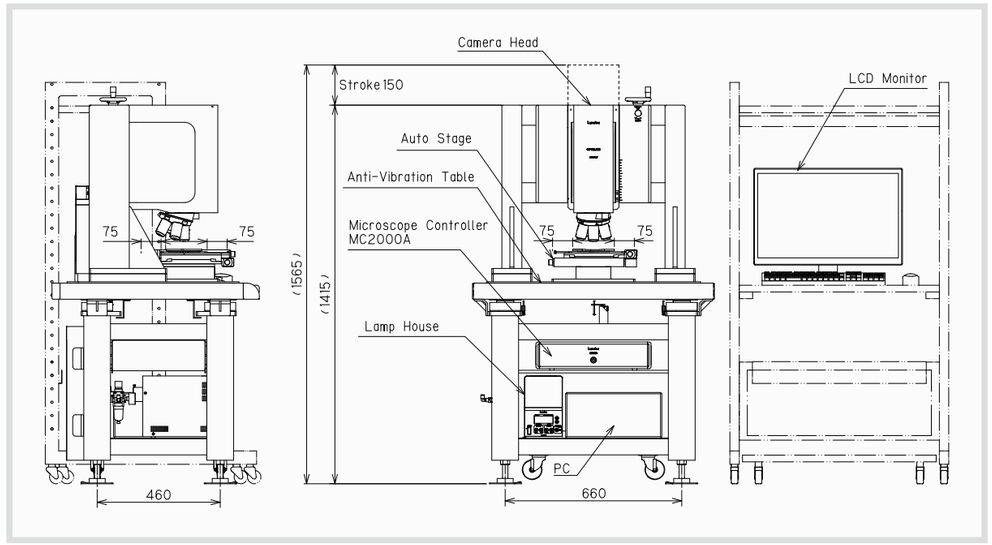
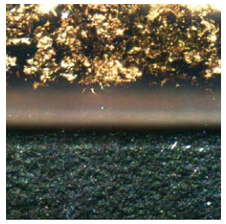
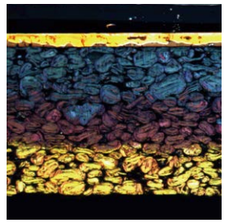
System overview



Observation examples

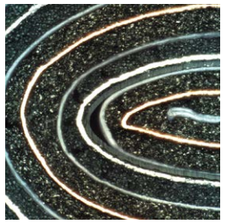


Half cell

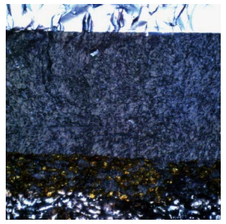


Cross section polish processed (Reaction distribution)

Provided by Lithium Ion Battery Technology and Evaluation Center (LIBTEC, Japan)



Rolled electrode



Solid state battery

Provided by professor Tatsumisago and Hayasi laboratory in Osaka Prefecture University

Application

Battery type	Analysis items	
• Full cell	• Reaction distribution (Anode, Cathode)	• Temperature characteristics
• Half cell	• Expansion and contraction (Anode, Cathode)	• Metal foreign behavior
• Stack type	• Dendrite generation and growth	• Gas generation behavior
• Rolled type	• Cycle degradation	• New material evaluation
• Pouch cell	• Rate characteristics	• Other
• Solid state battery		

Official web site product page Video available

www.lasertec.co.jp/en/products/environment/battery/eccsb320.html

Development and manufacturer

Lasertec Corporation

Solution Sales Department II
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Phone:+81-45-478-7330 Fax:+81-45-478-7333

Official web site
www.lasertec.co.jp

E-mail
sales@lasertec.co.jp

Distributor

05-2411

Lasertec

Electro-Chemical reaction visualizing Confocal System

ECCS B320

Creating the bright future
by *Operando* observation

High definition real time observation of electro-chemical reaction inside lithium ion battery during charging and discharging

