

## 古代石盐岩流体包裹体均一温度分析方法及古环境解释

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**中文摘要:** 由于石盐岩中的流体包裹体保留了其沉积时的古水温和组分信息, 一直是古环境和矿床地质研究中的重要工作, 但由于石盐岩易于塑性变形的特性, 给其研究带来很大困难。本文主要针对石盐岩流体包裹体均一温度分析方法, 从单一液相包裹体均一温度测试的冷冻条件和样品经历高温改造后测试结果的可靠性两方面进行了实验。实验结果表明: 在不发生明显的完全冻结结冰情况下, 不同冷冻条件下形成气泡后均一温度差别不大(低于 $3.6^{\circ}\text{C}$ )。然而, 一旦包裹体发生了完全结冰的现象, 其均一温度比冷冻至 $-18^{\circ}\text{C}$ 条件下可高出 $47.8^{\circ}\text{C}$ 。实验同时表明高温( $110^{\circ}\text{C}$ 以上)会引起石盐流体包裹体的均一温度发生明显变化。没有受到高温影响和测试过程中的低温冷冻干扰情况下, 以低的升温速率获得的石盐中单一液相包裹体均一温度可以代表石盐形成时的古水温, 其与石盐沉积时的大气温度较为接近, 可用于古气候研究。

**中文关键词:** [均一温度](#) [冷冻](#) [高温](#) [流体包裹体](#) [石盐岩](#)

## Analytical Method and Paleoenvironmental Interpretation of Fluid Inclusion Homogenization Temperature of Ancient Halite

**Abstract:** The study of fluid inclusions in halite is an important job in research on paleoenvironment and deposit geology, because they contain the important information concerning paleotemperature of lake water and rock components. The characteristics of plasticity of halite, however, cause many difficulties in the study. In this paper, homogenization temperature (Th) of fluid inclusions is focused on the finding out the proper research methods. Two kinds of experiments were done. One was conducted by using simple freezing condition for homogenization temperature of liquid inclusions while the other method used high temperature reformation condition based on the premise of enough reliability of the test results. The results show that the homogenization temperatures (lower than  $3.6^{\circ}\text{C}$ ) of bubbles formed under different freezing conditions differ insignificantly on the condition that the inclusions are not wholly iced up. However, once the inclusions are wholly iced up, their homogenization temperatures are  $47.8^{\circ}\text{C}$  higher than those measured under the freezing condition of  $-18^{\circ}\text{C}$ . Meanwhile, the experiments also indicate that high temperature (higher than  $110^{\circ}\text{C}$ ) can cause obvious changes in the Th of halite fluid inclusions. The Th of single liquid inclusions within halite obtained from slowly elevating temperature condition can represent the paleowater temperature when halite was formed, which was close to the atmospheric temperature when halite was deposited, so it can be used for paleoclimate research.


**keywords:** [homogenization temperature](#) [freezing](#) [high temperature](#) [fluid inclusion](#) [halite](#)

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