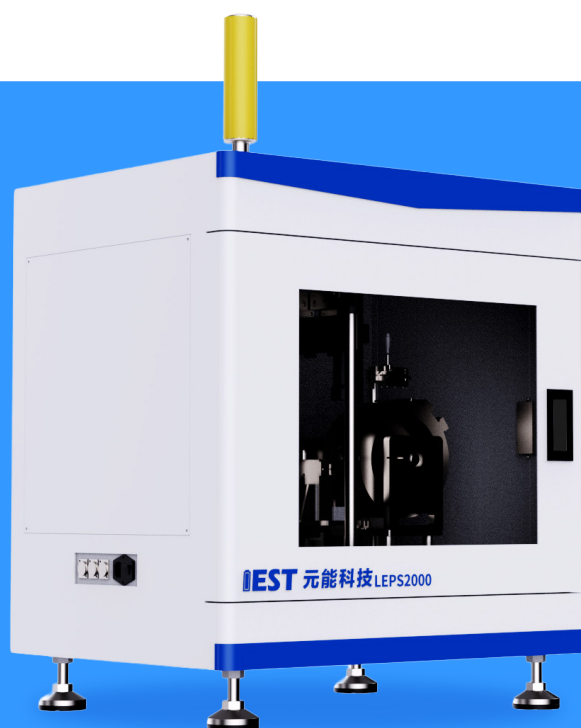
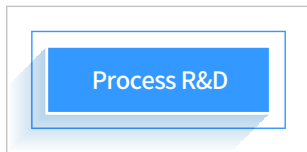


# Lithium Electrode Powder Scraper Sampling

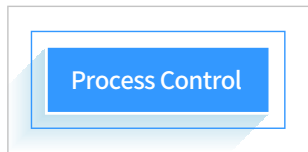
▶ LEPS Series



# Application Scenarios

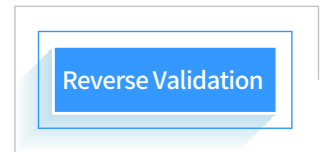


- Thick Coating / Thick Electrodes
- Multi-layer Coating / Gradient Design

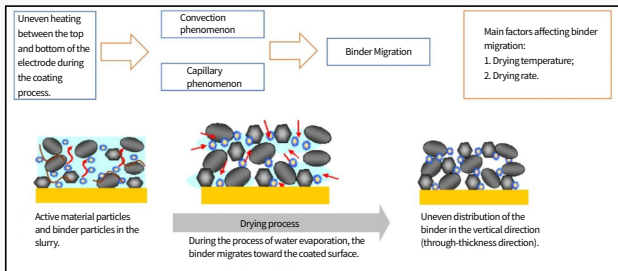


- Binder Migration Control

Top layer	3.7 wt-% SBR	2.5 wt-% SBR	0.0 wt-% SBR
Bottom layer	3.7 wt-% SBR	5.0 wt-% SBR	7.5 wt-% SBR
	Configuration A + A (reference)	Configuration B1 + B2	Configuration C1 + C2



- Electrode Composition Uniformity
- Compositional Depth Profiling



- ✓ Optimizing battery performance: Compositional analysis of thick/multi-layer coated electrodes.
- ✓ Providing process validation or reverse analysis for overall electrode performance and quality.
- ✓ Detecting SBR migration/anomalies as a routine quality control item for electrodes.

# Conventional Method — Manual Powder Scraping

Process / laboratory personnel scrape the coating powder from the electrode surface using a ceramic blade, followed by thermogravimetric (TG) analysis.



- Tape Peeling
- Manual Scraping



- Low scraping efficiency; time-consuming and labor-intensive.
- Difficult to control scraping depth, leading to inaccurate depth-resolved sample information.
- Manual operation carries inherent risks and lacks result traceability.
- Poor scraping consistency renders subsequent analysis unreliable and meaningless.

# Innovative Method



## Vision Module

High-precision vision module enabling fully automatic, fast, and precise blade calibration

## Electrode Thickness Measurement Module

Non-contact thickness measurement system enabling closed-loop thickness monitoring.

## Precision Feed Mechanism

Accuracy up to 1 $\mu$ m; Resolution 0.1 $\mu$ m. Enables precise advancement and meticulous control over scraping depth.

## Electrode Clamping Module

Constant tension to ensure sample loading consistency.

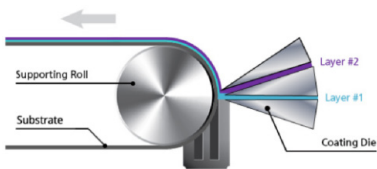
## Functional Advantages

- Precisely scrape coating thicknesses at the micrometer ( $\mu$ m) level;
- Efficiently and uniformly complete powder sampling;
- Guarantee the consistency of subsequent analytical testing.

