

# Cathode Material for Li-ion Secondary Battery Technology Trend and Market Forecast (ver.2011)

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## Abstracts

As there is growing concern about the depletion of fossil fuel and environment pollution, the study on hybrid electric vehicles, plug-in hybrid electric vehicle and electric vehicle are being conducted. Moreover, R&D activities on energy storage system that effectively store electric energy generated from renewable energy become active.

There is the Li-ion secondary battery as the key driven force in the electric vehicles and energy storage system and cathode material is the essential battery material for Li-ion secondary battery.

Of the four components (Cathode, Anode, Electrolyte and Separator) of Li-ion secondary battery, cathode material accounts for about 30~40% of Li-ion secondary battery cost. That is why performance and low-cost of cathode material is required to commercialize large-sized Li-ion secondary battery.

The total demand of worldwide cathode material in 2010 has been increased to 42,307ton with 29.6% growth rate from 32,653ton in 2009 but LCO which is the mainstream in the past has only grown by 2.8%, tending to be decreased. Meanwhile, NCM has been increased by 44.5%, NCA by 121.0%, LMO by 182.4% and FPO by 71.9% over last year and its use becomes expanded.

Cathode material for Li-ion secondary battery has increased its demand more than 7,000 ton every year. In addition, it is expected that the cathode material demand market would grow by 18% a year on average to 88,700ton in 2015 from 42,300ton in 2010 and its market would be increased in large-scale as battery market for EV starts in earnest after 2012.

Since 1991, the highest consumption LCO become less used, being decreased to 12% in 2015 from about 50% in 2010. The rest four type cathode materials are expected continuously to grow. In particular NCM is expected to be increased up to 48% in 2015 from 32% in 2010 and LMO is also expected to grow to 27% in 2015. Unlike previous two types, NCA seems to maintain its growing.

Cathode material market cost USD \$1066Million in 2009 and has grown to USD \$1202million in 2010 by 12.8%. The growth rate was 149% for NCA, 153% for LMO and 45% for NCM. However, in terms of market price, LCO still accounts for the largest part by 71.5% in 2009 and 57.6% in 2010.

Solar&eEnergy has released 'Cathode Material for Li-ion secondary battery Technology Trend and Market Forecast (ver.2011) report, including the following.

Technology Status and Development Trend

Manufacturing Process

Trend by Company

Market Trend and Forecast Analysis

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