Supplemental Information

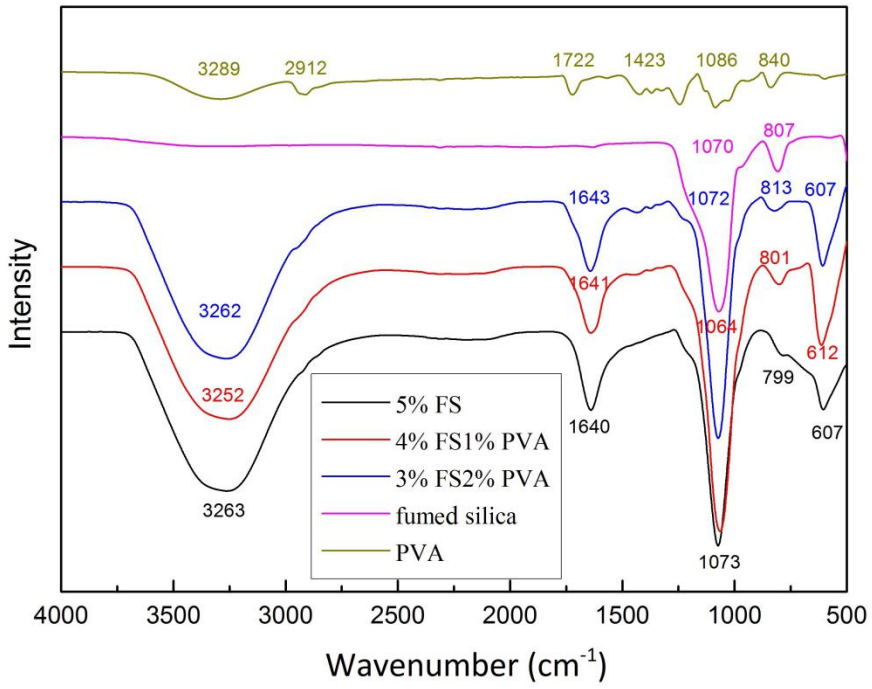

Figure S1. FTIR of PVA, FS, 3%FS+2%PVA, 4%FS+1%PVA, and 5%FS gel electrolytes.

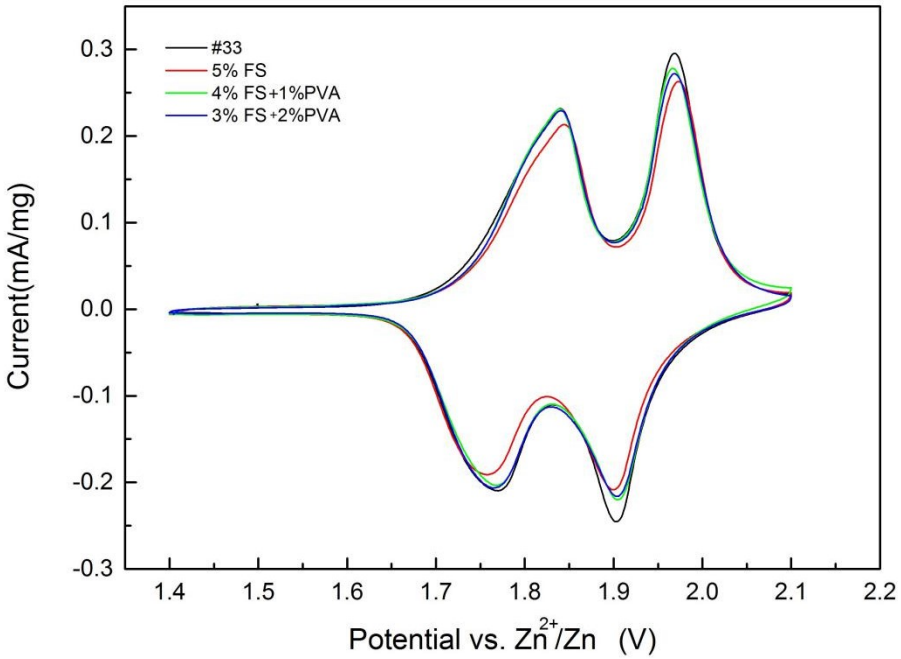

Figure S2. CV of the conventional Swagelok battery using the aqueous electrolyte (33), and batteries using 5%FS, 4%FS+1%PVA, and 3%FS+2%PVA gel electrolytes.

