

Oil-expulsing rate from different source rocks by the thermal simulation

HONGJU ZHENG¹, ZHAOYUN WANG² AND
DONGLIANG WANG³

¹Research Institute of Petroleum Exploration and Development, Petrochina, Beijing, China, hjzheng@petrochina.com.cn

²Research Institute of Petroleum Exploration and Development, Petrochina, Beijing, China, wzy@petrochina.com.cn

³Research Institute of Petroleum Exploration and Development, Petrochina, Beijing, China, wangdl@petrochina.com.cn

The oil-expulsing rate is basically related to the types of source rocks and the collocation of source rocks and reservoirs. The resident hydrocarbons in different source rocks are studied in different geological settings based on the combination of thermal simulation of hydrocarbon-generating and hydrocarbon-expulsing and actual geological profiles.

This paper has chosen 15 samples of different sedimentary facies with different abundance, type and maturity of organic matters and lithology for the thermal simulation experiment in the airtight system. The experiment shows that the oil-expulsing rate of all kinds of source rocks rises at the period of 0.7%-1.0% of Ro with increasing maturity, and the oil-expulsing rate is higher in better type of organic matters such as type I and type II 1 and higher content of organic matters.

Three wells in Bohai Bay basin with lacustrine source rocks are chosen to research the difference between the oil-expulsing rate in actual geolical profiles and that of the thermal simulation. The study indicates that the oil-expulsing rate for mudstones is in the range of 20% to 80%; the oil-expulsing rate generally increases by the higher abundance of organic matters to coincide with this experiment; the oil-expulsing rate goes up with the increasing maturity of organic matters. Especially, the thickness of source rocks has obvious effect on the oil-expulsing rate.

[1] Zhao et al (2005) *Petroleum Exploration and Development* **32**, 1-7. [2] Liang et al (2000) *Earth Science Frontiers* **7**, 534-547.