Study on the preparation and performance of the polymer electrolyte P (VDF-HFP)/PVP

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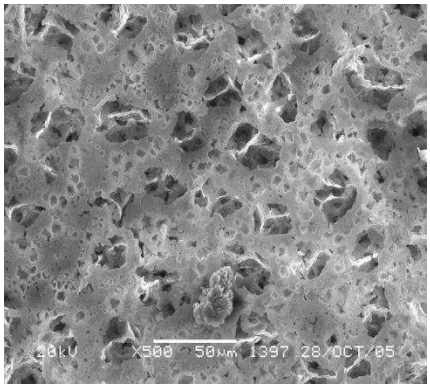

Fig. 1 SEM micrographs of polymer membrane

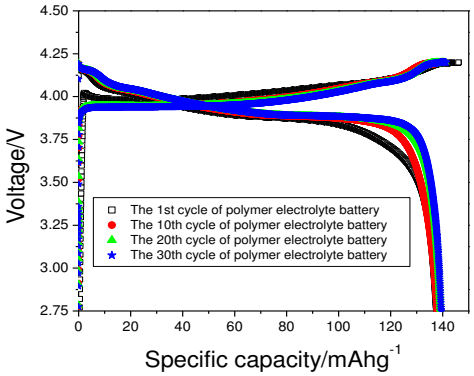

Fig. 2 Charge-discharge curves of lithium ion cell

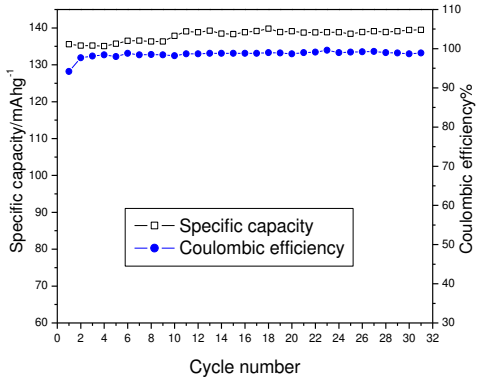

Fig. 3 Cycling performance at 0.1Current rate

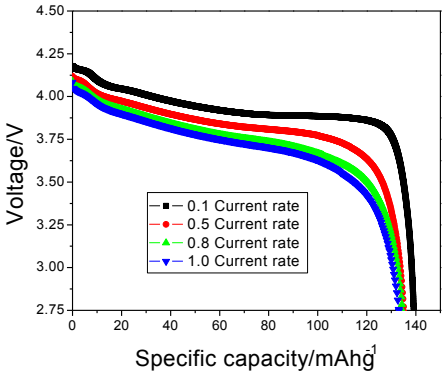

Fig. 4 Different rate performance

P (VDF-HFP)/PVP polymer electrolyte based on the blend of PVP and P (VDF-HFP) was prepared by phase transfer method. The polymer electrolyte was characterized by scanning electron microscopy, impedance response technology and linear scan voltammetry method. The $LiCoO_2$/Li polymer battery was assembled and tested. The results showed that this polymer electrolyte film had abundant micro pores and its uptake of solution was up to 530%. The electrochemical stable window of the polymer electrolyte was 5.5V, and its ionic conductivity was 5.85×10-3 S/cm at room temperature. The initial discharge capacity of the cell exhibited 136mAhg^{-1} and discharge plateau was about 3.88 V at 0.1 C. After 30 cycles, its discharge capacity kept 139mAhg^{-1}. The coulombic efficiency exceeds 98% during the cycling. When discharging at 1 C, it could retain 94% of the discharge capacity at 0.1 C.

References

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