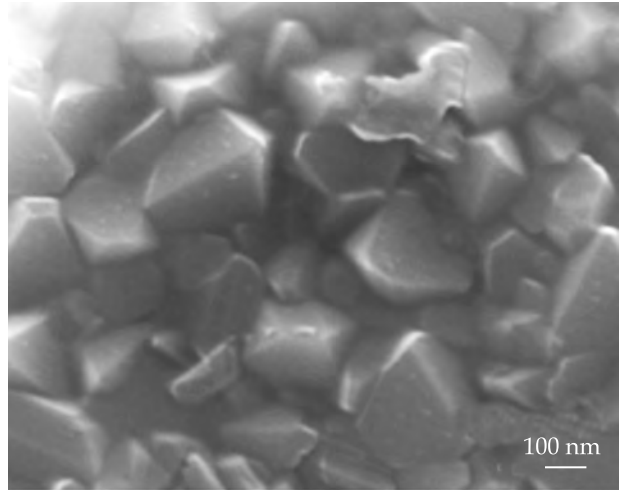


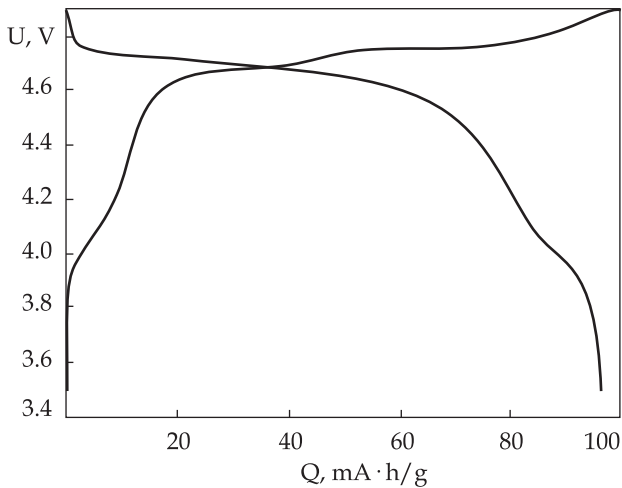
# LITHIUM-NICKEL-MANGANESE SPINEL $\text{LiNi}_{0.5}\text{Mn}_{1.5}\text{O}_4$ FOR HIGH-RATE BATTERY APPLICATIONS

## Advantages

Lithium-nickel-manganese spinel  $\text{LiNi}_{0.5}\text{Mn}_{1.5}\text{O}_4$  is one of the cathode materials having the highest energy density ( $500 \text{ mW} \cdot \text{h/g}$ ). It can sustain higher current loads up to  $5870 \text{ mA/g}$  (40 C) as compared with commercial analog



SEM micrograph of  $\text{LiNi}_{0.5}\text{Mn}_{1.5}\text{O}_4$



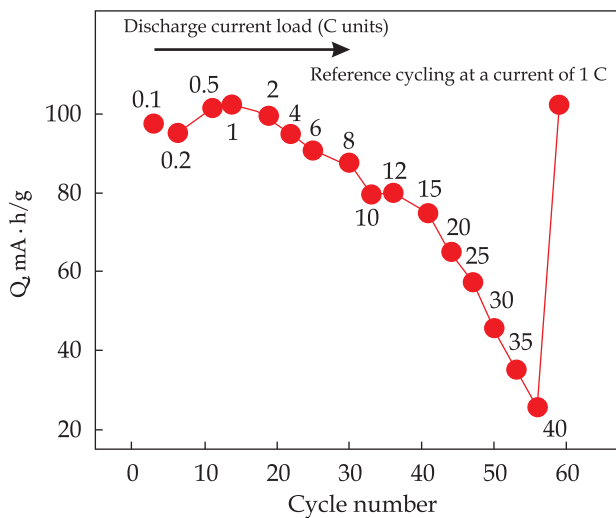
Stationary charge/discharge curves for  $\text{LiNi}_{0.5}\text{Mn}_{1.5}\text{O}_4$  at a current load of  $14.7 \text{ mA/g}$  (0.1 C)

## Areas of Application

Cathode material for lithium-ion batteries used in renewable energy

## Specification

Operating voltage range, V	3.4–4.85
Nominal capacity at 1.5 C discharge current, $\text{mA} \cdot \text{h/g}$	105
Maximal current load, $\text{mA/g}$	5870
Particle size, nm	<200
Crystallite size, nm	15–22



Dependence of discharge capacity on the cycle number for  $\text{LiNi}_{0.5}\text{Mn}_{1.5}\text{O}_4$

## Stage of Development.

## Suggestions for Commercialization

IRL5, TRL4  
The electrode material is proposed

## IPR Protection

IPR2, IPR3

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