

## Maturity parameter of pristane isomerization index

YINGQIN WU<sup>1,2</sup>, YONGLI WANG<sup>1\*</sup>, TIANZHU LEI<sup>1</sup>,  
YANHONG LIU<sup>1</sup>, YOUXIAO WANG<sup>1</sup>  
AND YANQING XIA<sup>1\*</sup>

<sup>1</sup>Key Laboratory of Petroleum Resources Research, Institute of  
Geology and Geophysics, Chinese Academy of Science,  
Lanzhou 730000, China

(\*correspondence: yqxia@lzb.ac.cn, wyll6800@163.com)

<sup>2</sup>Graduate School of the Chinese Academy of Sciences, Beijing  
100049, China  
(wuyingqin001@163.com)

The separation of diastereoisomers of pristane (2,6,10,14-tetramethylpentadecane) on HP-5 columns was reported by gas chromatography mass spectrometry (GC-MS) and the pristane isomerization ratio (PIR) and the reflectances of these highly and overly mature coal samples from the Junggar Basin and source rocks from the Sichuan basin were well studied in this paper. It is reported that the PIR, namely, (6R10R + 6S10S) / 6R10S increasing with the maturation has been proposed as a new effective parameter of maturity in the investigated basin. The results showed that linear relationships were found between the PIR and Ro in these highly mature Ai-13 (Ro=1.53%) and overly mature Ha-01 (Ro =2.32%) and Ha-02 (Ro = 2.99%). The relationship between the PIR and Ro was fitted well, with a high coefficient of 0.9951.

In the overmature Ha-01 and Ha-02 sections (Ro>2.0), the isomerization differences of Pristane are still obvious, and the relative abundances of the 6(R)10(R) + 6(S)10(S) isomers show significant changes with increasing Ro. The present results suggest that Pristane ratio is adequate in the Junggar Basin.

Furthermore, verified test with source rocks of the Sichuan basin was carried in laboratory scale. It has been proved by experiments that the model has a precision of 0.8979 in forecasting the test results. As a result, our results suggest that the PIR is an appropriate indicator of maturity for the highly and overly mature source rocks.

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