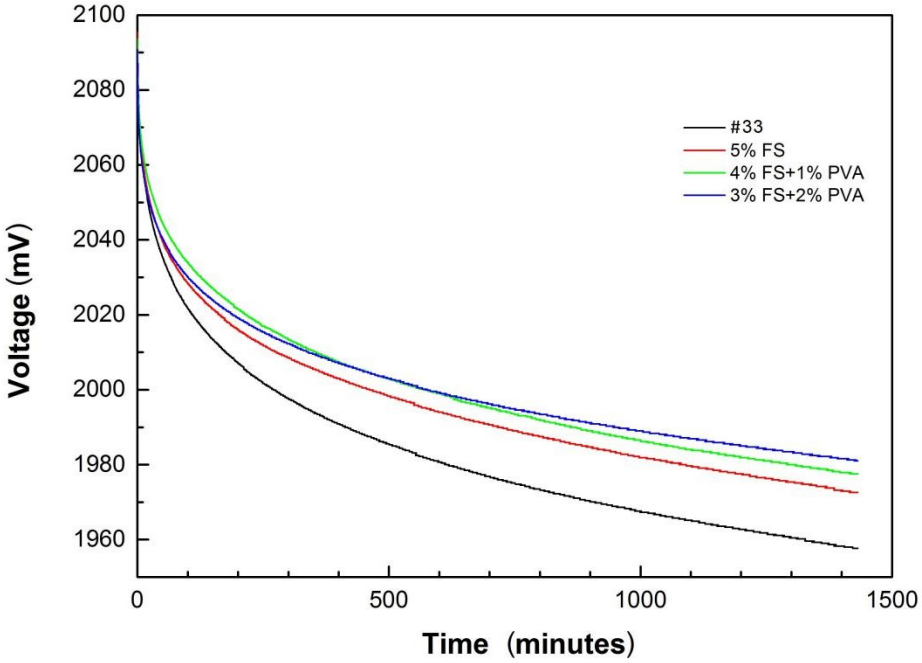

Figure S3. Open circuit voltage monitoring of typical conventional Swagelok battery, and batteries using 5%FS, 4%FS+1%PVA, and 3%FS+2%PVA gel electrolytes.

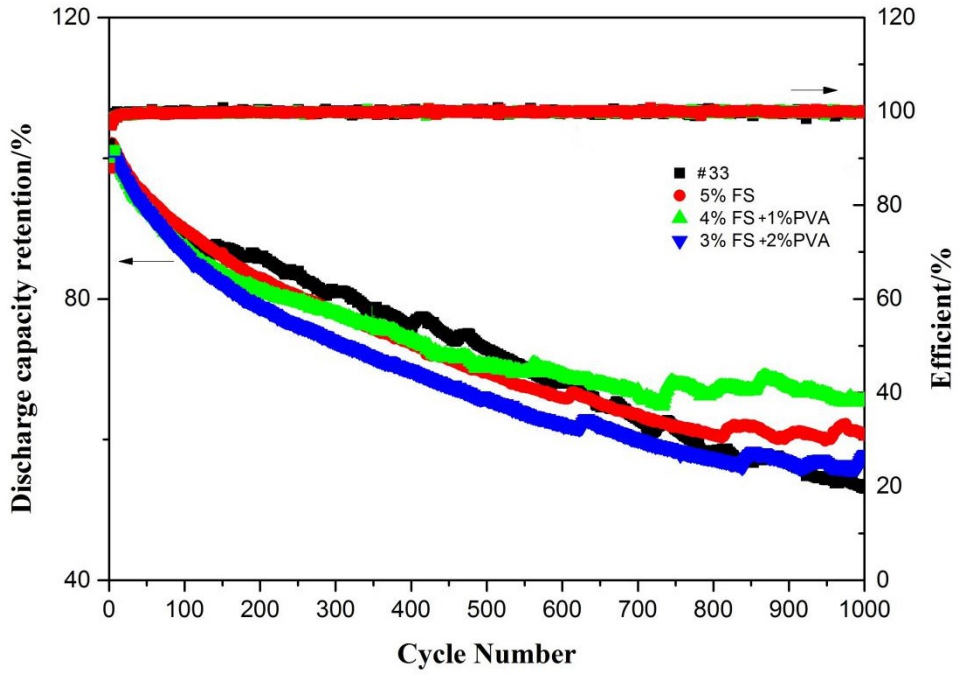

Figure S4. Cycle at 4C, constant current mode cycling of typical conventional Swagelok battery, and batteries using 5%FS, 4%FS+1%PVA, and 3%FS+2%PVA gel electrolytes.