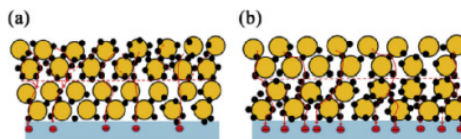
## Application Cases

Based on micron-level layered scraping technology, the system precisely delaminates electrode coatings at different depths and across different regions, obtaining structured powder samples.

### Process Validation



Multi-layer coating composition verification

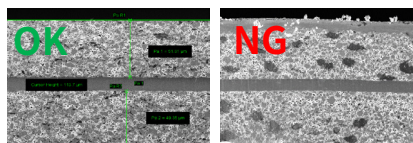
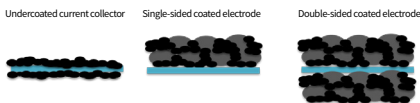


Material layered-design validation

**Scenario:** Samples obtained from different coating depths of the electrode are subjected to corresponding characterization techniques to derive compositional and structural information.

### Uniformity Assessment

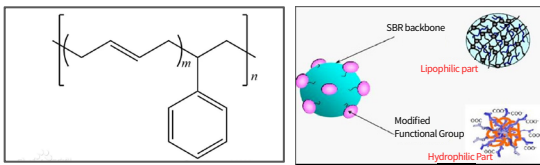
#### Stability monitoring of coating & calendaring processes across



**Scenario:** Samples obtained from different coating depths of the electrode are subjected to corresponding characterization techniques to derive compositional and structural information.

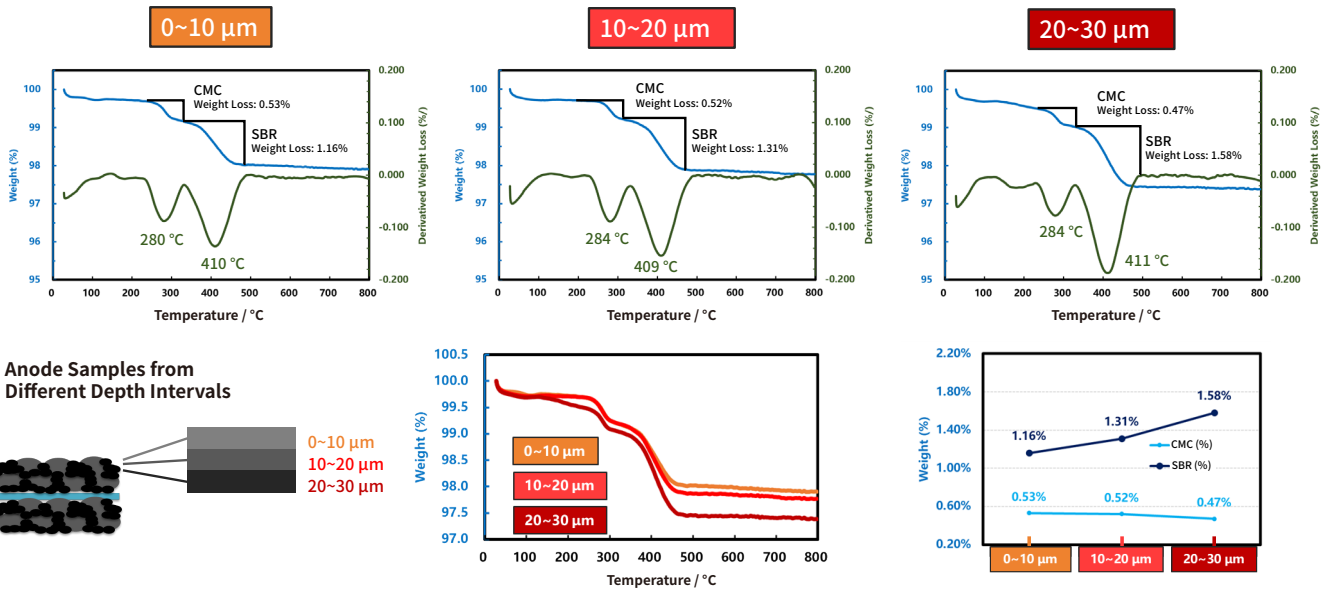
### SBR Content Quality Control

#### Styrene-Butadiene Rubber (SBR)



**Scenario:** Powder samples obtained by scraping are analyzed via thermogravimetric analysis (TGA) to determine the styrene-butadiene rubber (SBR) content, identify abnormal SBR surface migration, and serve as a dedicated quality control protocol.

## CMC & SBR Content Analysis



## Model and Parameters

Parameter		LEPS1000	LEPS2000
Dimensions & