

Comment 1)

The major drawback of current study that not all previously reported reviews and research papers on functional separators are taken into consideration, e.g.:

1. 10.1093/nsr/nwx037
2. 10.1016/j.jpowsour.2016.09.044
3. 10.1021/acsami.8b14196

Response 1)

We appreciate of reviewer's meaningful comments and suggestions. We added the references

References

37. Pan, Y.; Chou, S.; Liu, H.K.; Dou, S.X. Functional membrane separators for next-generation high-energy rechargeable batteries. *Natl. Sci. Rev.* **2017**, *4*, 917-933.
130. Deng, C.; Wang, Z.; Wang, S.; Yu, J.; Martin, D.J.; Nanjundan, A.K.; Yamauchi, Y. Double-Layered Modified Separators as Shuttle Suppressing Interlayers for Lithium–Sulfur Batteries. *ACS Appl. Mater. Interfaces* **2019**, *11*, 541-549.
38. Deng, N.; Kang, W.; Liu, Y.; Ju, J.; Wu, D.; Li, L.; Hassan, B.S.; Cheng, B. A review on separators for lithiumsulfur battery: Progress and prospects. *J. Power Sources* **2016**, *331*, 132-155.

Comment 2)

I strongly recommend sorting separators not only based on its materials – but also by their function or properties – as it was stated in the introduction. It can be grouped like dendrite-suppressing separators, thermostable separators, separators from sustainable materials or earth-abundant elements, etc.

Response 2)

We thank the reviewer for her/his time and helpful suggestions. Based on the referee's comments, we have re-organized our manuscript. Please have a look our revised manuscript (Trackable mode).

Comment 3)

Figure 1 the figure is nice, however does not carry a deep meaning and the colour codes is not clear.

Response 3)

We appreciate of reviewer's valuable comments and carefully revised our manuscript according to the reviewer 1's comments. We added a detail that indicates the meaning of each color. Please check figure 1.

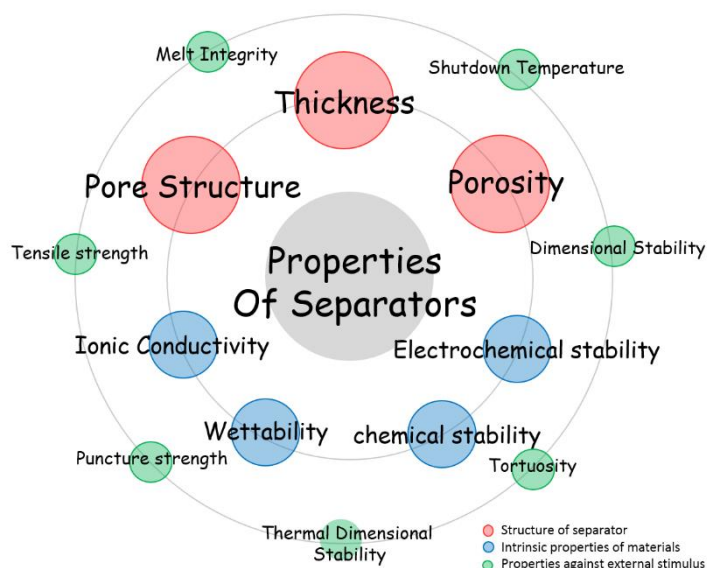


Figure 1. Illustration of the key properties of separators.

Comment 4)

Figure 3 the μm units are poorly visible.

Response 4)

We appreciate of reviewer's valuable comment about the figures. We have revised it so that it can be seen more clearly.

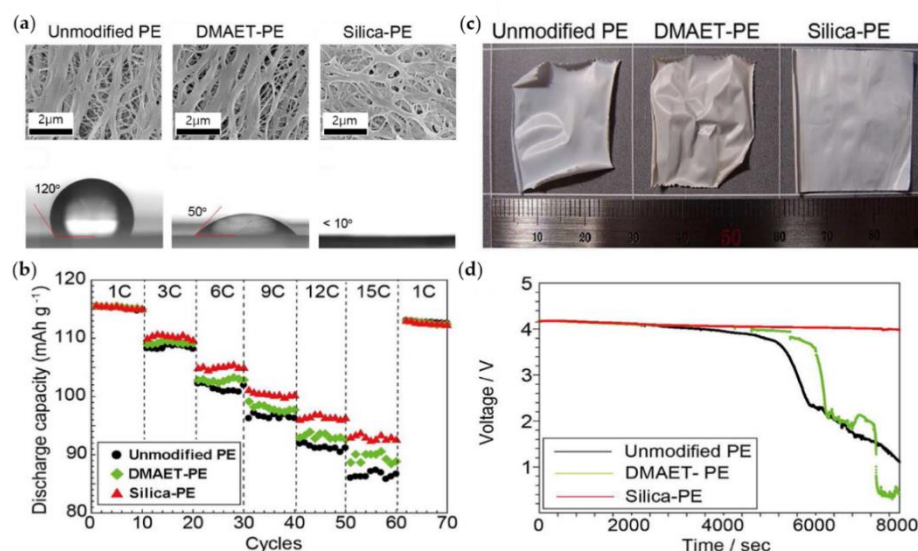


Figure 3. (a) SEM and water contact angle images of various membranes. (b) Rate capabilities of the different separators (1 C for charge and various C-rates for discharge). The anode and cathode are graphite and LiMO, respectively. (c) Digital images of the different separators after exposure to 140 °C for 1 h. (d) Open circuit voltage measurements of the cells with various separators at 140 °C. Reprinted with permission from [49]. Copyright (2012) American Chemical Society.

Comment 5)

Figure 4 lines 105-104 – lack of the necessary citation.

Response 5)

We appreciate of reviewer’s meaningful comment. We added references.

Figure 4. SEM images of the surfaces of various separators: (a) Celgard 2400 (PP), (b) Celgard 2730 (PE), (c) Celgard 2500 (PP). Reprinted with permission from [39]. Copyright (2004) American Chemical Society. (d) PVDF membrane (ethanol precipitation bath). Reprinted with permission from [50]. Copyright (2008) Elsevier B.V. (e) PMMA particles Reprinted with permission from [51] Copyright (2018) CC BY. (f) PAN nanofibers Reprinted with permission from [52] Copyright (2019) CC BY.