

Supplementary Information

Tuning the nanostructure of nitrogen-doped graphene laminates for forward osmosis desalination

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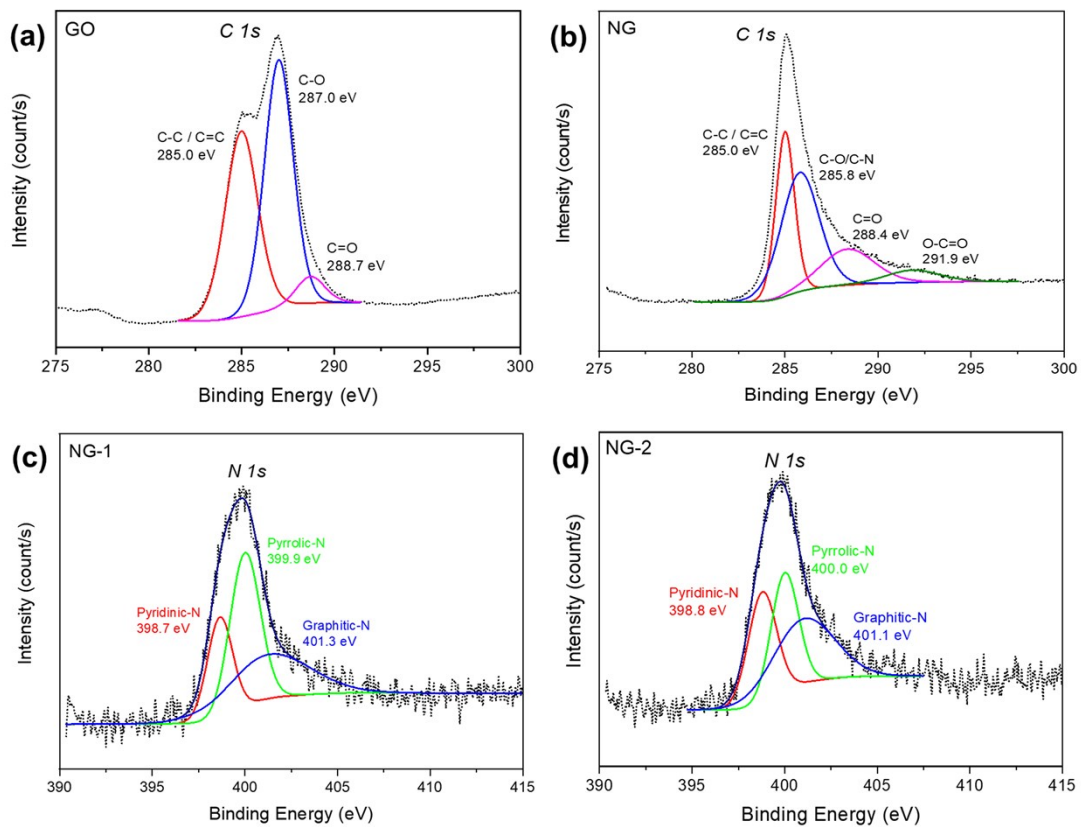


Fig. S1. XPS spectra C1s of (a) GO, and (b) NG powder. N1s of (c) NG-1, and (d) NG-2.

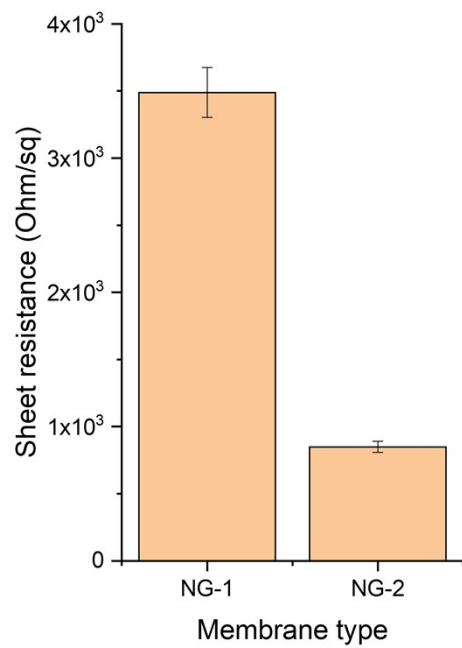


Fig. S2. Sheet resistance of NG-1 and NG-2. GO is insulator ($\sim 9 \times 10^6 \Omega/\text{sq}$).

