Comments to the Author:

Thanks for revising the manuscript. However, not all comments were addressed in the revised manuscript (such as comment 5 and 6 of reviewer 1). In addition, there is no reference to the "previous work" in the added text.

Dear Editor,

We appreciate your comments on our manuscript. The answers to comment 5 and 6 of reviewer 1 were added to the text. Also, the reference to the “previous work” was added to the text and to the reference list.

Dear Reviewer 1,

The authors graciously acknowledge the reviewer’s comments on our manuscript. We provide responses to each comment received below. Our response is given in red.

I have reviewed the manuscript entitled “Evaluation of Thin Film Composite Forward Osmosis Membranes: Effect of Polyamide Preparation Conditions”. I recommend minor revision; though, the following comments need to be addressed.

1- The language is generally good; though, I recommend another round of revision.

We have gone through the manuscript thoroughly again to English-improve the text by re-writing some parts and correcting grammatical errors and typos. We believe that the text in general has improved in this new version.

2- Abs., Please identify the performance results at the optimum conditions.

The abstract has been modified to address reviewer’s suggestion.

3- CSA-TEA (2:1), is this a weight or mole percentage?

This is a weight ratio; this has been clarified in the manuscript.

4- Figure 1, if you used this figure from another work, please cite.

A reference was added to Figure 1.

5- Line 116, “while the thin polyamide layer had a contact angle of 33o.” Please explain why this contact angle is lower than the similarly prepared TFC membrane.

As you know, contact angle of the membrane can be influenced by many parameters such as monomer concentration, reaction time, type of organic solution, post-treatment condition, etc. during IP reaction process. However, the reported value of the contact angle in our manuscript lies within the range of the previously reported contact angle of TFC membrane please look at (Kadhom et al., 2016; Lau et al., 2015)

6- Is it possible to draw the salt rejection with the salt flux?

Typically, salt flux is used in forward osmosis investigations to describe the selectivity of the membrane, while salt rejection is normally used in reverse osmosis studies. The salt rejection equation can be used when there is a feed solution involved in the process, while in FO, there are feed solution and draw solution. That is why the salt flux is used instead of the salt rejection.

7- What is the percentage of the salt in figure 7? Please add.

Testing conditions of Figure 7: feed solution: DI water and draw solution: 1M NaCl.

8- Please make a table to compare this work’s results with similar work.

Table 1. Comparison of the performance of some TFC membranes from previous studies.

Membrane	Feed solution	Draw solution	Water flux (L/m2 h)	Salt flux (g/m2 h)	Reference
TFC-PSU	DI water	1 M NaCl	36.58	6.8	This work.
HTI-TFC	DI water	1 M NaCl	15	4.5	(Ren and McCutcheon, 2014)
TFC-PAN	DI water	1 M NaCl	16	4	(Al-Furaiji et al., 2020)
Aquaporin TFC	DI water	1 M NaCl	9	4	(Xia et al., 2017)
TFC-M2 (CAB substrate)	DI water	1 M NaCl	6.81	5.88	(Ma et al., 2020)
TFC-CTA (HTI, commercial)	DI water	1 M NaCl	12.0	8.04	(Kwon et al., 2017)
CAB	DI water	1 M NaCl	9.0	3.78	(Ong et al., 2012)

PVDF nanofiber-PA	DI water	1 M NaCl	11.6	3.48	(Tian et al., 2013)
PSU /Silica-PA	DI water	1M NaCl	31	7.44	(Liu and Ng, 2015)
Oasys TFC	DI water	1M NaCl	30	50	(Cath et al., 2013)

References

Al-Furaiji, M., Kadhom, M., Kalash, K., Waisi, B. and Albayati, N.: Preparation of thin-film composite membranes supported with electrospun nanofibers for desalination by forward osmosis, Drink. Water Eng. Sci., 13(2), 51–57, doi:10.5194/dwes-13-51-2020, 2020.

Cath, T. Y., Elimelech, M., McCutcheon, J. R., McGinnis, R. L., Achilli, A., Anastasio, D., Brady, A. R., Childress, A. E., Farr, I. V., Hancock, N. T., Lampi, J., Nghiem, L. D., Xie, M. and Yip, N. Y.: Standard Methodology for Evaluating Membrane Performance in Osmotically Driven Membrane Processes, Desalination, 312, 31–38, doi:10.1016/j.desal.2012.07.005, 2013.

Kadhom, M., Yin, J. and Deng, B.: A thin film nanocomposite membrane with MCM-41 silica nanoparticles for brackish water purification, Membranes (Basel)., 6(4), doi:10.3390/membranes6040050, 2016.

