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Supporting Information

High performance graphene oxide/polyacrylonitrile composite pervaporation membranes for desalination applications

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Preparation of GO aqueous suspensions

Graphite powder was mixed with H_2SO_4, $K_2S_2O_8$, and P_2O_5. The mixture was kept at 80 ºC for 4.5 h. Distilled water was added for dilution which was followed by filtration, washing, and drying. H_2SO_4 and $KMnO_4$ were slowly added to the pretreated graphite in an ice bath. The mixture was reacted at 35 ºC for 2 h, and distilled water was added for hydrolysis. After 2 h, 30% H_2O_2 was added to the mixture. The mixture was allowed to stand for at least 12 h, after which the clear supernatant was decanted. The remaining precipitate was washed with 5% HCl solution and washed again with distilled water. The final solution was centrifuged and ultrasonicated for 4 h. The concentration of the obtained GO was 1.23 g/L.

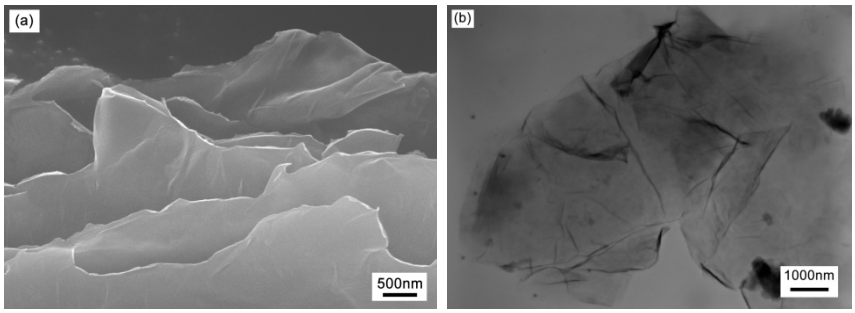

Fig. 1S (a) SEM and (b) TEM morphology of the GO sample.

