山东大学学报(工学版) 2012, 42(2) 52-57 DOI: ISSN: 0412-1961 CN: 21-1139

土木工程

矸石山内部粒径分布规律的实验研究

崔乃鑫,赵芳芳,梁冰,盖迪

辽宁工程技术大学力学与工程学院, 辽宁 阜新 123000

摘要:

以阜新海州立井矸石山为原型,通过矸石山相似模拟实验,分析了煤矸石粒径分布特征,在此基础上利用Matlab图像处理功能画取钻孔,实现矸石山实体模型的三维构建。实验结果表明:矸石山主要存在3个区域,分别为分布于矸石山上部区域的小粒径煤矸石、分布于矸石山中部区域的中等粒径煤矸石和分布于矸石山底部的大粒径煤矸石;在区域交界处形成了锯齿状条纹结构,其条纹数量在轨道坡两翼方向上逐渐减少;同时受不同粒径煤矸石分布区域的影响,矸石山整体表现为中上部区域有较大的容重,周边位置容重相对较小。

关键词: 相似模拟实验 矸石山 粒径分布 剖面 柱状图

Experiment on internal particle size distribution law of a waste dump

CUI Nai-xin, ZHAO Fang-fang, LIANG Bing, GAI Di

Department of Mechanics and Engineering Sciences, Liaoning Technical University, Fuxin 123000, China

Abstract:

According to similarity simulation theory, the characteristics of particle size distribution in the coal mine waste damp of Haizhou coal mine in Fuxin was analyzed. A three dimensional physical model was built according to the drilling histogram on the physical model by Matlab image processing technology. The results showed that the interior of a whole coal mine waste dump could be divided into three parts. The smaller coal gangue particles were mainly distributed around the upper area of the dump and the medium particle size of coal gangue were located in the central region, and the larger size of coal gangue concentrated around the bottom of the dump. A strip of serrated structure could be found around the junction between two regions. The number of strips gradually reduced along the wings of track slope of the dump. Influenced by different particle size of the coal gangue distribution in the dump, the value of the coal gangue unit weight was higher in the middle and upper area, while in the surrounding position, the value of the unit weight was lower.

Keywords: similarity simulation experiment coal mine waste dump particle size distribution profiles histograms

收稿日期 2011-06-22 修回日期 网络版发布日期

DOI:

基金项目:

国家自然科学基金资助项目(50974070)

通讯作者:

作者简介: 崔乃鑫(1963-),男,黑龙江哈尔滨人,教授,主要研究方向为煤矿灾害预测与防治.E mail:zffhello@163.com

作者Email:

PDF Preview

参考文献:

本刊中的类似文章