

论文

开滦矿区煤岩动力灾害的构造应力环境

韩 军, 梁 冰, 张宏伟, 朱志洁, 荣 海, 张普田, 梁和平

- 1. 辽宁工程技术大学 矿业学院, 辽宁 阜新 123000;
- 2. 开滦(集团)有限责任公司, 河北 唐山 0630005. 开滦集团有限责任公司

摘要:

运用空心包体地应力测量方法进行了开滦矿区地应力测试, 系统分析了开滦矿区地应力场的类型、作用特征及其与区域构造的关系, 在此基础上分析了开滦矿区煤与瓦斯突出、冲击地压和底板突水等煤岩动力灾害与矿区地应力场之间的内在关系。研究表明开滦矿区地应力场属于大地动力场, 地应力以水平构造应力为主导, 且属于高应力区。矿区地应力场的量值和方位受开平向斜的控制, 开平向斜轴部区域应力值最高, 随着远离轴部, 应力值逐渐降低; 最大主应力方位与开平向斜轴部走向近似垂直。构造应力场对开滦矿区煤体结构、瓦斯参数、煤体渗透特性等具有控制作用, 开滦矿区煤与瓦斯突出和冲击地压发生在地应力值最高的开平向斜轴部区域, 底板突水发生在地应力最低的开平向斜翼部区域。开滦矿区煤岩动力灾害具有统一的构造应力环境。

关键词: 开平向斜; 煤与瓦斯突出; 冲击地压; 底板突水; 构造应力

Tectonic stress environment of coal and rock dynamic hazard in Kailuan mining area

Abstract:

Using hollow inclusion method measure the in situ stress of Kailuan mining area. In situ stress field types, interaction behavior and the relationship between regional structure was systematically analyzed. Based on this, the inner relationship between in situ stress field and coal and gas outburst, rockburst, water inrush and other coal and rock dynamic disaster was analyzed. Studies show that in situ stress field in Kailuan mining area belongs to the Earth dynamical field, the horizontal tectonic stress is dominant, and it belongs to the high stress zone. In situ stress magnitude and orientation is controlled by Kaiping syncline. Stress value is the highest in Kaiping synclinal axis section. As far away from the axis, the stress value decreases gradually. The maximum principal stress orientation and axis trend of Kaiping synclinal is approximate vertical. At the same time tectonic stress field controls coal structure, coal gas parameters, permeability and so on. In the Kailuan mining area, coal and gas outburst and rock burst occurred in synclinal axis section of Kaiping where stress value is highest, water inrush occurred in the Kaiping syncline wing where stress value is the lowest. Coal and rock dynamic disaster in Kailuan mining area is in the unified tectonic stress environment.

Keywords: Kaiping syncline; coal and gas outburst; rockburst; water inrush; tectonic stress

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通讯作者: 韩军

作者简介: 韩 军(1980—), 男, 内蒙古临河人, 副教授, 博士
作者Email: hanj_intu@163.com

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