

检索...

检索

高级检索 (<http://www.nggs.ac.cn/CN/1672-1926/home.shtml>)

作者投稿

专家审稿

编辑办公

天然气地球科学 (<http://www.nggs.ac.cn>)

• 非常规天然气 •

◀ 上一篇 (<http://www.nggs.ac.cn/CN/abstract/abstract3652.shtml>)

模拟冻土区水合物地层骨架的人造岩心实验研究

郑明明, 蒋国盛, 宁伏龙, 刘力, 张凌, 李实, 张可, Chikhotkin V.F. ▾

Experimental Study on Artificial Core Samples of Simulating Hydrate Bearing Sediment Skeleton in Permafrost

ZHENG Ming-ming, JIANG Guo-sheng, NING Fu-long, LIU Li, ZHANG Lin, LI Shi, ZHANG Ke,Chikhotkin V.F. ▾



PDF (PC)

140

摘要/Abstract

摘要 :

目前,天然气水合物物性认识和资源评价研究都受到了天然岩心来源的极大限制。因此,开发出一套贴近于水合物地层的人造岩心技术特别是基础骨架制备思路显得尤为必要。从实际水合物地层特性出发,选取地质资料丰富、水合物成藏条件良好的美国阿拉斯加北部斜坡冻土区Mount Elbert Unit C-GH1井段地层作为模拟对象,选用石英砂环氧树脂压制胶结岩心方法,通过全面实验分析了影响人造岩心渗透率的主要因素,然后以渗透率和孔隙度为实验指标设计正交实验研究各因素对指标的影响,确定了与目标地层渗透率和孔隙度最为接近的2个配方,并通过力学单轴抗压强度值的比较进一步明确了较优配方。实验研究结果表明,设计的较优配方与目标地层的粒径配比、渗透率、单轴抗压强度和密度基本相同,孔隙度则较为接近,采用这种技术流程可以制备出贴近原位的水合物沉积物骨架。

关键词: 天然气水合物, 人造岩心, 正交实验, 渗透率, 孔隙度, 力学强度

Abstract:

Understanding of physical properties and resource evaluation of gas hydrate have been largely limited by the source of natural cores. Therefore, developing a manufacturing method of artificial cores which are similar to gas hydrate bearing sediment, especially the ideas of producing basic skeleton for simulating hydrate reservoirs are indispensable. Firstly, this article analyzed the characteristics of real hydrate bearing sediments, chose unit C-CH1 in Mount Elbert, Alaska North Slope as target simulated stratum with plenty of geological data and rich gas hydrate accumulation, adopted cementation of quartzite and epoxy for simulating real stratum. Secondly, comprehensive experiment was used to determine the main factors of affecting artificial core samples' permeability, then orthogonal experiment of target values of permeability and porosity was designed to analyze the effects of factors on experiment target values. Finally, according to the experimental results, two core sample formulas were determined which are similar to target simulation stratum and then the better one was chosen by comparing uniaxial compressive strength values. The experimental results indicate that particle gradation, permeability, uniaxial compressive strength and density of the final formula are almost the same to target hydrate stratum's and their porosities are similar. This technique process can be used to prepare artificial core samples which are close to the in-suit hydrate bearing sediment skeleton.

Key words: Gas hydrate; Artificial core sample, Orthogonal experiment, Permeability; porosity, Mechanical strength

中国分类号:

TE132.2

参考文献

相关文章 15

Metrics

本文评价

推荐阅读 0

✉ Email Alert (../alert/showAlertInfo.do) 📡 RSS (../rss/showRssInfo.do)

地址：甘肃省兰州市天水中路8号 (730000)

电话：(0931)8277790 Email: geogas@lzb.ac.cn

版权所有 © 2018 天然气地球科学 编辑部



(<http://www.miitbeian.gov.cn>)

陇ICP备05000311号-2