SUPPORTING INFORMATION

Choice of PES/NMP ratio

To study the effect of LiCl on the PES pore structure, NMP & PES's mass will be made constant throughout the study. Hence, a suitable PES/NMP ratio need to be defined. Hence, several membranes of different PES/NMP ratio was prepared by adjusting the PES content between 4 to 12g to yield PES/NMP ratio of 0.10, 0.14, 0.19, 0.24 & 0.29, with similar concentration of LiCl at 2 wt.%. NMP's mass was locked at 42g with LiCl's mass due to the complex formation mentioned in the article [1, 2]. Overall results suggested that high PES/NMP ratio create a denser surface while low PES/NMP ratio increased the surface porosity but making it mechanically weaker. This is suggested from the surface micrograph at 1000x magnification for PES/NMP ratio of 0.10, which shown a severe SEM burn after a few seconds of focus. While this burn doesn't prove a weak mechanical strength on its own, this effect suggested that the ratio produced a very thin polymer network that would surely be detrimental to the mechanical strength of the substrate. On the other hand, surface micrograph at 1000x magnification for PES/NMP ratio of 0.29 has shown very low number of surface pores, indicating the possible unsuitability as the substrate layer in this work despite of its more structured cross-sectional void. Nevertheless, as this is not the main interest of this study, 0.19 was chosen as it is in the middle ground, which should possess moderately high surface pores and the mechanical strength suited for this study.

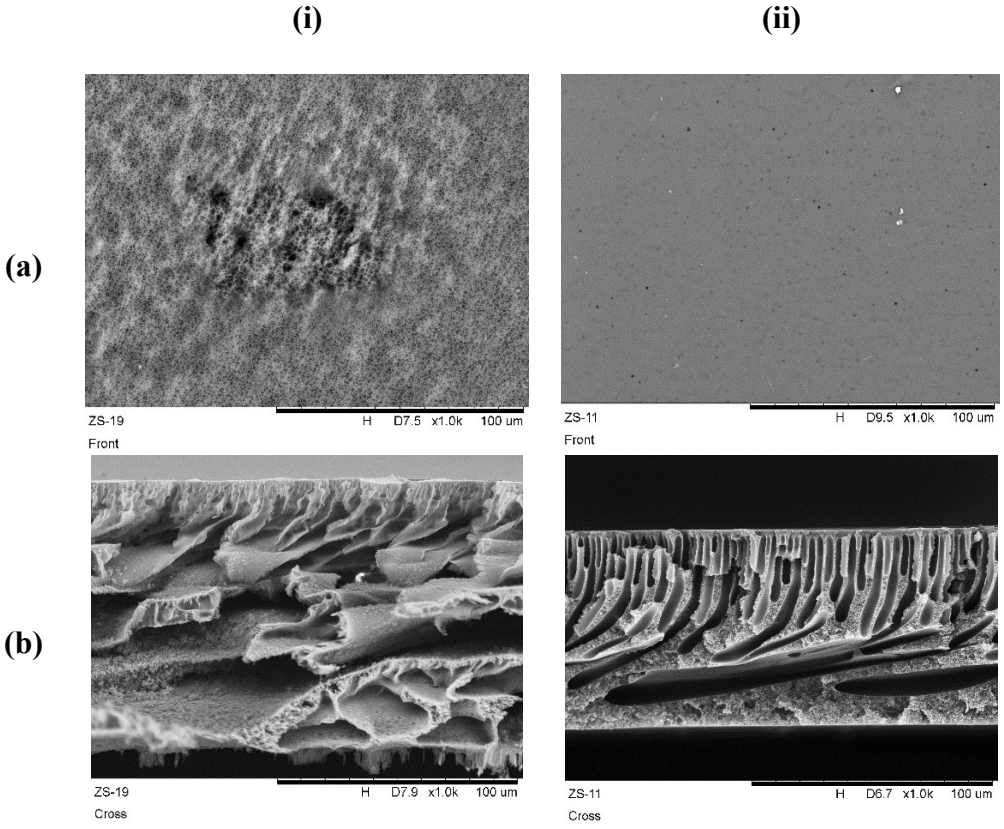

Figure S1: Substrate layer surface & cross-sectional micrograph for (a) surface at x1000 magnification, (b) cross section at x1000 magnification, (i) PES/NMP = 0.10, (ii) PES/NMP = 0.29

1. El-Kafrawy, A., *Investigation of the Cellulose/LiCl/Dimethylacetamide and Cellulose/LiC1/N-Methyl-2-Pyrrolidinone Solutions by 13C NMR Spectroscopy.* Journal of Applied Polymer Science, 1982. **27**: p. 2435-2443.
2. Lee, H.J., et al., *Solution properties of poly(amic acid)–NMP containing LiCl and their effects on membrane morphologies.* Journal of Membrane Science, 2002. **196**: p. 267-277.