

论文

不同突出口径条件下煤与瓦斯突出模拟试验研究

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摘要:

使用自主研发的煤与瓦斯突出模拟试验装置开展了不同突出口径条件下煤与瓦斯突出模拟试验, 以分析石门揭煤时含瓦斯煤体暴露面面积对煤与瓦斯突出发生发展的影响。分析结果表明: 突出口径越大, 煤体越易于破裂失稳并发生煤与瓦斯突出, 所以, 石门揭煤时煤体暴露面面积对煤与瓦斯突出有着一定的控制作用, 合理设计揭煤工艺控制煤层新暴露面面积可有效防治煤与瓦斯突出; 突出口径影响破断煤体中瓦斯的放散, 使得煤体中瓦斯压力梯度变化趋势不同; 突出口径越小, 煤与瓦斯突出持续时间越长, 瓦斯压力降低越慢, 瓦斯对煤体的粉碎性越不明显, 突出强度也越小, 也因此改变了突出时温度变化量, 结果在某种程度上说明了突出口径影响含瓦斯煤的破断失稳和抛出特性。

关键词: 煤与瓦斯突出; 揭煤暴露面面积; 压力梯度; 温度

Coal and gas outburst analogous test under the different diameter of exposed coal seam surface

Abstract:

In order to study how the variation in the diameter of exposed coal seam during uncovering coal may influence coal and gas outburst properties, a coal and gas outburst analogous test device was developed to simulate coal and gas outburst, under the conditions of the different diameter of exposed coal seam surface. The experimental results show that the exposed area of coal seam has some effect on coal and gas outburst. It is displayed mainly in the following aspects: the larger the exposed area, the more easily the outburst occurs during the rock cross-cut coal uncovering, so it is possible to control outbursts by decreasing the exposed area during coal uncovering. The gas emission in coal failures is also effected by the exposed diameter, and this will change the trend of gas pressure gradient. The smaller the exposed area, the longer the coal and gas outburst lasts, the slower the gas pressure in coal seam, and less obviously the crushing capacity of gas. Under the smaller exposed area, the authors observed the smaller coal and gas outburst intensity and the lower variable quantity of temperature. The results also indicate that the size of exposed area affects the instability, destruction and throw-out characteristics of gas-containing coal.

Keywords: coal and gas outburst; exposure degree during coal uncovering; pressure gradient; temperature

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