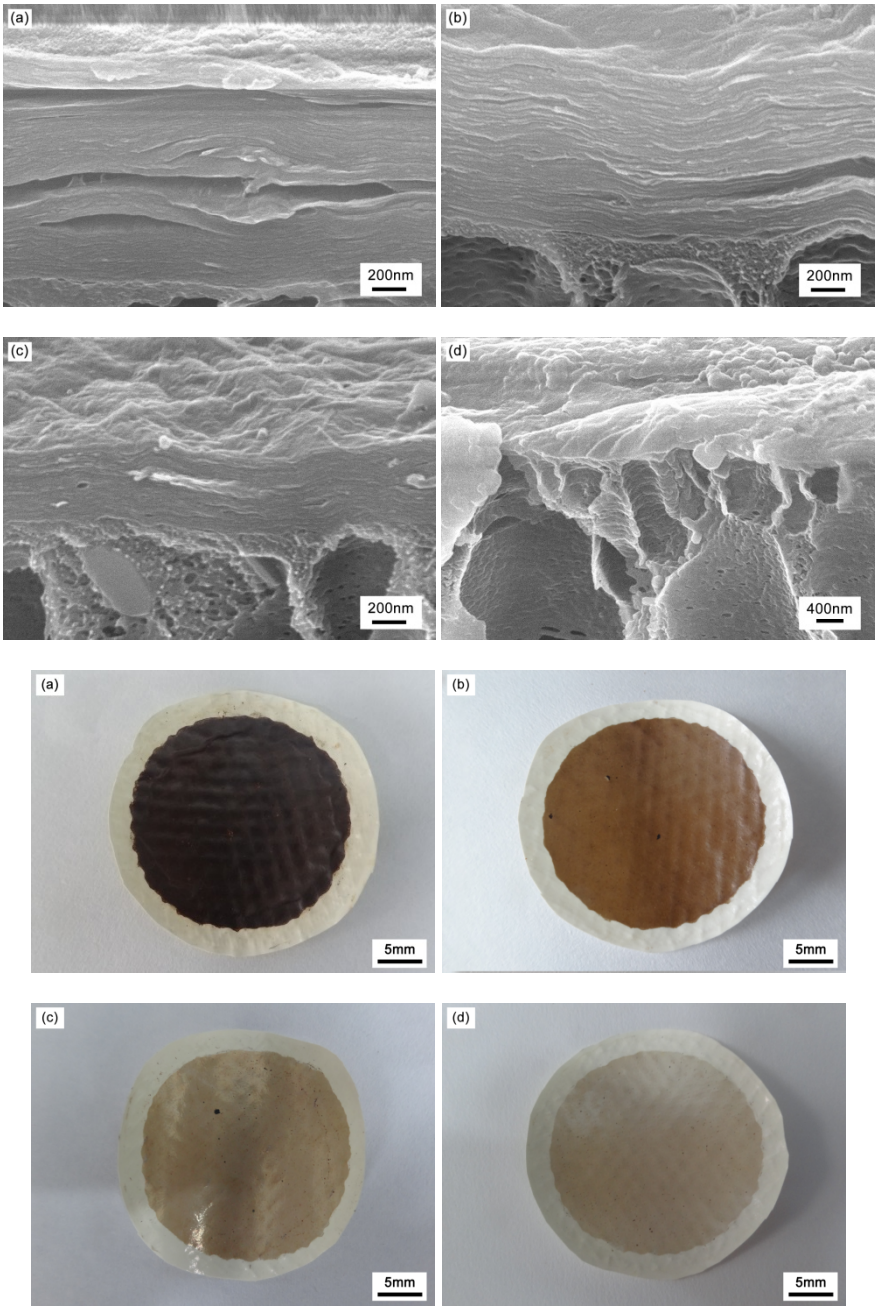

Fig. S2 The GO film thickness increases linearly with the specific GO deposition

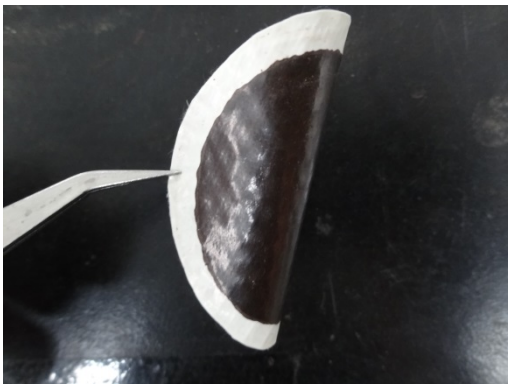

Fig. S3 Digital photo of folding GO/PAN composite membrane

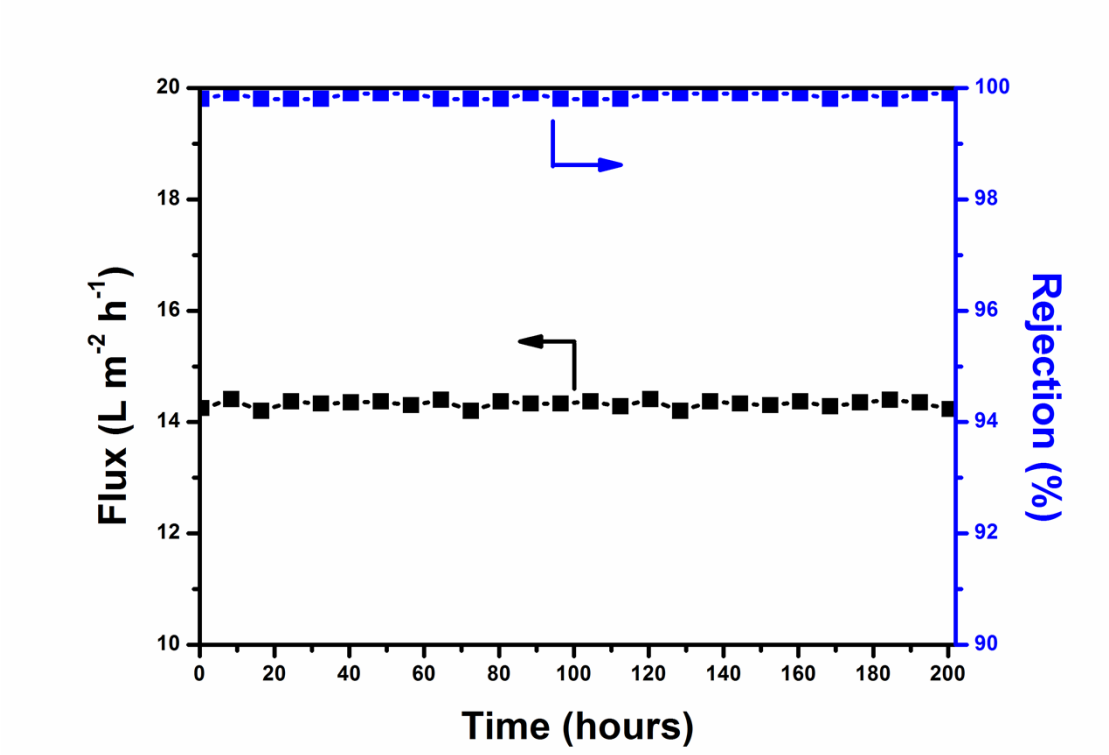

Fig. S4 the long-term stability of the composite membrane with 35,000 ppm NaCl solution at 30 ºC.