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An experimental study of sorption characteristics for the sub-bituminous coal considering size effect

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In this study, adsorption and desorption characteristics were analyzed by changing the particle size of coal in order to estimate the CBM production potential. We used sub-bituminous coal samples from Kotabaru field in Indonesia and volatile matter, ash and moisture content analyzed. All samples were crushed and they are divided into seven groups with particle size from 50 mesh to 20 mm. For each sample, volumetric method was applied to measure the Langmuir pressure (PL), Langmuir volume (VL), and equilibrium time. From results, as particle size increases, Langmuir volume that is the maximum gas content of the sample decreases due to the reduction of specific surface area, but they show a little difference. In contrast, in desorption process, more time was needed for the large particle size to reach an equilibrium state because desorbed gas flow through the longer path and diffuses by the concentration difference. In conclusion, desorption characteristics with coal size should be considered because the pore volume, pore size, and effective surface area are different. Moreover, Langmuir isotherm measurement for the lump coal considering cleat spacing is essential to obtain a more precise CBM production profile.

Biography

Donghyeon Kim received his BS from Chonbuk National University. Currently, he is MS student in Petroleum Engineering Lab. His experiment topic is sorption characteristic of various coal size by methane gas.

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