Supporting information

A novel method for fabrication of high-flux zeolite membranes on supports with any geometry

Liang Yu*, Allan Holmgren and Jonas Hedlund
Chemical Technology, Luleå University of Technology, SE-971 87 Luleå, Sweden

E-mail: liang.yu@ltu.se
1. Measurement of single gas permeation of tubular zeolite CHA membranes

To evaluate the quality of the membranes, the single gas helium permeance was measured at 6 bar feed pressure and atmospheric permeate pressure at room temperature before calcination. Single gas permeation experiments of He, CO₂, H₂ and SF₆ were carried out at room temperature using 2 bar (absolute) feed pressure and atmospheric permeate pressure directly after calcination.

Single gas SF₆ permeance was employed to evaluate the quality of the tubular zeolite CHA membranes. The SF₆ molecule having a kinetic diameter of 0.55 nm can only permeate through defects and, accordingly, this test is suitable for membrane quality evaluation [1].

2. Gas permeation results of zeolite membranes

2.1 Permporometry patterns of tubular zeolite MFI membranes

![Permporometry patterns of tubular zeolite MFI membranes](image)

**Figure S1.** Adsorption branch He permporometry patterns of two tubular zeolite MFI membranes using n-hexane as adsorbate. The He permeance was measured as a function of p/p₀ of a hydrocarbon. The pressure difference over the membrane was about 1 bar and the permeate side was at atmospheric pressure.
2.2 Single gas permeance of tubular zeolite CHA membranes

Table S1. Single gas permeance of tubular zeolite CHA membranes prepared in two different batches using the same masking method. The feed and permeate pressures are 2 and 1 bar, respectively, for the test after calcination.

<table>
<thead>
<tr>
<th>Membranes</th>
<th>Before calcination</th>
<th>After calcination</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>He</td>
<td>He</td>
</tr>
<tr>
<td>M1</td>
<td>0.040</td>
<td>26</td>
</tr>
<tr>
<td>M2</td>
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<td>37</td>
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<tr>
<td>Average</td>
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Reference