## Accepted Manuscript

Title: Drying characteristics of low rank coals in a pressurized flash drying system

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To appear in:

 Received date:
 16-6-2017

 Revised date:
 4-8-2017

 Accepted date:
 11-8-2017

Please cite this article as: In Seop Gwak, You Ra Gwak, Ye Bin Kim, See Hoon Lee, Drying characteristics of low rank coals in a pressurized flash drying system, Journal of Industrial and Engineering Chemistryhttp://dx.doi.org/10.1016/j.jiec.2017.08.017

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## ACCEPTED MANUSCRIPT

### Drying characteristics of low rank coals in a pressurized flash drying system

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#### Highlights

- F The characteristics of pressurized flash drying of low rank coal were investigated.
- The drying ratio mostly increased with temperatures and pressures. But the drying ratio did not increase at high pressure conditions because of increasing boiling temperature.
- • The empirical equation to predict drying ratio was suggested as follows:

$$D_r = 2.82 \times R^{0.63} \times S^{0.02} \times P^{0.28} \times T^{0.65}$$

#### ABSTRACT

Drying characteristics of low rank coals were examined and determined using a pressurized flash drying system which consisted of a pressurized feeder, rolled tubes(maximum of 6 m), a cyclone, and a back pressure regulator. The effect of the operating conditions, such as pressure(maximum of 40 bar), gas outlet temperature(maximum of 300 °C), particle sizes(212~300 and 300~355 µm) and residence time(maximum of 1 s) on the drying ratio was investigated and analyzed. The study results show that temperature is a more effective factor than pressure. A correlation equation to predict the drying ratio of coals was suggested based on operation conditions.

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