C}_1 > \delta^{13}\text{C}_2 > \delta^{13}\text{C}_3$, and $\delta^{13}\text{C}_1$ values range from -31.3‰ to -26.7‰, with an average of -28.2‰ that is one of the heaviest $\delta^{13}\text{C}_1$ 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 $\delta^{13}\text{C}_1$ and $\delta^{13}\text{C}_3$ evolve along a parabola at the stage of post-rollover zone[1, 3].

[1]Dai *et al.* (2014) *Organic Geochemistry* **74**, 3-12.

[2]Wang *et al.* (2012) *ACTA PETROLEI SINICA* **33**, 551-

561. [3]Xia *et al.* (2013) *Chemical Geology* **339**, 205-212.