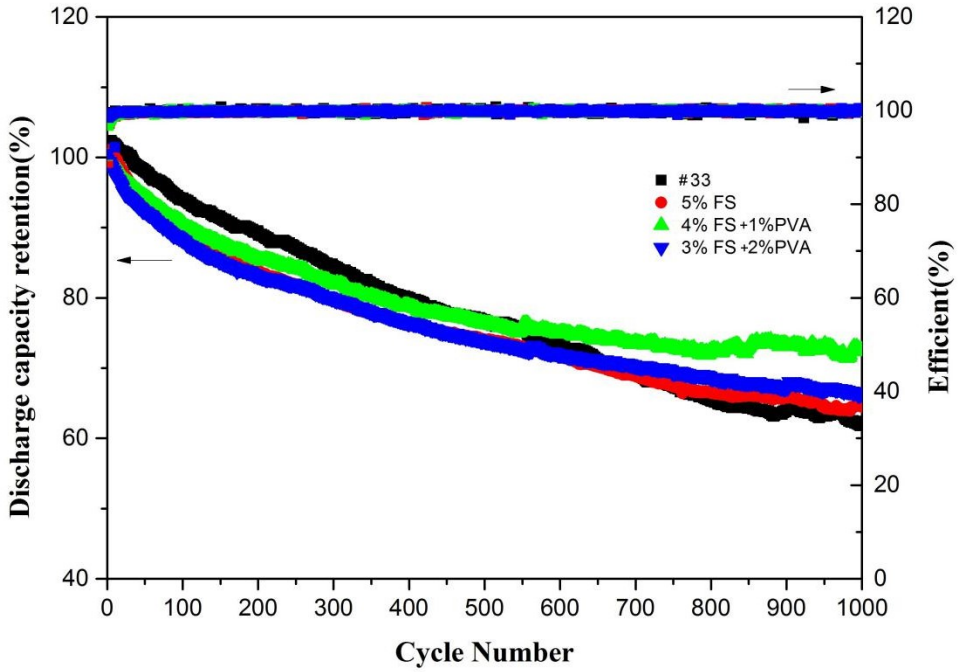

Figure S5. Cycle 4C, constant current – constant voltage cycling of typical conventional Swagelok battery, and batteries using 5%FS, 4%FS+1%PVA, and 3%FS+2%PVA gel electrolytes. The current cut-off during constant voltage charge at 2.1V is 10% of the charging current at 4C.

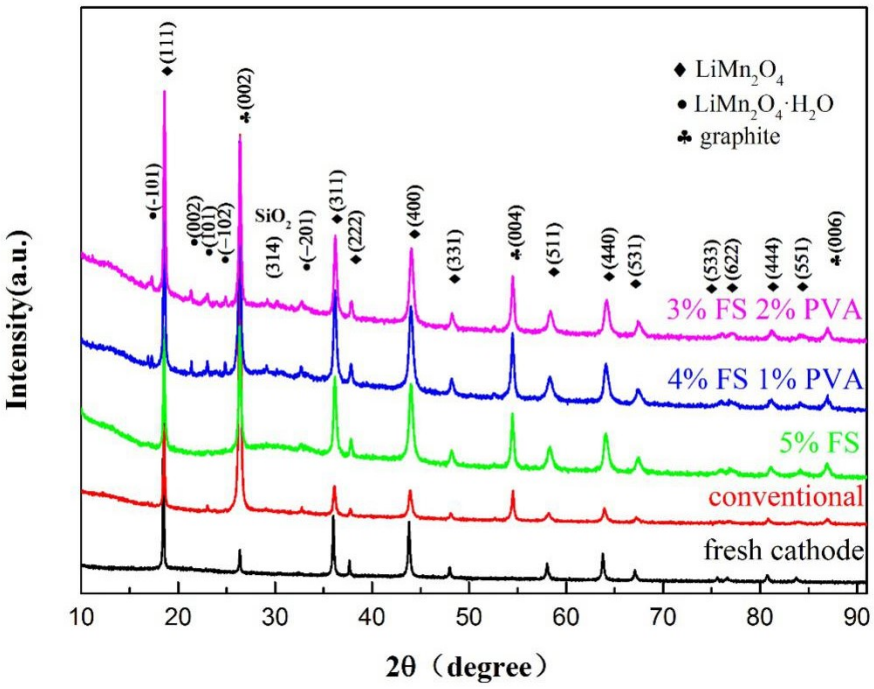

Figure S6. XRD patterns of the post-cycling cathodes of typical conventional Swagelok battery, and batteries using 5%FS, 4%FS+1%PVA, and 3%FS+2%PVA gel electrolytes. The batteries were cycled under standard constant current mode at 4C.

