HUBUNGAN KARAKTERISTIK BATUBARA DAN KARAKTERISTIK PORI PADA BATUBARA DAERAH PALARAN DAN SAMARINDA ULU, KALIMANTAN TIMUR

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Batubara masih menjadi sumber energi yang banyak digunakan di Indonesia, dan didukung oleh melimpahnya daerah penghasil batubara di Indonesia seperti Cekungan Kutai. Namun batubara termasuk sumber energi yang banyak menghasilkan polusi, sehingga perlu dicari alternatif lain untuk mengekstraksi batubara, salah satunya adalah *coalbed methane* (CBM) atau gas metana batubara, yang tersimpan secara adsorpsi pada pori. Penelitian dilakukan pada batubara dari wilayah Palaran dan Samarinda Ulu, Kalimantan Timur dengan formasi pembawa batubara adalah Formasi Balikpapan dan Formasi Pulaubalang. Berdasarkan hasil pengukuran stratigrafi terukur, terdapat 23 *seam* batubara, dengan 6 *seam* batubara yang dijadikan fokus penelitian.

Karakteristik geokimia batubara pada daerah penelitian adalah sebagai berikut: kadar lengas antara 7,39% – 10,93%, kandungan abu antara 4,00% – 15,38%, kandungan zat terbang antara 31,72% – 67,61% dan kandungan karbon tertambat antara 15,46% – 48,40%. Komponen maseral yang dominan pada batubara daerah penelitian didominasi oleh grup maseral huminit (52,91% – 78,73%), maseral liptinit memiliki persentasi 6,55% – 34,73% dan maseral inertinit 3,09% – 24,91%. Peringkat batubara daerah penelitian termasuk ke dalam *subbituminous*. Luas permukaan batubara daerah penelitian bernilai antara 1,797 – 21,482 m^2/g, dan volume pori antara 0,0038 – 0,0371 cc/g. Pori yang dominan berjenis *macropore*, sehingga karakteristik pori yang dianalisis adalah karakteristik pori *macropore*. Berdasarkan korelasi, karakteristik batubara yang mempengaruhi karakteristik pori adalah kadar abu, kandungan karbon dan batubara murni, serta komponen maseral huminit dan inertinit yang memiliki struktur dinding sel yang utuh. Korelasi positif ditemukan pada komponen maseral huminit, sedangkan korelasi negatif ditemukan pada peringkat, komponen maseral inertinit dan liptinit. Kandungan abu hanya memiliki korelasi positif terhadap volume pori.

Kata kunci: karakteristik batubara, karakteristik pori batubara, Palaran, Samarinda Ulu

CORRELATION BETWEEN COAL AND PORE CHARACTERISTIC OF PALARAN AND SAMARINDA ULU COAL, EAST KALIMANTAN

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Abstract

Coal as energy source is still used commonly in Indonesia, and this fact is also supported by abundant places of coal reserves like Kutai Basin. But coal produces so much pollution, thus it is important to find other alternative ways to extract coal and one of the solutions is coalbed methane (CBM) which is adsorbed on the pore surface. This study is conducted on Palaran and Samarinda Ulu's coals, East Kalimantan with Balikpapan and Pulaubalang Formation as the coal-bearing formations. Based on measured stratigraphy result, there are 23 coal seams, with 6 seams as the main seams analyzed in this study.

Geochemical characteristics of coals analyzed are: moisture between 7.39% - 10.93%, ash yield between 4,00% - 15.38%, volatile matter between 31.72 – 67.61%, and fixed carbon between 15.46% - 48.40%. Dominant maceral composition found in the coals is huminite (52.91% - 78.73%), liptinite percentage between 6.55% - 34.73% and inertinite percentage between 3.09% - 24.91%. Coal rank for all samples analyzed is subbituminous. Pore surface area of coal analyzed ranges between 1.797 – 21.482 m^2/g and pore volume ranges between 0.0038 – 0.0371 cc/g. Macropore-sized pore is the dominant pore type in the coals, thus pore characteristics analyzed in this study is all from macropore-type. Based on correlation, coal characteristics that affect coal pore characteristics are ash yield, coal rank, and maceral composition. Positive correlation is found in correlation with huminite percentage, while negative correlations are found in correlation with coal rank, liptinite and inertinite percentage. Ash yield only has positive correlation with pore volume and no correlation found with pore surface area.

Keywords: coal characteristics, coal pore characteristics, Palaran, Samarinda Ulu