Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A.

Supporting Information

Polybenzimidazole membranes with nanophase-separated structure induced by non-ionic hydrophilic side chain for vanadium flow batteries

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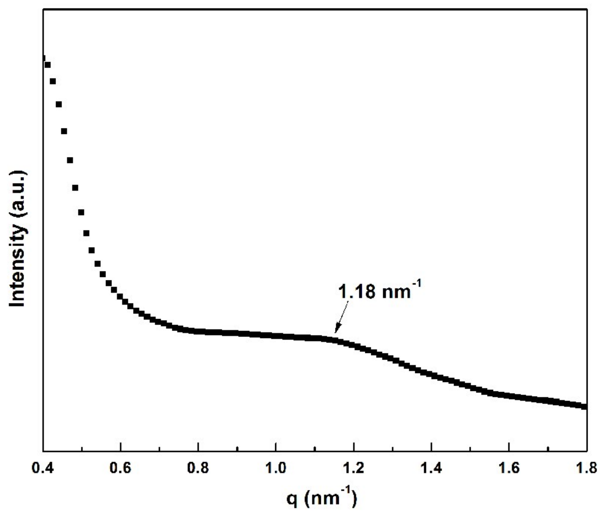

Fig. S1. SAXS pattern of Nafion membrane.

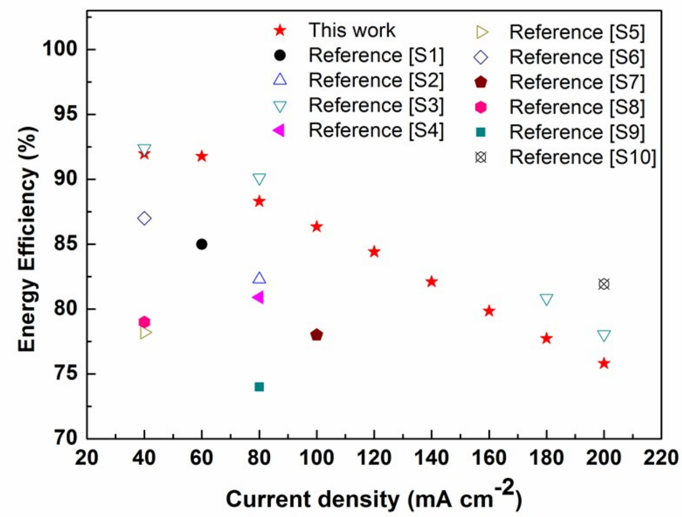

Fig. S2. Representative EE of ever reported PBI-based VFBs and this work (solid: dense membranes; hollow: porous membranes).[S1-S10]

