

The Measurement of Coal Porosity with Different Gases

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Sorption process could be used to study different characteristics of coal structure, like gas content (coalbed methane potential of a deposit), gas diffusion, internal surface area, etc.

This paper deals with coal porosity (micro-, meso- and macroporosity) studies in relation to molecule sizes of different gases. Since some gases can penetrate in the total coal structure and some others not, the authors used gases with different molecule sizes and forms: helium, methane, carbon dioxide, and nitrogen. Due to the different behaviour of gases under pressure and temperature conditions, it is critical, in each case, to know the gas characteristics, especially the compressibility factor.

Experimental conditions of the sorption process were as follows: temperature in the bath 35°C; sample with moisture equal or greater than the Moisture-Holding Capacity, particle size of sample less than 212 μm and mass between 80 and 100 g.

Additionally, the authors used electronic microscopy to determine coal pore dimensions, pore connections and eventual presence of mineral matter.