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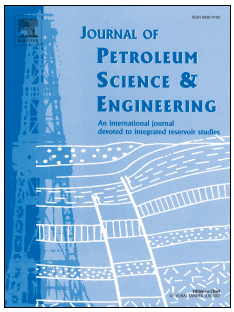

Experimental study on sorption induced strain and permeability evolutions and their implications in the anthracite coalbed methane production

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Experimental study on sorption induced strain and permeability evolutions and their implications in the anthracite coalbed methane production

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Abstract: The dynamic changes of strain-induced strains and permeability are two key parameters to determine the production profile of coalbed methane (CBM) wells. Recent field observations from a group of anthracite CBM wells demonstrate that the permeability dramatically changed with depletion. In addition, different drainage strategies will induce different permeability evolution due to different matrix shrinkage behaviors. We carried out a series of experimental measurements on sorption induced strain evolution and its influence on permeability evolution for anthracites using a desorption-seepage testing system. The relationship between sorption pressure and its induced strains was studied. The results show that both axial and radial strains of a coal specimen increase with continuous methane injection pressure. It was found that the strain perpendicular to the bedding plane is higher than that parallel to the bedding plane. Under constant confining and axial stresses, the effective stress decreases with the increase of methane pressure,

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