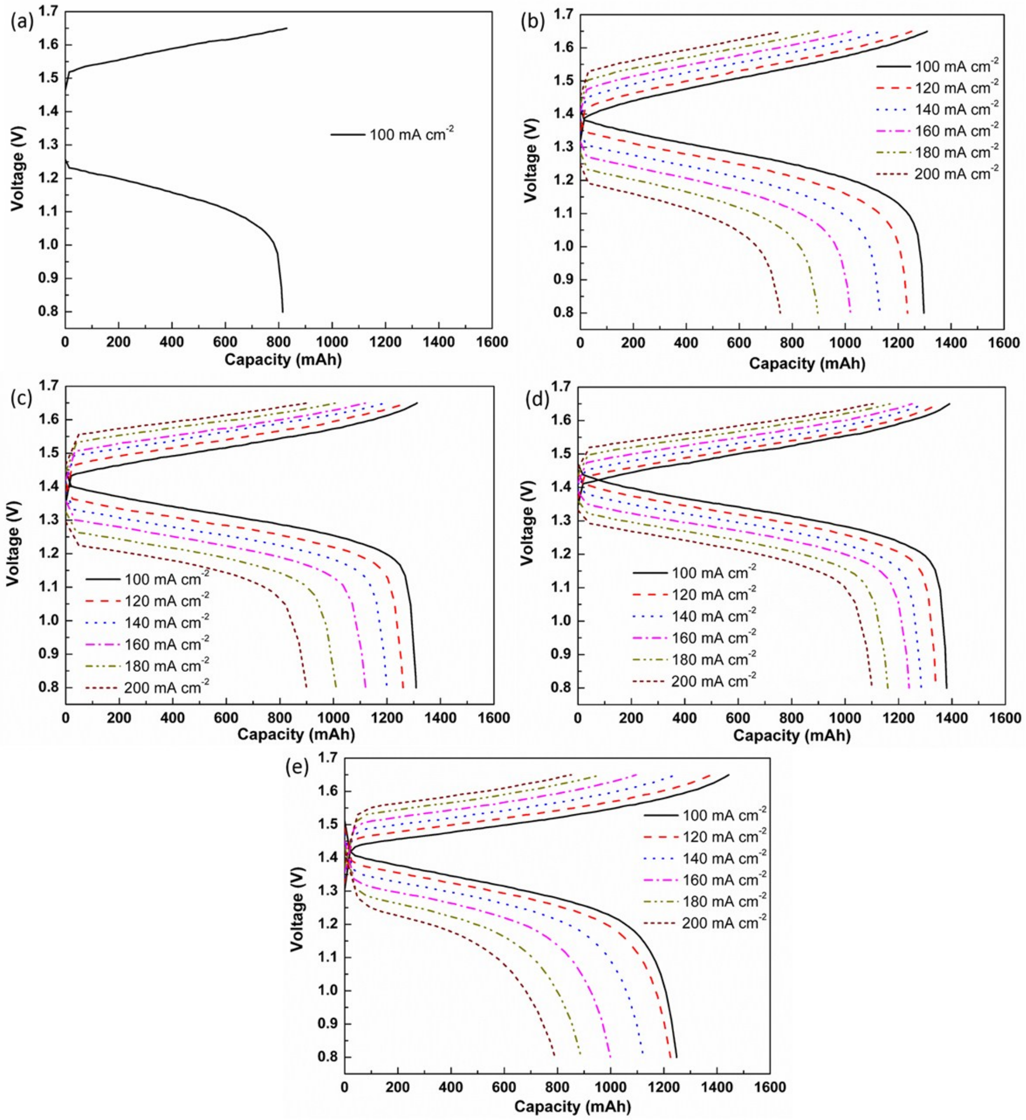

Fig. S3. Charge/discharge curves of VFB with (a) PBI, (b) GPBI-1, (c) GPBI-2, (d) GPBI-3 and (e) Nafion 211 under different current densities.

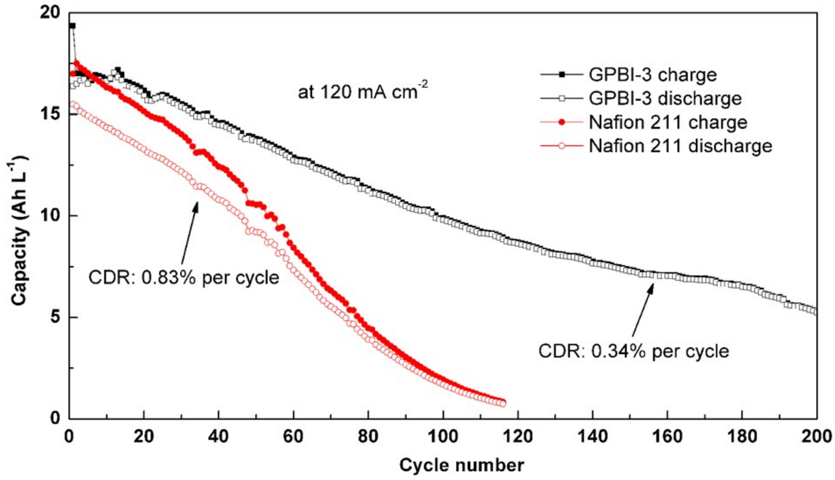

Fig. S4. Capacity decay in cycling teat (CDR refers to capacity decay rate of discharge capacity).

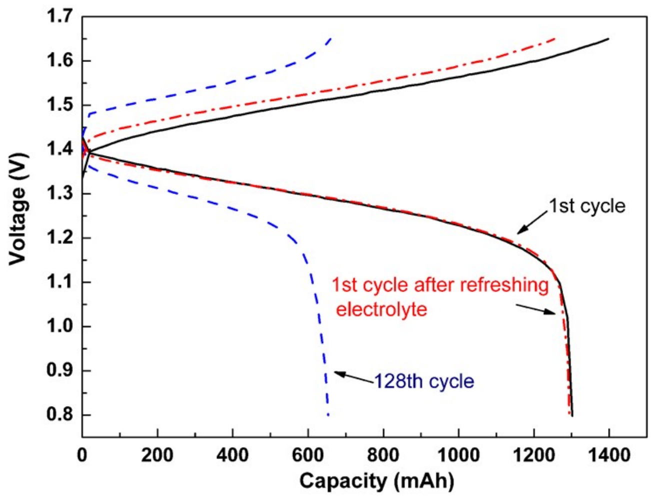

Fig. S5. Charge/discharge curves of VFB assembled with GPBI-3 in cycling test with refreshing electrolyte.

