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Progress in the Organic Matter Study of Immature Oils in the Qaidam Basin

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Abstract

There are low-richness organic matter and high hydrocarbon translation ratio of Tertiary hydrocarbon source rocks in Qaidam basin. It was formed in environment of salt water and deoxidization. It's characteristic differ from eastern petroliferous basin of China. Especially, nearly 80 percent of the proved oil resources in Qaidam Basin are immature oil. In order to explain this anomalous feature, we have improved the traditional method of kerogan extraction and combined the determination of kerogan type with maceral analysis of thin-sections of mudstone. Writers have identified *Botryococoous* and *Coccolithophorida*, which are enriched fatty acid. According to our research, it is concluded that *Botryococoous* and *Coccolithophorida* are the real organic matter that forms the immature oil deposits in the Qaidam Basin.

Key words: immature oil; organic matter; *Botrycococus*; *Coccolithophorida*

黑云母-钙质角闪石温度计初步研究

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利用新近修正的石榴石-黑云母温度计(Holdaway, 2000)和石榴石-斜长石-角闪石-石英压力计(Kohn and Spear, 1990)，根据从文献中收集的角闪岩、变泥质岩、变辉长岩和变粒玄岩的相关资料，采用经验标度方法，本文首次标度了适用于 560～800℃、0.26～1.4GPa 的黑云母-钙质角闪石温度计。其中，黑云母作为对称的 Fe-Mg-Al^{IV}-Ti 四元固溶体，角闪石简化为对称 Fe　Mg 二元固溶体。该温度计计算温度与石榴石-黑云母温度计相差不超过±50℃，并且能准确区分低角闪岩相、高角闪岩相、麻粒岩相的递增变质带中岩石变质温度系统有规律的变化。±0.2GPa 的压力估算误差和±5%的矿物电子探针分析误差给该温度计带来的偶然误差为±16℃。为和 Holdaway (2000)保持一致，标度及应用该温度计时，黑云母中三价铁含量确定为 11.6%，角闪石中三价铁含量则根据 Dale 等人(2000)的方法计算。本文的黑云母-钙质角闪石温度计适用于中级至高级的基性变质岩石和泥质变质岩石。

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