天然低渗岩芯分形维数变化原因分析

景贵成，刘福海，俞 理

(中国科学院 渗流流体力学研究所，河北 廊坊 065007)

摘要　基于相似维数的概念提出用常规压汞资料或图像分析测定天然低渗岩芯分形维数的方法，并推导分形维数的计算公式。利用油田的天然岩芯压汞资料数据绘制双对数曲线，并求出多孔介质分形维数，分析导致岩芯具有单一分形或多重分形的原因，得出如果沉积条件不变则分形维数唯一，而沉积条件发生明显改变则分形维数多变的结论。

关键词　岩石力学；分形维数；低渗岩芯；沉积条件；孔隙结构

分类号

ANALYSIS OF CHANGEABLE CAUSE FOR THE FRACTAL DIMENSION IN THE NATURAL LOW-PERMEABLE CORES

JING Gui-cheng，LIU Fu-hai，YU Li

(Institute of Porous Flow and Fluid Mechanics，The Chinese Academy of Sciences，Langfang 065007，China)

Abstract

The effects of pore structure on the fractal dimension were studied. Based on the similar dimension，the method of measuring the fractal dimension was brought forward in natural low-permeable cores through traditional intrusive mercury data or image analysis，and the calculated formula for the dimension was achieved. By using the intrusive mercury data from natural cores，the curves were protracted and the fractal dimensions in porous media were calculated. In some formation segments，where there are only compaction and solution under pressure，the fractal dimension has diagenesis；while in other segments，the pore structures become more complicated due to intensive epigenesises，such as secondary quartz enlargement，recrystallization，and corrosion. Therefore there are several dimension values.

Key words　rock mechanics；fractal dimension；low-permeable core；depositional condition；porous structure

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