Supplementary Materials

Hole-type spacer for more stable shale gas produced water treatment by forward osmosis

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Table S1. FO membrane characteristics.

| Parameter   | Values          |
|-------------|-----------------|
| A (LMH/bar) | 1.31            |
| B (LMH)     | 1.80            |
| S (m)       | 0.000463        |

Figure S1. Experimental and simulated water fluxes produced by using 0.3 M NaCl as FS and 1.2 M NaCl as DS.
Figure S2. Experimental and simulated water flux produced by using synthetic shale gas produced water as FS and 5 M NaCl as DS.