准噶尔盆地中部Ⅲ区块原油中25-降藿烷分布特征与成因意义

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作者	单位	E-mail
秦黎明	中国石油大学石油天然气成藏机理教育部重点实验室，北京102249	qinliming2006@yahoo.com.cn
张枝焕	中国石油大学石油天然气成藏机理教育部重点实验室，北京102249	
李伟	中国石化国际勘探开发公司，北京100083	
杨永才	中国石油大学石油天然气成藏机理教育部重点实验室，北京102249	
袁东山	中国石油大学石油天然气成藏机理教育部重点实验室，北京102249	

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中文摘要:通过对准噶尔盆地中部Ш区块原油或油砂抽提物的饱和烃气相色谱-质谱分析,研究了原油或油砂抽提物中25-降藿烷的分布规律.结果表明,不同井区或同一口井不同深度(层的原油25-降藿烷的相对含量存在比较明显的差别,表明其所遭受的生物降解程度有所差异,沿构造带从南到北,同一油层中原油的生物降解程度增强,比如位于构造北部(构造部位相对高的永1井、永3井侏罗系原油25-降藿烷丰度较高,表明生物降解比较明显,而位于南部(构造低部位)的永6井白垩系和侏罗系油层中的原油均无明显的生物降解现象;同一口井随深度增加物降解作用将弱,如永2井浅部白垩系油层的原油降解较严重,而深部西山窑组的原油降解作用则不明显.根据原油生物降解的特征,结合车-莫古隆起调整对研究区油气成藏的影响,讨论油生物降解差异分布的成因机制.

中文关键词:原油类型 生物降解作用 25-降藿烷 成因机制 准噶尔盆地

The Distribution and Genetic Mehhanism of 25-Norhopane from the Ⅲ block in Central Junggar Basin

Abstract:Geochemical characteristics of saturated and aromatic hydrocarbons from crude oil or core extracts in the Ш block of Junggar basin were investigated by gas chromatography-mass spectrometry,and the distribution of 25-norhopanes was studied.The results indicate that the relative abundances of 25-norhopanes differ clearly and there are distinct levels of biodegradation in different wells or even along the vertical variation of one well.Along the structural belt from the south to the north,the biodegradation the crude oils in the same formation becomes severer in sequence.For example,the relative abundance of the 25-norhopanes is higher in Jurassic crude oil of Yong 1 well and Yong 3 well in the upper structural section(the relative upper structural section),but it is lower in Jurassic and Cretaceous oil layers of Yong 6 well(the relative lower structural section).And also the levels of biodegradation changes increase with depth.The relative abundance of 25-norhopanes in Xishanyao Formation crude oil is higher at the surface of Yong 2 well,but it is lower in crude oil from the bottom of Xishanyao Formation in Yong 2 well.Based on characteristics of biodegradation and adjustment of Chepaizi-Mosuowan paleo-uplift,the genetic mechanism of oil/gas reservoir biodegradation was studied.