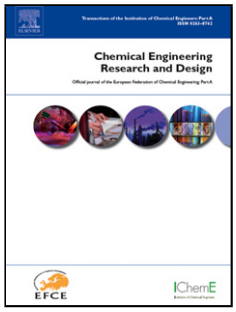

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Effects of hydrate-slurry decomposition conditions on gas generation and recovery performance

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Highlights

- Slurry decomposition conditions affected refrigerant gas recovery and separation.
- Maximum separation factors of ~50 and 20 for R22 and R134a, respectively.
- Pressure and temperature effects differed between refrigerants and N_2.
- Separation factor variations were explained based on gas-generation rates.

Abstract

Many studies have been conducted on the application of hydrate-based gas separation to recover or reduce greenhouse-gas emissions. We evaluated the effects of hydrate-slurry decomposition conditions, specifically depressurization and heating, on gas recovery and separation, by using mixtures of refrigerants R22 or R134a with N_2 as models of a greenhouse gas and a low-pressure gas,