Application Note BATT1010

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BATT1010 - Investigation of Phase Transition Behavior upon Cathode Material NCM Firing

Introduction

Cathode materials are known for being synthesizable through firing using the solid-phase method. With in-situ XRD measurement, it is possible to investigate the firing process in detail by performing measurements while increasing the temperature of the samples.

Crystal phase analysis

- **Analysis:** Cathode material
- **Analysis method:** Qualitative analysis
- **Use:** Optimizing electrochemical performance
- **Analyzed materials:** $Li(Ni_xCo_yMn_z)O_2$, NCM
- **Instrument:** SmartLab, SmartLab SE

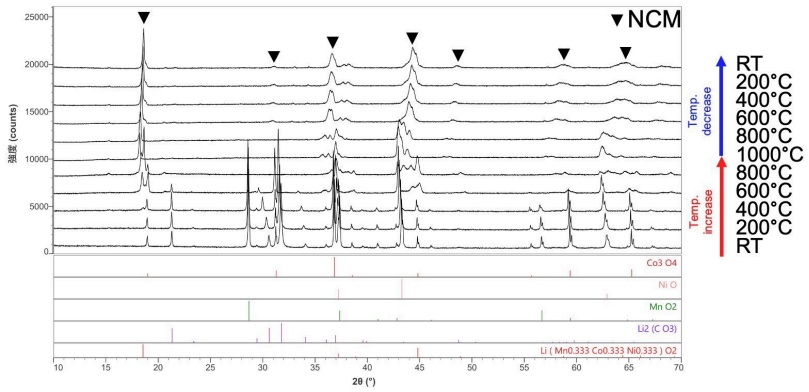

Figure 1: XRD profile at various temperatures
(The raw material powder reacts from 600°C and becomes NCM units at 1000°C)

Conclusion

It is possible to capture a solid-state reaction during the sintering process. By examining firing conditions in this fashion, appropriate temperatures and times can be determined.

Related products

SmartLab

Advanced state-of-the-art high-resolution XRD system powe red by Guidance expert system software

SmartLab SE

Highly versatile multipurpose X-ray diffractometer with built -in intelligent guidance