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Benedict Prah, Rin Yun

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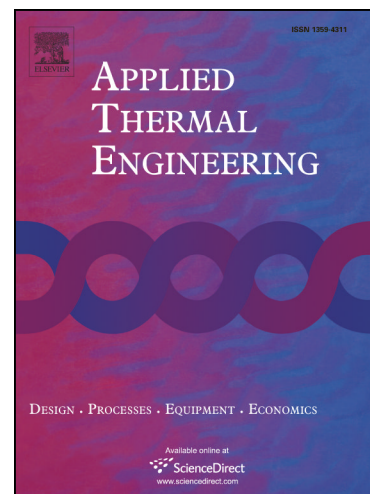
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# CO<sub>2</sub> HYDRATE SLURRY TRANSPORTATION IN CARBON CAPTURE AND STORAGE

Benedict Prah and Rin Yun\*

Hanbat National University 125 Dongseodaero, Yuseonggu, Daejeon 34158, Republic of Korea

## ABSTRACT

Based on a proposed hydrate-based gas separation and the utilization of this technology, CO<sub>2</sub> hydrate slurry transportation in pipeline from capture plants to storage sites is proposed in this paper. Two different transport processes are considered in the present study. The concept of CO<sub>2</sub> hydrate slurry transportation in pipelines has many advantages over the current approaches of CO<sub>2</sub> transportation. Transferring CO<sub>2</sub> in hydrate slurry status reduces energy input for transportation and eliminates of hydrate blockage in pipelines thus reducing the overall cost of gas transportation. The effect of CO<sub>2</sub> hydrate slurry formation in the absence and presence of anti-agglomerants is investigated in an experimental flow loop. The effect of four low dosages of 0.3, 0.5, 0.7 and 1.0 wt% of anti-agglomerant; Tween 80 (non-ionic surfactant) on CO<sub>2</sub> hydrate is investigated. Discussions on CO<sub>2</sub> hydrate formation kinetics, induction time, slurry density and slurry flow within the experimental loop are provided. In the experiment, hydrate mass fraction ranged from 8 to 32%. The result indicates that CO<sub>2</sub> hydrate slurry flow and circulation in the flow loop is significantly enhanced with anti-agglomerant.

**Key words:** CO<sub>2</sub> hydrate, CO<sub>2</sub> transportation, Anti-agglomerant, Carbon Capture and Storage, Pipeline

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