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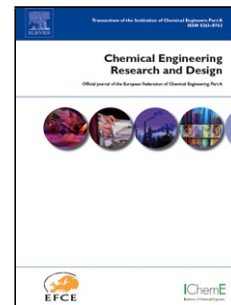
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Separation of CO₂ and N₂ from CH₄ Using Modified DD3R Zeolite Membrane: a Comparative Study of Synthesis Procedures

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Highlights

- A new procedure was presented to successful synthesis of DD3R zeolite membrane.
- In this procedure, synthesis solution with low SiO₂/H₂O ratio was used.
- Low concentration of silica source results in a dense and uniform DD3R layer.
- The modified membrane showed good performance in separation of CO₂ and N₂ from CH₄.

Abstract

The SiO₂/H₂O ratio of the synthesis solution has high importance in the synthesis of selective DD3R zeolite membrane. A DD3R membrane (M1) has been synthesized by procedure with a defined low SiO₂/H₂O ratio used mostly for the synthesis of DD3R powder. Another membrane (M2) has been synthesized by procedure with a defined high SiO₂/H₂O ratio that the synthesis of high selective DD3R membrane with this method is limited to NGK^{*}-insulators. XRD and SEM confirmed the formation of DD3R layer on the support with both methods. The surface of membranes were treated with polydimethyl siloxane solution. The results of pure gas

* Nippon (Japan) Gaishi (insulator) Kaisha (company).

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