

Improved Electrochemical Performance of NCM Cathode Materials Based on the Modification of the Salt Content in the Electrolyte

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INTRODUCTION

The layered LiMO_2 ($M = \text{Mn, Co, and Ni}$ denoted as NCM), have been extensively studied and considered to be a promising candidate of cathode material for future LIBs because of their high theoretical capacity, low cost, safety, high cycling stability and low toxicity. However, it is considered that the need to continue with these studies, to be able to improve their electrochemical behavior especially with respect to its low initial coulomb efficiency and poor rate capability, is still present.

EXPERIMENTAL

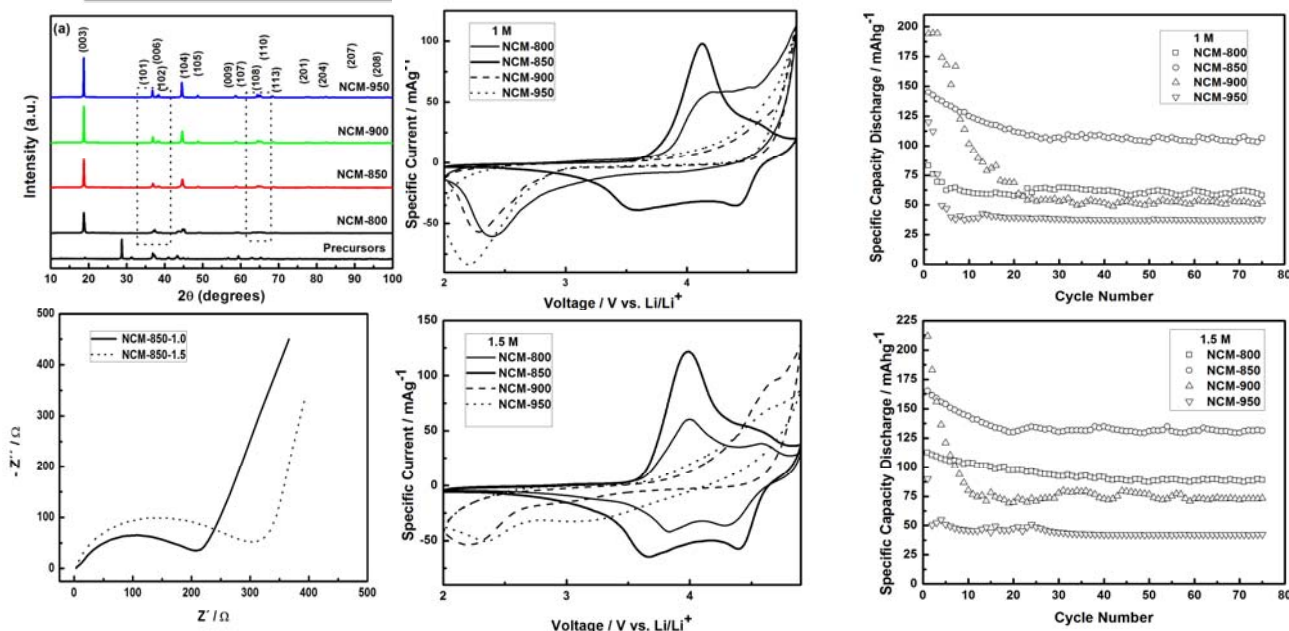


•**Cathode:** active material (80 wt.%), Super P (10 wt.%) And PVDF (10 wt.%) in N- methyl-2-pyrrolidone.

•**Counter and reference electrode:** Li metal foil

•**Electrolyte:** 1M and 1.5 M LiPF₆ in EC:DMC- 1:1 w/w

RESULTS AND DISCUSSION



CONCLUSIONS

- ✓ NCM materials are synthesized by solid state reaction routine, being a simple process; that allows to prepare highly homogeneous electrode materials.
- ✓ NCM electrodes annealed for 12 h at 850 °C in air (NCM-850) exhibit well-ordered layered structure and an improvement of their electrochemical performance.
- ✓ The best electrochemical behavior for NCM-850 materials is obtained when the salt content in the electrolyte is 1.5 M LiPF₆.