Electro-Chemical reaction visualizing Confocal System

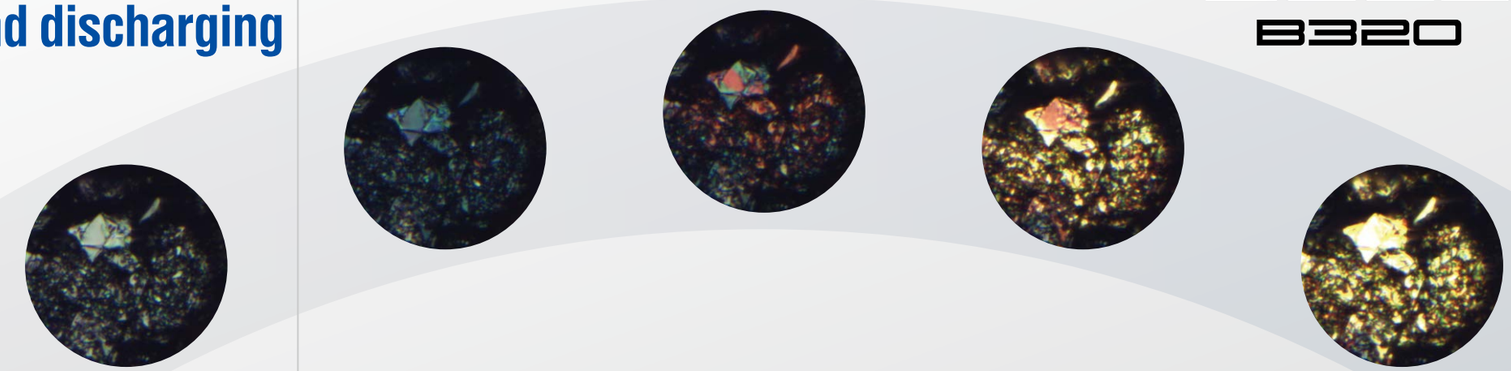
ECCS B320

ECCS B320 is the system that enable us to see electro-chemical reaction in lithium ion battery during charging and discharging by *Operando* observation. The system visualizes intercalation, quantifies expansion and contraction process of active material, and enables to analyze dendrite generation and formation process by Lasertec unique real color confocal optics and specially designed observation cell.

Operando observation of cross-sectional electrode during charging and discharging.

Real time observation of dendrite generation and formation process.

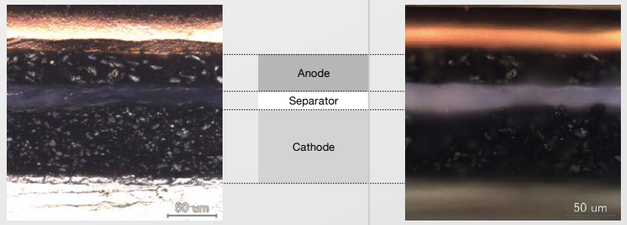
Drastically reduce the initial evaluation period.



Unique optics

Operando observation

High resolution and high contrast real time observation by real color confocal optics to remove glass and electrolyte effect.

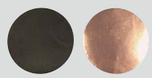


Confocal optics　　Non-confocal Optics

Specially designed observation cell

Observation of cross-sectional electrode

Two types of cross-sectional observation cell for coin and pouch type. Easy to use. Applicable to various kinds of application.

	Specially designed fixture for coin cell	Specially designed fixture for pouch cell
Base unit		
Clamp unit		
Applicable cell	Coin cell	Pouch cell
Electrode size	ø15-17mm	□25mm
Pressure	70kPa	1.4MPa
Appearance		

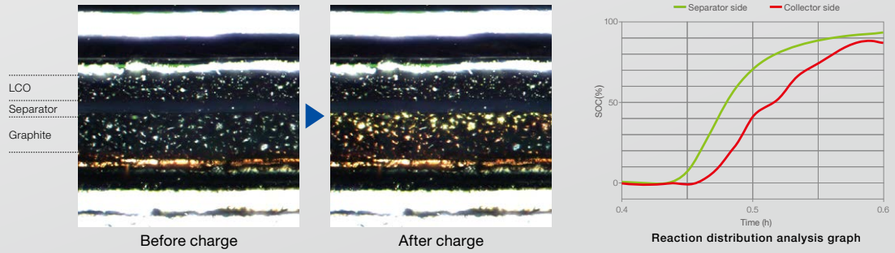
Specially designed analyzing software

Useful to LiB development challenges

Contribute to the challenges of LiB development such as quality improvement or new material development.

Reaction distribution analysis

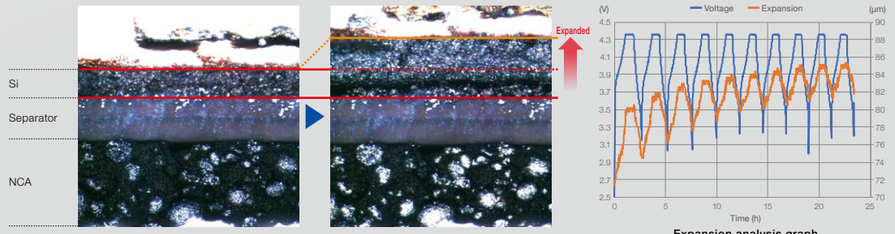
Quantitative analysis of reaction distribution is possible in the thickness direction by capturing color and brightness change of active material.



Before charge　　After charge　　Reaction distribution analysis graph

Expansion and contraction analysis

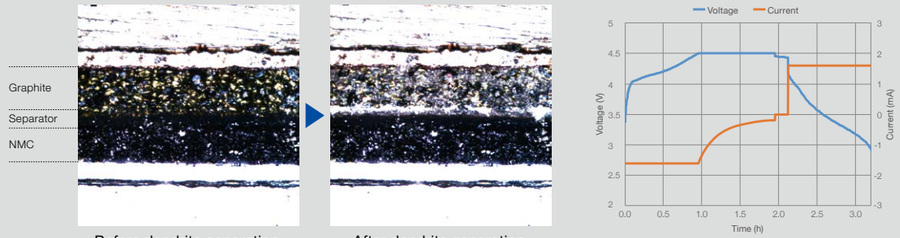
Real time minor variation analysis is possible that which is hard to be measured by micrometer or displacement meter.



Before charge　　After charge　　Expansion analysis graph

Dendrite analysis

Generation and growth process quantitative analysis is possible. Small dendrite observation is also possible which is not shown on charge and discharge curve.



Before dendrite generation.　　After dendrite generation.　　Charge and discharge curve