## Techno-Economical feasibility of bio-cellulose membrane along with polyethylene film as a separator for lead-acid batteries

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Figure S1. BET curve of (a) AGM separator, (b) BC membrane and (c) PE separator.

Figure S2. Discharge capacity of AGM battery and BC-PE battery system.

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Figure S4. Cycle performance of BC-PE battery at 0.1A after (a) 100<sup>th</sup>, (b) 1000, (c) 5000, and (d) 10000 cycles.

Figure S5. Cycle performance of BC-PE battery at 0.1A after (e) 15000 and (f) 20000 cycles.

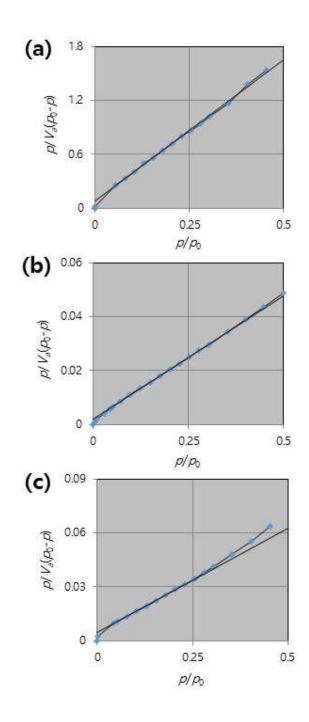


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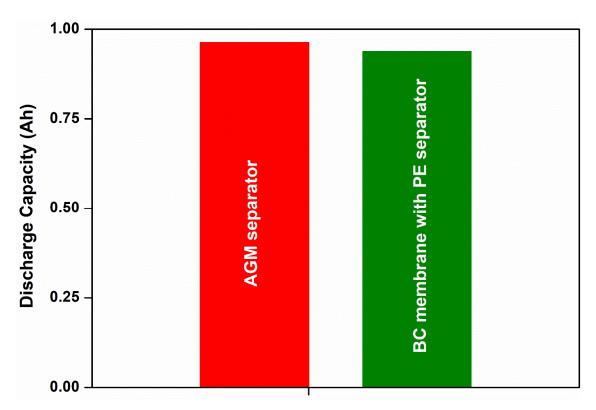


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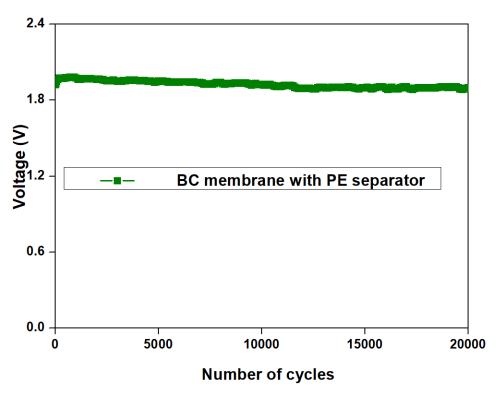


Figure S3. Long-term cycle test performances of BC-PE battery at 0.1A current.

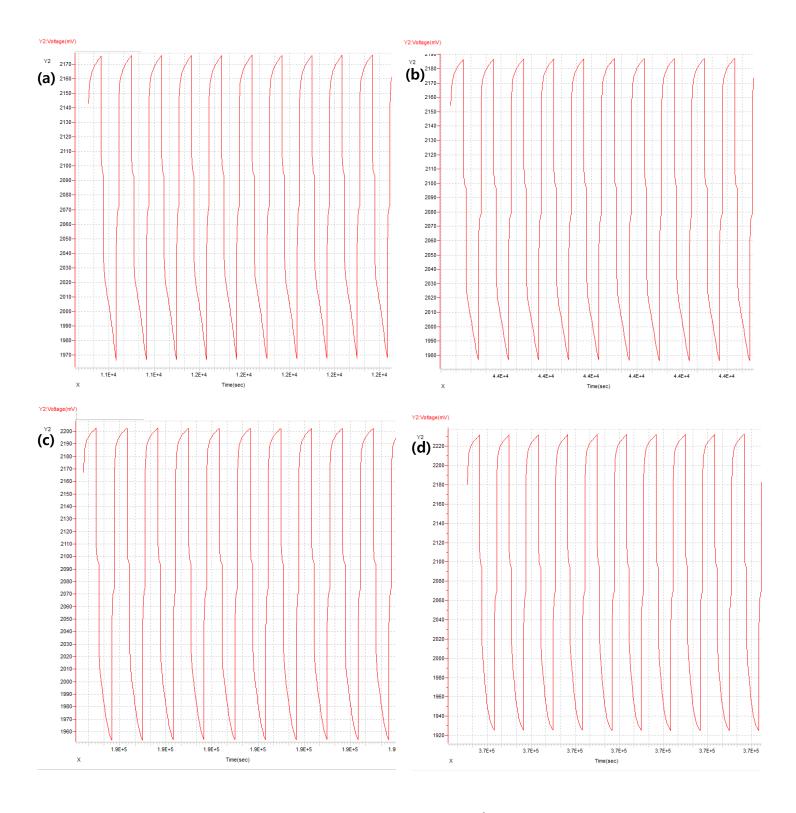


Figure S4. Cycle performance of BC-PE battery at 0.1 A after (a) 100th, (b) 1000, (c) 5000, and (d) 10000 cycles.

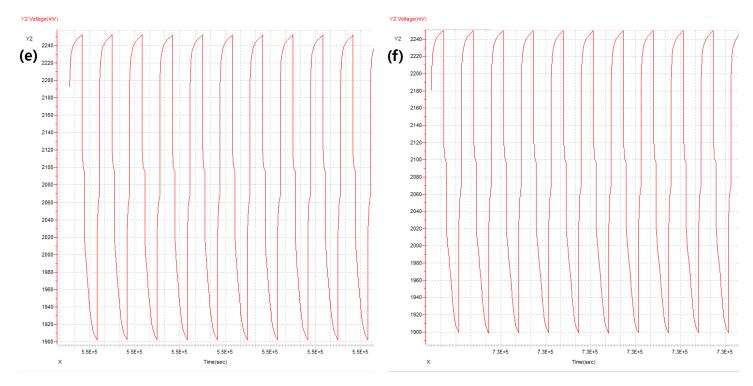


Figure S5. Cycle performance of BC-PE battery at 0.1 A after (e) 15000 and (f) 20000 cycles.