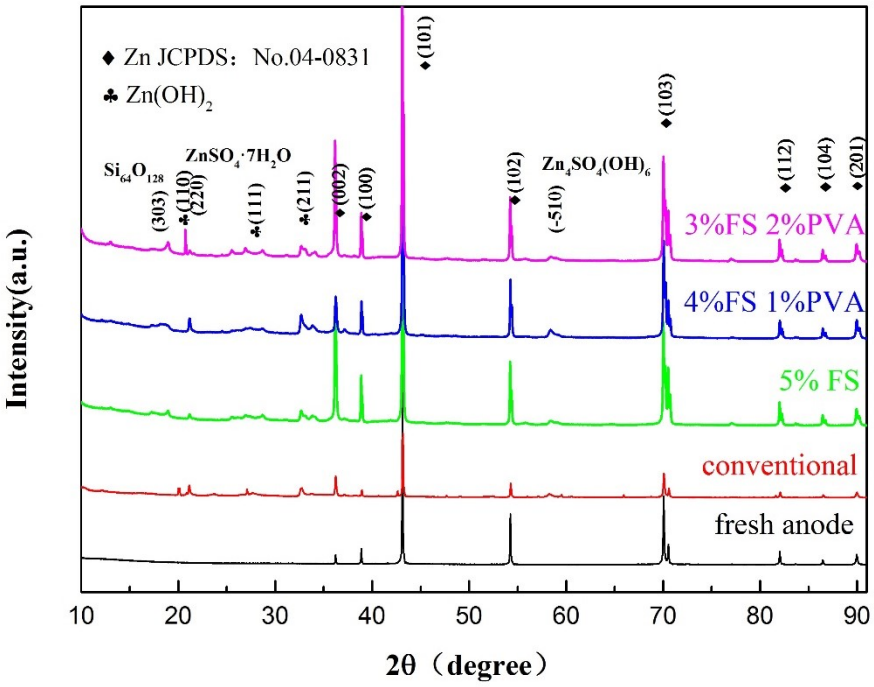

Figure S7. XRD patterns of the post-cycling anodes of typical conventional Swagelok battery, and batteries using 5%FS, 4%FS+1%PVA, and 3%FS+2%PVA gel electrolytes. The batteries were cycled under standard constant current mode at 4C