Kwon, S. J., Park, S. H., Park, M. S., Lee, J. S. and Lee, J. H.: Highly permeable and mechanically durable forward osmosis membranes prepared using polyethylene lithium ion battery separators, J. Memb. Sci., 544(March), 213–220, doi:10.1016/j.memsci.2017.09.022, 2017.

Lau, W. J., Ismail, A. F., Goh, P. S., Hilal, N. and Ooi, B. S.: Characterization methods of thin film composite nanofiltration membranes, Sep. Purif. Rev., 44(2), 135–156, doi:10.1080/15422119.2014.882355, 2015.

Liu, X. and Ng, H. Y.: Fabrication of layered silica-polysulfone mixed matrix substrate membrane for enhancing performance of thin-film composite forward osmosis membrane, J. Memb. Sci., 481, 148–163, doi:10.1016/j.memsci.2015.02.012, 2015.

Ma, J., Xiao, T., Long, N. and Yang, X.: The role of polyvinyl butyral additive in forming desirable pore structure for thin film composite forward osmosis membrane, Sep. Purif. Technol., 242(January), 116798, doi:10.1016/j.seppur.2020.116798, 2020.

Ong, R. C., Chung, T. S., Helmer, B. J. and De Wit, J. S.: Novel cellulose esters for forward osmosis membranes, Ind. Eng. Chem. Res., 51(49), 16135–16145, doi:10.1021/ie302654h, 2012.

Ren, J. and McCutcheon, J. R.: A new commercial thin film composite membrane for forward osmosis, Desalination, 343, 187–193, doi:10.1016/j.desal.2013.11.026, 2014.

Tian, M., Qiu, C., Liao, Y., Chou, S. and Wang, R.: Preparation of polyamide thin film composite forward osmosis membranes using electrospun polyvinylidene fluoride (PVDF) nanofibers as substrates, Sep. Purif. Technol., 118, 727–736, doi:10.1016/j.seppur.2013.08.021, 2013.

Xia, L., Andersen, M. F., Hélix-Nielsen, C. and McCutcheon, J. R.: Novel Commercial Aquaporin Flat-Sheet Membrane for Forward Osmosis, Ind. Eng. Chem. Res., 56(41), 11919–11925, doi:10.1021/acs.iecr.7b02368, 2017.

Dear Reviewer 2,

We appreciate your valuable comments on our manuscript and the fruitful discussion points that you have raised; below are our answers to your comments. Our response is given in red.:

The authors presented the effect of exposure time of MPT and TMC on the water/salt flux in the prepared FO membranes.

- From the desalination point of view, an optimal FO membrane should have high water flux but low salt flux. Why did the authors concluded that the best results were found to be at 5 min for MPD and 1 min for TMC reaction times (highest water and salt fluxes)?

Even though the salt flux increased when water flux increased (at 5 min for MPD and 1 min for TMC), but the salt flux still within the acceptable limit where the J_s/J_w ratio is 0.25 g/L compared to what has been reported in the literature. So, we concluded that this membrane was the optimum as it provided the highest water flux with a salt flux of an acceptable value.

- In the figures, please avoid using abbreviations like LMH, GMH.

The figures will be updated in the next version, according to the reviewer's comment.

- In the authors publication: M. Al-Furaiji et al.: TFC membranes supported with nanofibers for forward osmosis process, the water and salt flux reported is much lower as compared with the values presented in this manuscript. What drives such differences? If we zoom-in to compare the water flux and salt flux reported in M. Al-Furaiji et al.: TFC membranes supported with nanofibers for forward osmosis process (previous work) and in current work, the water flux is approx 4 time higher than that reported in previous work, but the salt flux is approx 6-8 time higher than that reported in previous work. This means that the salt rejection by the FO membrane prepared in the current work will be significantly lower than the membrane prepared in your previous work. it will be interesting comparison to be discussed in the manuscript.

We appreciate the reviewer's comments. To compare our previous TFC membrane with the current one, we should compare both membranes at the same preparation conditions (MPD= 2min, and TMC= 1min.); please see the following table.

	Water flux	Salt flux
This work	35.58 ±7	6.8 ±2
Previous work	16 ±1.5	4 ±0.5

It can be seen that the water flux of the current work is about twice that of the previous work, while the salt flux is a bit higher. There are two main differences between the previous work and the current work:

1. In the previous work, we used PAN polymer as a support for the TFC FO membrane, while in this work, we used PSU polymer.
2. In the previous work, the support layer was prepared using the electrospinning method while in this work phase inversion method was used.

The polyamide layer was perfectly formed and well distributed on the PSU support layer compared to the PAN nanofibers based membrane. This is most likely due to the smaller pore size and the hydrophobic nature of the PSU substrate. Although, electrospinning method produces a highly porous membrane, but phase inversion makes a more robust membrane that can perform better in FO testing.