

## ***Supplementary Information***

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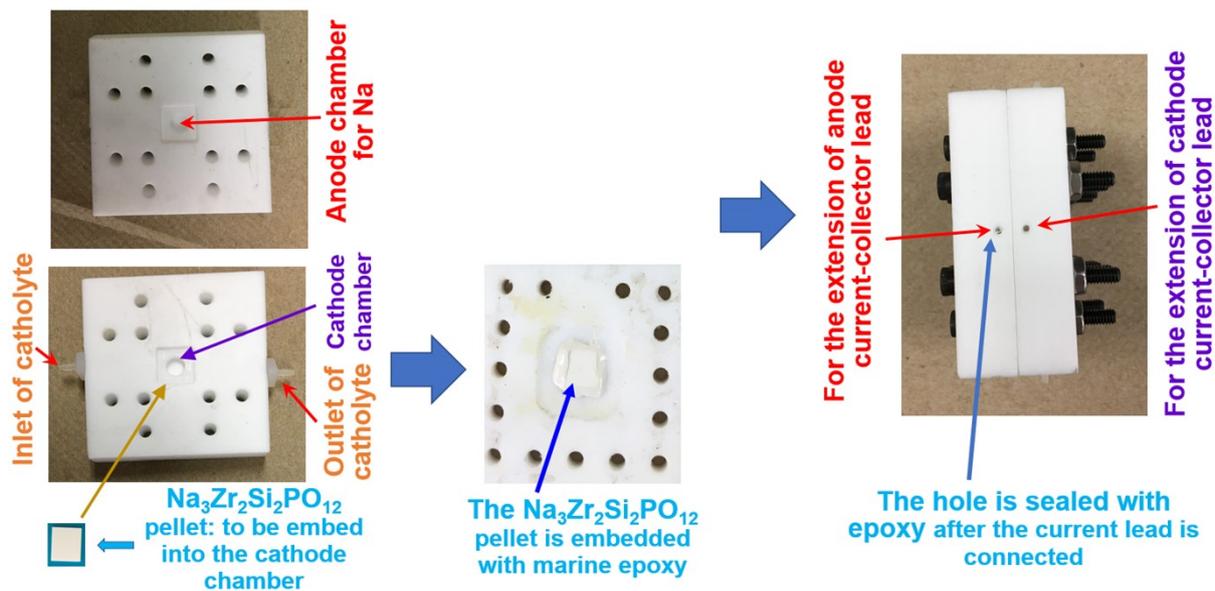
### **Nonaqueous Hybrid Redox Flow Energy Storage with a Sodium-TEMPO Chemistry and a Single-ion Solid Electrolyte Separator**