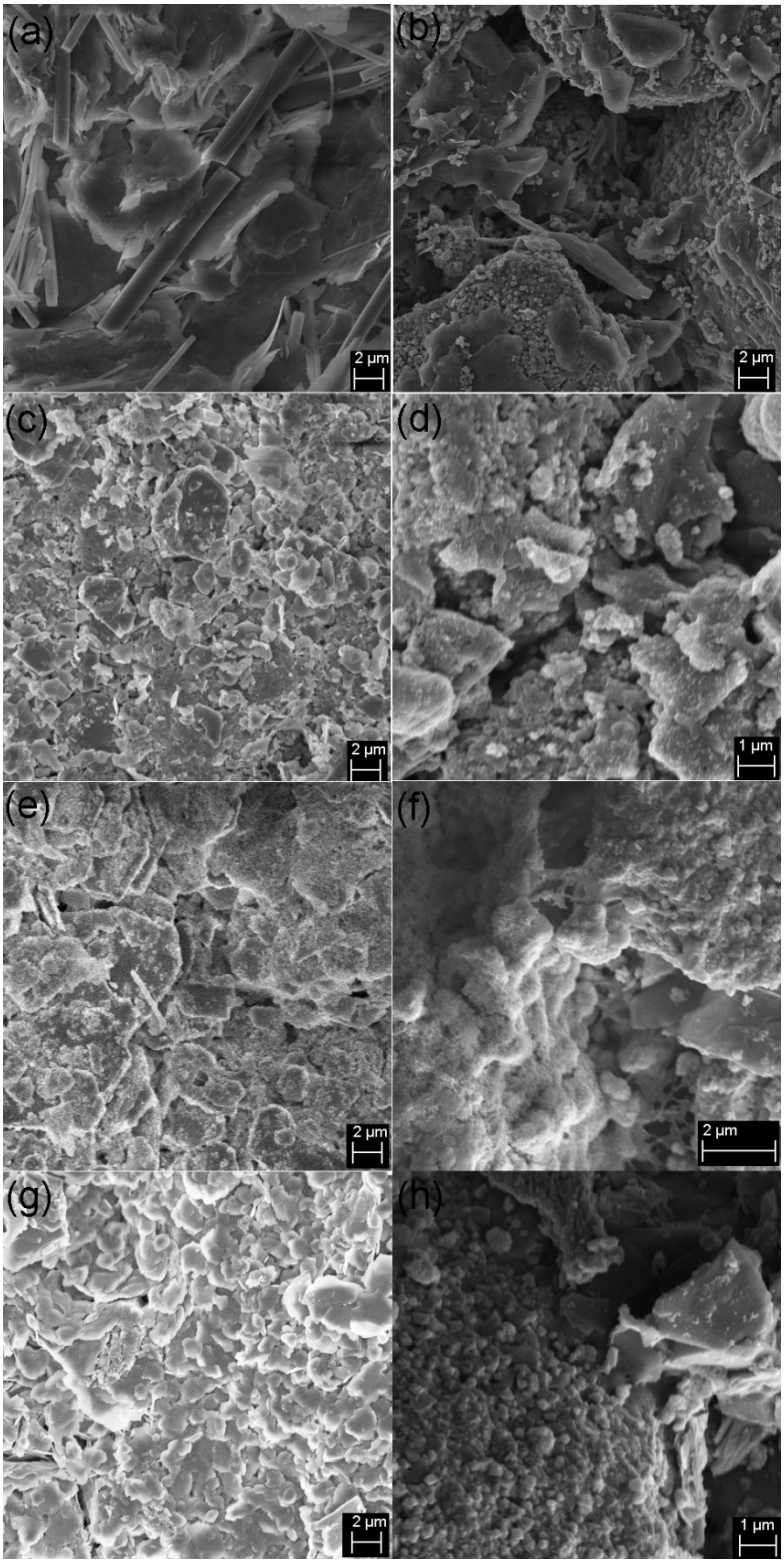

Figure S8. SEM images of the post-cycling anodes and cathodes of typical conventional Swagelok battery (a and b), and batteries using 5%FS (c and d), 4%FS+1%PVA (e and f), and 3%FS+2%PVA (g and h) gel electrolytes. The batteries were cycled under standard constant current mode at 4C.

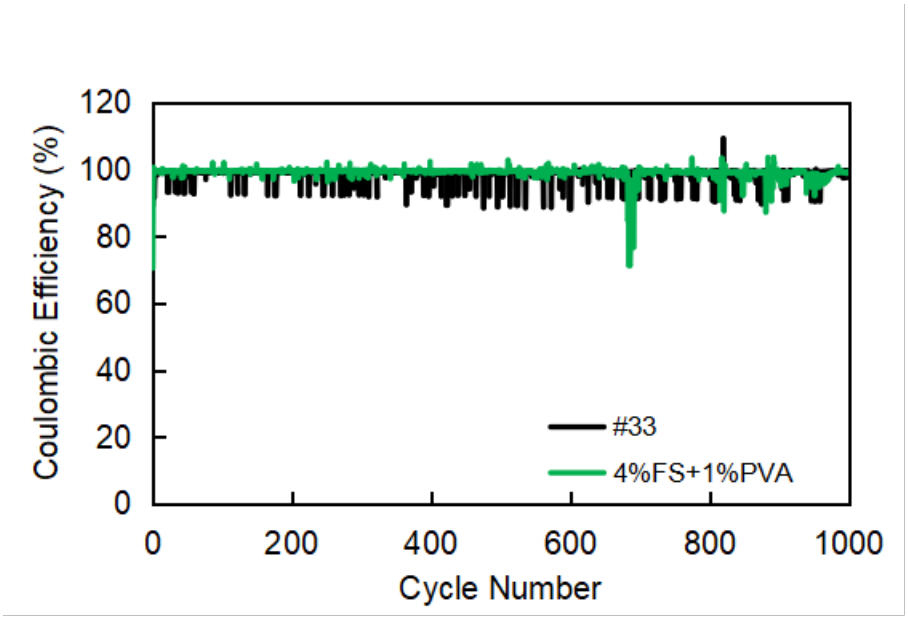

Figure S9. Coulombic efficiencies of the reference and gelled battery.