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论文

孔隙压力作用下泥岩三轴蠕变实验研究

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摘要：

在具有孔隙压力系统的岩石三轴蠕变仪上,对泥岩进行了考虑孔隙压力作用的三轴蠕变实验.实验中不仅考虑了轴压σ_1和围压σ_3对蠕变的影响,而且考虑了孔隙压力p在泥岩蠕变过程中产生的重要影响.通过不同应力水平下的蠕变实验,对比含孔隙压力和不含孔隙压力的蠕变实验曲线,表明当轴压σ_1和围压σ_3一定时,随着孔隙压力p的增加,蠕变变形量将会减小,在稳态蠕变阶段的应变率也会减小,在一定程度上会延长蠕变三个阶段的蠕变时间.并采用经典蠕变模型对实验结果进行分析.

关键词： 孔隙压力; 泥岩; 三轴实验; 蠕变

Investigation on triaxial creep claystone under pore pressure

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Abstract:

Triaxial creep experiments of a kind of claystone under pore pressure were performed with a triaxial creep testing device which has the system of pore pressure. The effects of axial stress σ_1 and confining pressure σ_3 on the creep, and the pore pressure p were investigated. By creep experiments with different stress states and analyzing the results of different pore pressures, it was found that for constant axial stress and constant confining pressure, with the increase of pore pressure, the deformation amount of creep was reduced, the steady　state creep strain rate was decreased, and the three　state of creep time became longer. The creep behavior of claystone was analyzed with a classic creep model.

Keywords: pore pressure; claystone; triaxial creep experiments; creep

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