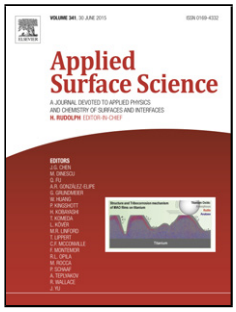

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Composites of Ionic Liquid and Amine-modified SAPO 34 Improve CO_2 Separation of CO_2-selective Polymer Membranes

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Highlights

> SAPO 34 was modified with amine groups to improve CO_2/H_2 selectivity of MMM.
> IL was loaded on modified SAPO 34 to enhance cohesion between SAPO 34 and polymer.
> MMM surface became smooth after SAPO 34 was modified with NH_2 groups and IL.
>Both CO_2 permeability and selectivity of MMM increased after the modification.
>CO_2/H_2 selectivity of MMM with IL/SAPO 34-NH_2 reached up to 22.1 at 20 °C.

Abstract

Mixed matrix membranes with ionic liquids and molecular sieve particles had high CO_2 permeabilities, but CO_2 separation from small gas molecules such as H_2 was dissatisfied because of bad interfacial interaction between ionic liquid and molecular sieve particles. To solve that, amine groups were introduced to modify surface of