第 34 卷　第 1 期　　电　　池　　Vol.34, No.1
2004 年　　2 月　　BATTERY　BIMONTHLY　　Feb., 2004

$LiCo_xNi_{0.5-x}Mn_{1.5}O_{3.95}F_{0.05}$：5V 锂离子电池正极材料

李　文，苏光耀，李朝晖，肖启振

（湘潭大学化学学院，湖南 湘潭　411105）

摘要：为改善锂锰氧化物的电化学特性，采用溶胶-凝胶法合成了钴、镍、氟复合掺杂型锂离子电池正极材料 $LiCo_xNi_{0.5-x}Mn_{1.5}O_{3.95}F_{0.05}$（$x$ =0，0.1，0.25）。XRD 分析表明：该复合氧化物仍为尖晶石结构；电化学性能测试结果显示：当 x 取值 0.1 时，在 3.5~5.1V 电压范围内以 0.12mA/cm^2 的电流密度进行充放电循环时，$LiCo_{0.1}Ni_{0.4}Mn_{1.5}O_{3.95}F_{0.05}$ 材料具有较好的循环特性，初始放电容量可达 139mAh/g。

关键词：锂离子电池；　正极材料；　掺杂；　尖晶石；　电化学性能

中图分类号：TM912.9　　文献标识码：A　　文章编号：1001-1579(2004)01-0035-03

$LiCo_xNi_{0.5-x}Mn_{1.5}O_{3.95}F_{0.05}$：5VLi-ion battery cathode material

LI Wen，SU Guang-yao，LI Zhao-hui，XIAO Qi-zhen

（College of Chemistry，Xiangtan University，Xiangtan ，　Hunan 411105，China）

Abstract：In order to improve the electrochemical properties of lithium manganese oxide，a series of Li-ion batteries multi-doped (cobalt, nickel and fluorine)cathode materials $LiCo_xNi_{0.5-x}Mn_{1.5}O_{3.95}F_{0.05}$ materials used for Li-ion batteries were studied. Test results showed that the synthesized materials had the type of spinel. The electrochemical properties of these materials were investigated from 3.5～5.1V. When x was 0.1,the charge and discharge current densities were 0.12mA/cm^2，the $LiCo_{0.1}Ni_{0.4}Mn_{1.5}O_{3.95}F_{0.05}$ electrode delivered the initial capacity of 139mAh/g and with excellent cycle ability.

Key words：Li-ion battery；　cathode material；　doping；　spinel；　electrochemical characteristic