Supporting Information

Dimensionally stable hexamethylenetetramine functionalized polysulfone anion exchange membranes

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Fig. S1. RDFs and CNs of different atoms in the dry PSF-ImOH membrane.
Fig. S2. RDFs and CNs of different atoms in the dry PSF-QuOH membrane.

Fig. S3. RDFs (solid lines) and CNs (dashed lines) of N⁺-N in the dry and hydrated (a) PSF-QuOH and (b) PSF-ImOH membranes. (WU: water uptake)
Table S1 Coordination Numbers of different atoms.

<table>
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<tr>
<th>AEMs</th>
<th>N^{+}-O_{1}</th>
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<th>N^{+}-N</th>
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<td>CN(O_{1})</td>
<td>r^a (Å)</td>
<td>CN(O_{2})</td>
<td>r^a (Å)</td>
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<td>-^b</td>
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</table>

^a Upper boundary for integration of the first shell.

^b The first peaks of the RDFs (except for the first strong peaks (<4 Å)) are very weak. This indicates the atoms are uniform distribution in the AEMs and the corresponding CNs are close to zero.

^c 4CN(N)=CN(total)-CN(one repeat unit), CN(total) is the integration of the RDFs; CN(one repeat unit) is the number of N atoms around N^{+} ion in one repeat unit, and equal to 1 for PSF-ImOH and 3 for PSF-QuOH, respectively.

Fig. S4. TGA and DTG curves of the PSF-QuOH 1.67 membrane.
Fig. S5. FTIR of the PSF-QuOH 1.94 membrane before and after 1 M KOH immersion at 60 °C for 168 h.

Fig. S6. Alkaline stability of the PSF-QuOH 1.39 after 4 M NaOH immersion at 80 °C for 264 h.
Fig. S7. $^1$H NMR spectra of BHMTA degradation in 1 M NaOH CD$_3$OD/D$_2$O (3:1).

Fig. S8. Chemical shift correlated spectroscopy (COSY) of BHMTA degradation products.