

论文

煤中可溶有机质对瓦斯吸附与解吸特性的影响

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摘要:

为了研究煤中可溶有机质对瓦斯吸附与解吸特性的影响,在常温、常压下,用四氢呋喃抽提了淮北矿区的青东8煤、许疃3煤和孙疃8煤中的有机质,对比分析了原煤和残煤的瓦斯吸附量,常压真空解吸量和放散初速度 Δp 的变化规律。结果表明:抽提后,青东8煤和许疃3煤瓦斯吸附量减少,抽提前后瓦斯吸附增量随压力增加先增大后减小, Δp 减小;孙疃8煤瓦斯吸附量无明显变化, Δp 增大;3种煤样的常压真空瓦斯解吸量均增大。分析认为:突出煤层中,瓦斯溶解于煤中可溶有机质,形成固溶体,增加了煤层瓦斯含量,提高了瓦斯放散速度,煤层突出危险性增大;非突出煤层中可溶有机质占据了部分孔隙,可减缓瓦斯释放,降低瓦斯释放速度。

关键词: 瓦斯 吸附 解吸 可溶有机质 溶剂抽提

Effect of soluble organic matter in coal on gas sorption and desorption characteristics

Abstract:

In order to research the effect of soluble organic matter in coal on characteristics of gas sorption and desorption, the organic matters in coal seam 8(Qingdong), coal seam 3(Xutuan) and coal seam 8(Suntuan) of Huaibei mining area were extracted by THF at normal temperature and pressure. The gas adsorption capacity, vacuum desorption volume at normal pressure and variation of Δp of raw coal and residual coal were comparatively analyzed. After extraction, the Δp and gas adsorption capacity of coal seam 8(Qingdong) and coal seam 3(Xutuan) are reduced. Meanwhile, the increment for gas adsorption capacity of those coal seams increases first and then decreases with the growing of gas pressure. In contrast, the gas adsorption capacity of coal seam 8(Suntuan) has not significant change. However, Δp of coal seam 8(Suntuan) increases. The vacuum desorption volume at normal pressure of all these coal samples is increased. The gas dissolutes in soluble organic matter of coal and forms solid solutions in outburst coal seams, which lead to the increase of coal seam gas content, gas emission speed and coal seams outburst risk. Soluble organic matter occupies part of the pores in non outburst coal seam, which can slow down the gas release and reduce the gas release rate.

Keywords: gas; sorption; desorption; soluble organic matter; solvent extraction

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