Supplementary Information (SI)

High-flux nanofiltration membranes tailored by bio-inspired co-deposition of hydrophilic g-C$_3$N$_4$ nanosheets for enhanced selectivity towards organics and salts

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Fig. S1 Chemical structures of the reactive dyes tested in the study. (A): Reactive orange 1; (B): reactive orange 16; (C): reactive blue 19.
Fig. S2 Digital images of the pristine HPAN substrate and the modified membranes through bio-inspired co-deposition of the hydrophilic g-C$_3$N$_4$ nanosheets. (A): Pristine HPAN; (B): M0; (C): M1; (D): M2; (E): M3; (F): M4.
**Table S1** Chemical composition of g-C$_3$N$_4$ nanosheets before and after oxygen plasma treatment

<table>
<thead>
<tr>
<th>g-C$_3$N$_4$ sample</th>
<th>Chemical composition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C (%)</td>
</tr>
<tr>
<td>Before treatment</td>
<td>39.6</td>
</tr>
<tr>
<td>After treatment</td>
<td>32.1</td>
</tr>
</tbody>
</table>
Table S2 Performance comparisons between as-prepared membranes in this work and previously reported NF membranes in water permeability, dye retention, and salt permeation

<table>
<thead>
<tr>
<th>Membrane</th>
<th>Permeability (LMH·bar⁻¹)</th>
<th>Dye species</th>
<th>Dye rejection</th>
<th>Salt rejection</th>
<th>Ref.</th>
</tr>
</thead>
<tbody>
<tr>
<td>TFN-mZIF2 (-)</td>
<td>14.90</td>
<td>Reactive blue 2</td>
<td>99.2%</td>
<td>12.0%</td>
<td>90.0%</td>
</tr>
<tr>
<td>TMC-PEI (511 Da)</td>
<td>9.5</td>
<td>Chromotrope FB</td>
<td>98.8%</td>
<td>49.0%</td>
<td>75.9%</td>
</tr>
<tr>
<td>BHAC-PIP (570 Da)</td>
<td>15.3</td>
<td>Methyl blue</td>
<td>98.9%</td>
<td>59.6%</td>
<td>23.4%</td>
</tr>
<tr>
<td>PA-PP (570 Da)</td>
<td>7.0</td>
<td>Reactive black 5</td>
<td>99.6%</td>
<td>65.0%</td>
<td>98.5%</td>
</tr>
<tr>
<td>VES/AgCl-PEI (681 Da)</td>
<td>10.6</td>
<td>Crystal violet</td>
<td>99.2%</td>
<td>8.3%</td>
<td>12.8%</td>
</tr>
<tr>
<td>SiO₂-PSS/PES (655 Da)</td>
<td>23.3</td>
<td>Reactive black 5</td>
<td>92.0%</td>
<td>3.0%</td>
<td>10.5%</td>
</tr>
<tr>
<td>TMC-Sericin (880 Da)</td>
<td>11.9</td>
<td>Methyl blue</td>
<td>99.5%</td>
<td>40.8%</td>
<td>95.4%</td>
</tr>
<tr>
<td>PEI-g-SBMA/TMC (-)</td>
<td>13.2</td>
<td>Orange GII</td>
<td>90.6%</td>
<td>7.1%</td>
<td>50.4%</td>
</tr>
<tr>
<td>M4 (592 Da)</td>
<td>28.4±1.2</td>
<td>Reactive blue 19</td>
<td>99.8%</td>
<td>2.9%</td>
<td>7.6%</td>
</tr>
</tbody>
</table>
References