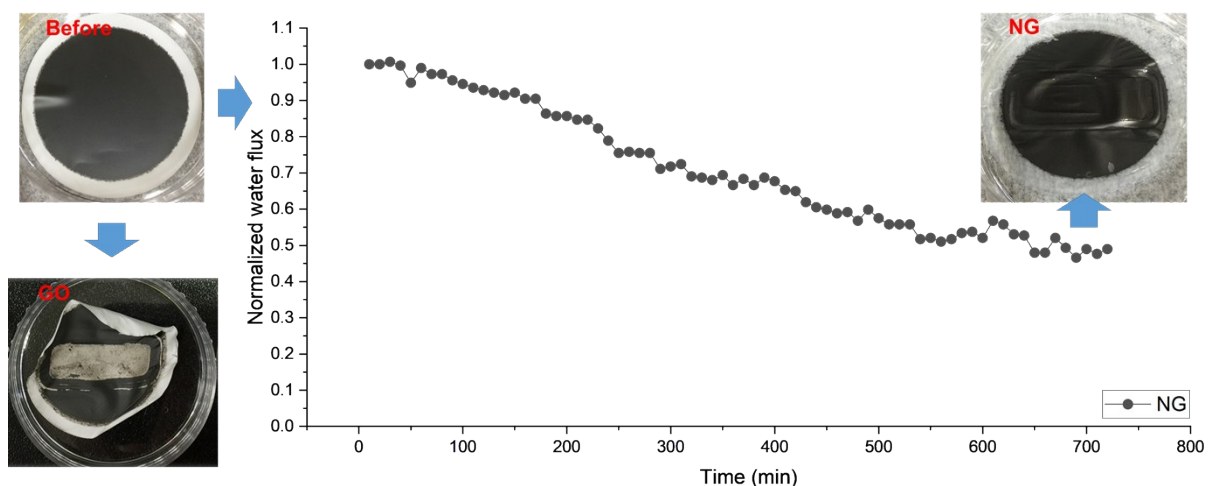


Fig. S3. Photograph of membranes by different condition (before FO testing, and after testing using GO, NG membranes) The GO membrane cannot stand cross-flow system, and sheets falls off in a flash. However, the NG membrane can resist over 12 hours under same condition.

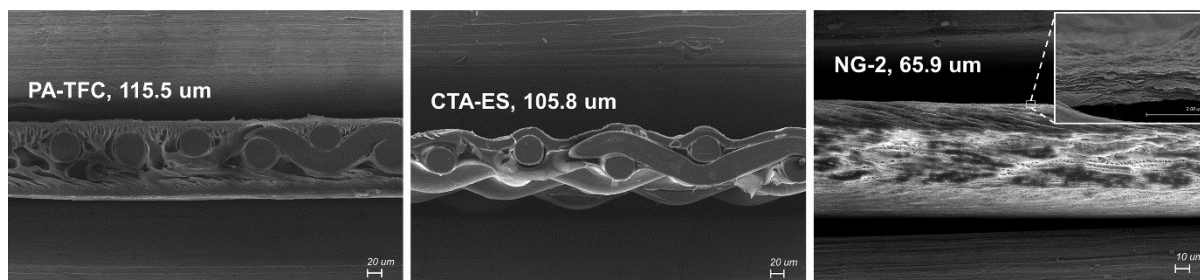


Fig. S4. SEM image (Cross-sectional view) of PA-TFC, CTA-ES, NG-2 membranes.

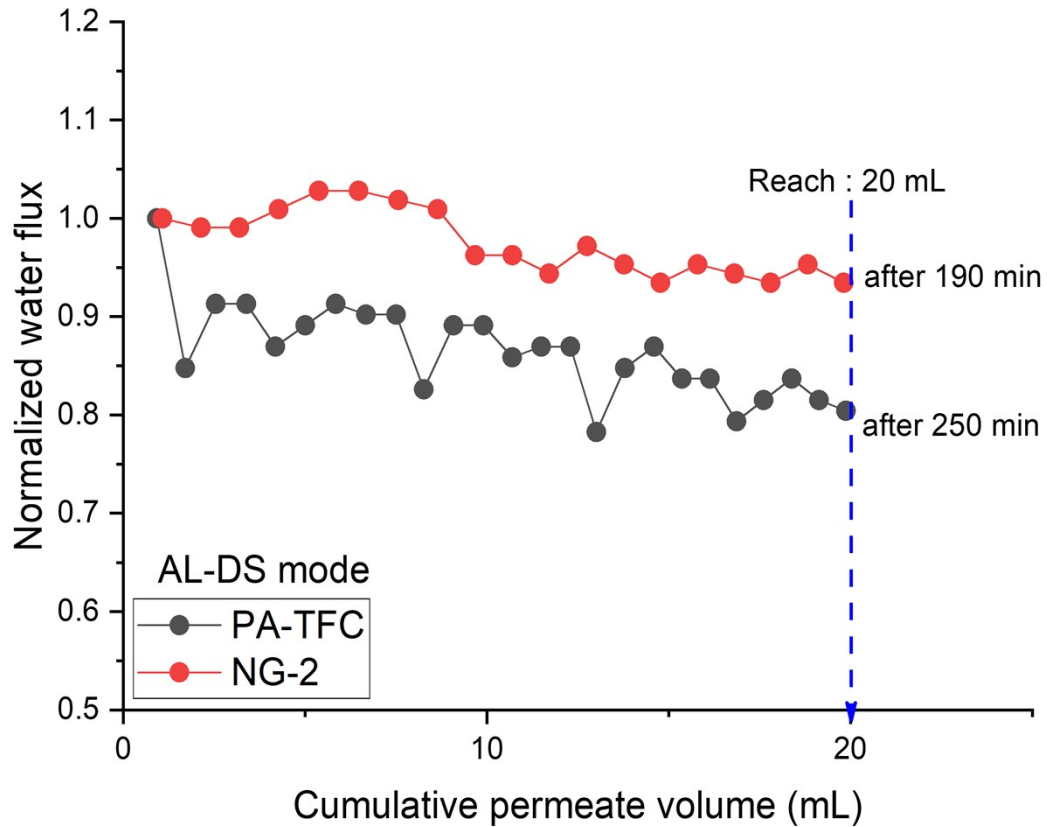


Fig. S5. Normalized water flux of PA-TFC and NG-2 membranes in FO (AL-DS mode) system using DI water and 0.1 M NaCl as a FS and DS. A cumulative permeate volume of 20 mL was achieved after about 190 min for NG-2 and 250 min for PA-TFC. The normalized flux decline of PA-TFC was slightly higher than that of NG-2 membrane, indicating ICP effect. At the same time, the normalized flux of NG-2 did not decrease much, but the decrease of PA-TFC was larger than that of NG-2.