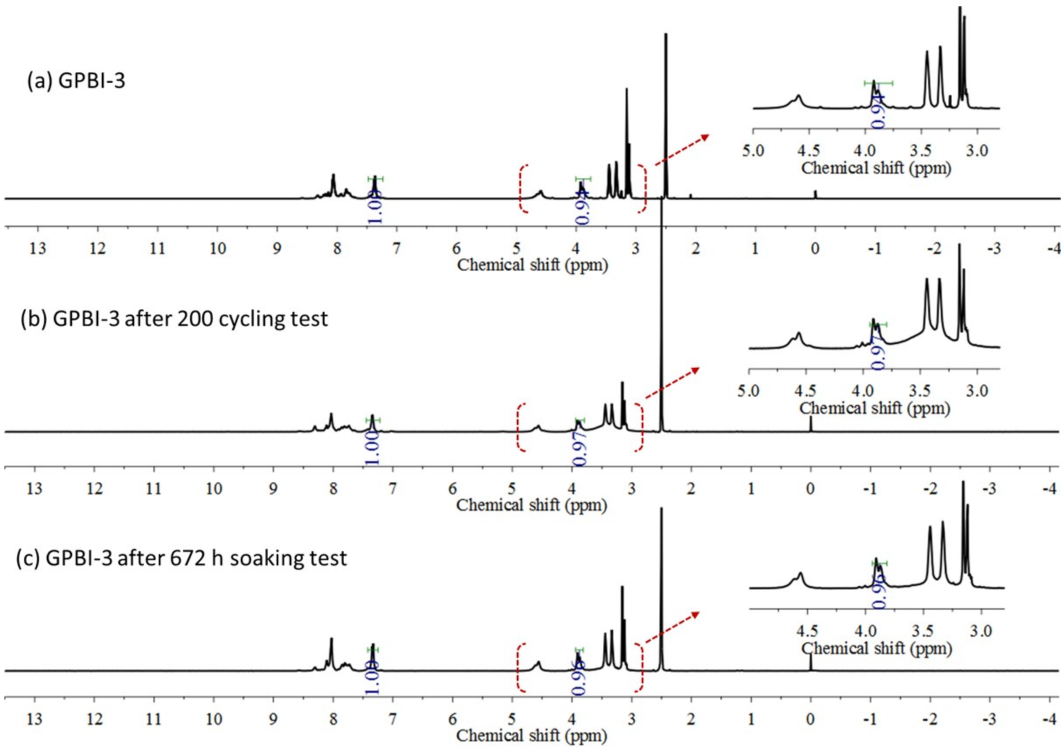

Fig. S6. ^{1}H NMR spectra of GPBI-3 membranes.

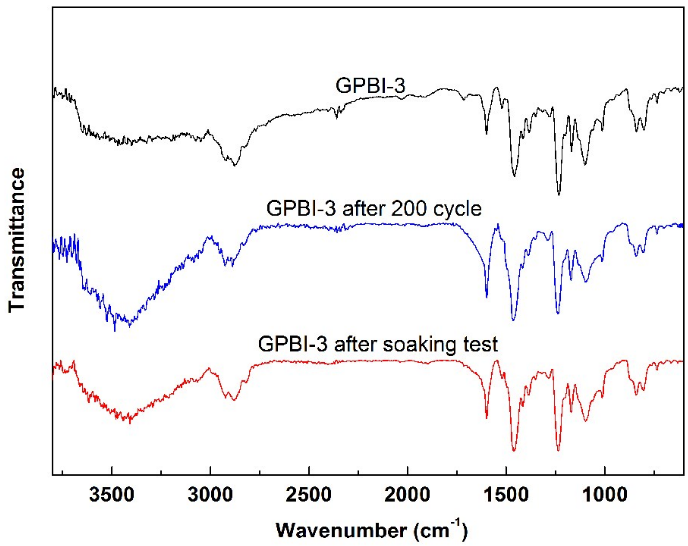

Fig. S7. FTIR spectra of GPBI-3 membranes.

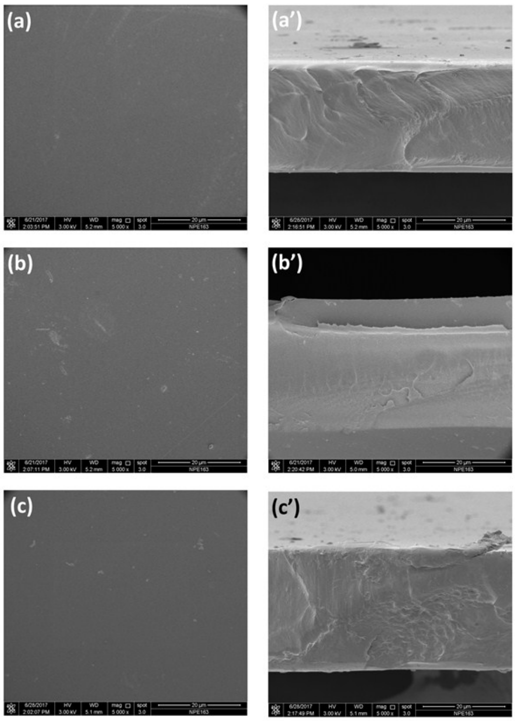

Fig. S8. SEM images of GPBI-3 membranes: pristine (a: surface, a': cross section), after 200 cycling test (b: surface, b': cross section), and after 672 h soaking test (c: surface, c': cross section).

References for the SI:

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