

The Effect of Temperature on the Formation or Release of Steranes

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Key Words

temperature, sterane, formation, release

Sample and Experiments

Steranes are regarded as biomarkers for the existence of eukaryotes and molecular oxygen[1,2],but this view generated great controversy [3,4]. No sterane series compounds were detected in the Xiamaling Formation immature marine shale samples of the Mesoproterozoic, northern China. However, abundant and complete C₂₇-C₂₉ sterane series compounds were detected in the products of hydrous pyrolysis experiments(250°C-390°C). The main contributors to the organic matter were prokaryotes rather than eukaryotes.

Discussion

Our research indicates that the formation or release of steranes in the Precambrian sediments may be related not only to the source of the organisms but also, to some extent, to metamorphism or a thermal event that the sedimentary organic matter had undergone. Temperature is one of the key factors for the formation or release of sterane.

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[1]Brocks, J.J.(1999). *Science* 285, 1033-1036.[2] Kopp, R.E.(2005). *P NATL ACAD SCI USA* 102, 11131-11136.[3]French K.L.(2015). *PNAS* 112(19),5915-5920.[4] Rasmussen, B. 2008. *Nature* 455, 1101-1104.