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渤海湾盆地东营凹陷北带油包裹体成分特征

作者	单位
吴珍珍	中国石油勘探开发研究院, 北京 100083
董甜甜	辽河油田勘探开发研究院海外所, 盘锦 124010
曹锋	中国石油勘探开发研究院, 北京 100083

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摘要：

油包裹体成分在油源对比和流体包裹体*PVT*热动力学模拟具有至关重要的作用。本文采用常规荧光光谱、定量荧光技术和在线压碎群体包裹体成分分析方法对东营凹陷北带沙三段和沙四段砂岩储层样品中的油包裹体成分进行分析。荧光光谱分析结果表明油包裹体荧光颜色从黄色-黄白色-白色-蓝白色到蓝色呈现连续变化特征,主波长范围在445nm至550nm之间,指示了东营凹陷北带捕获的包裹体中油的成熟度从低到高呈连续变化。观察到的发蓝白色荧光的油包裹体荧光光谱主波长均小于500nm,黄色荧光的油包裹体荧光光谱主波长大于500nm。油包裹体荧光光谱参数主波长和Q值反映发蓝白色和黄色荧光的油包裹体中饱和烃、芳烃、非烃含量和API明显不同,发蓝白色荧光的油包裹体中的烃类具有密度相对较小、成熟度较高的特征。定量荧光和群体包裹体成分结果也表明由于发蓝白色和黄色荧光的油包裹体成分不同导致QGF光谱以及TSF参数都具有明显的区别,发蓝白色荧光的油包裹体甲烷含量偏高,而发黄色荧光的油包裹体C_7-C_9含量相对偏高。

英文摘要：

The composition of oil inclusions is crucial for the oil-source correlation and fluid inclusions *PVT* modeling. In this paper, the compositions of oil inclusions in the sandstone reservoir from the third and fourth members of the Shahejie Formation in the north of Dongying Depression are analyzed by combination of the fluorescence spectra, quantitative fluorescence technology and bulk oil inclusions compositions analyse with crushing on line. The results of fluorescence spectra show that the fluorescence colour of the oil inclusions change continuously from yellow-with yellow-white-white blue to blue and the λ_{max} is ranged from 445nm to 550nm, which indicate that the maturity of the oil in the inclusions which are trapped in the north of Dongying Depression change continuously. The λ_{max} of the fluorescence spectra is less than 500nm for the observed oil inclusions with the fluorescence colour of the white blue and more than 500nm for the observed oil inclusions with the fluorescence colour of the yellow. The λ_{max} and Q value of the fluorescence spectra indicate the difference in the content of the saturate, aromatic, NSO compositions and API gravity between the oil inclusions with the fluorescence colour of the white blue and yellow, which indicate the oil inclusions with the fluorescence colour of the white blue have the lower density and higher maturity. The results of quantitative fluorescence and bulk oil inclusions compositions analyse also show the difference in the QGF spectra and TSF parameters for the two types of oil inclusions. The methane in the oil inclusions with the fluorescence colour of the white blue is higher and the contents of C_7-C_9 is lower than the oil inclusions with the yellow fluorescence colour.

关键词：东营凹陷北带 油包裹体 荧光光谱 定量荧光 成分分析

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