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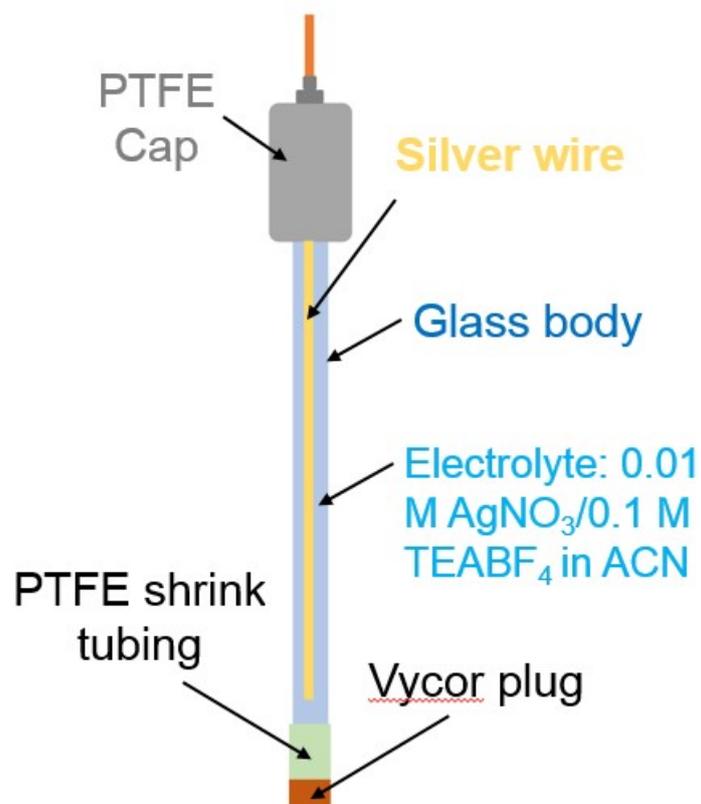
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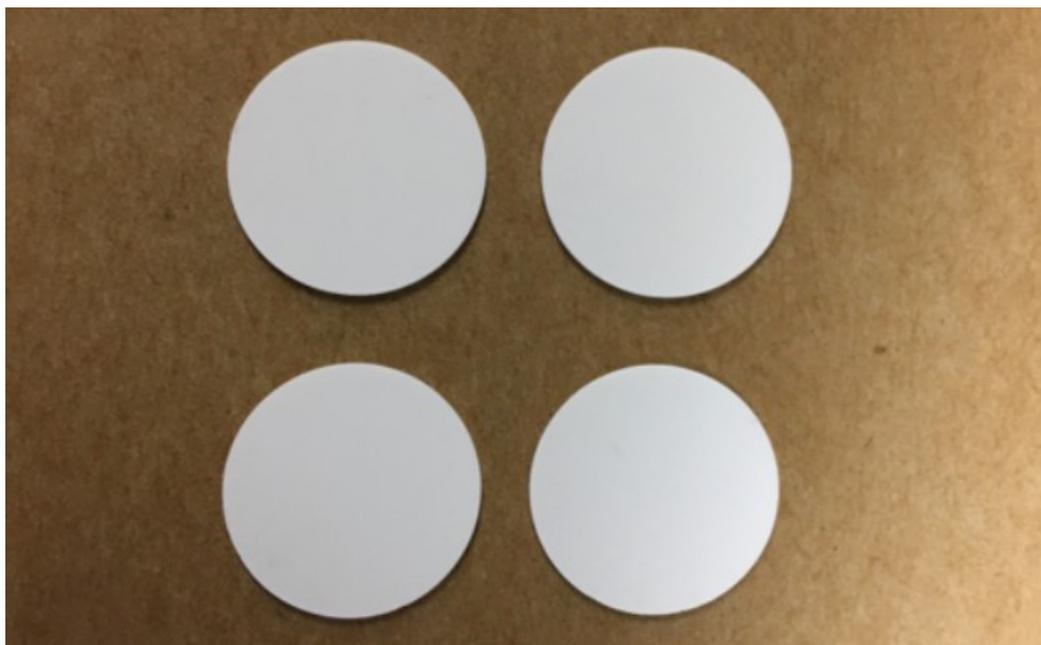
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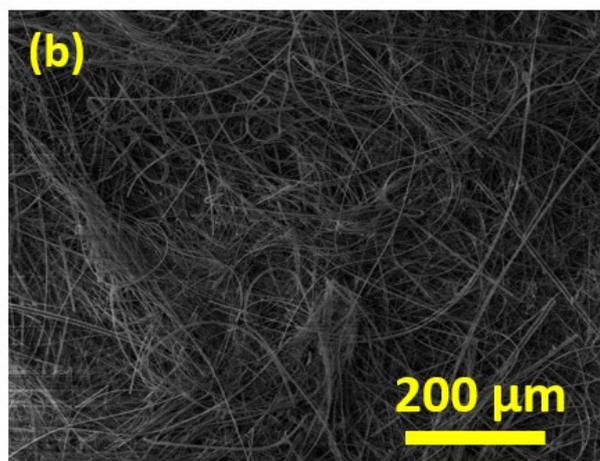
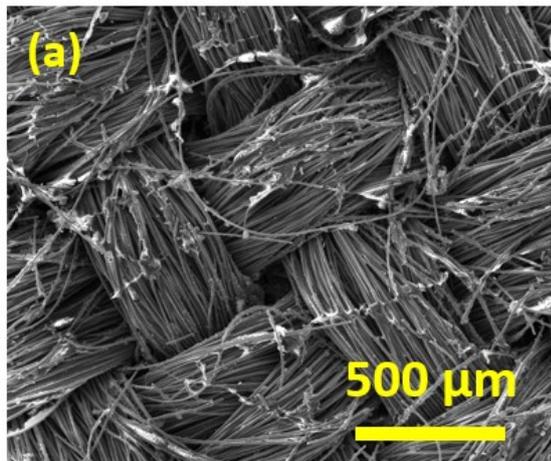
**Fig. S1.** Cell parts and the assembly of a nonaqueous HFB.



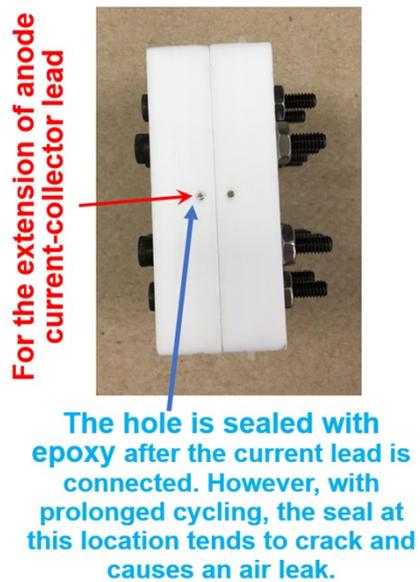
**Fig. S2.** Schematic of the assembly of an in-house designed nonaqueous  $\text{Ag}^+/\text{Ag}$  reference electrode.



**Fig. S3.** Image of Na<sub>3</sub>Zr<sub>2</sub>Si<sub>2</sub>PO<sub>12</sub> solid electrolyte pellets.



**Fig. S4.** (a) SEM image of a cycled carbon cloth electrode matrix. (b) SEM image of a cycled glass fiber interlayer.



**Fig. S5.** The possible location where the leakage occurs during the operation of HFB.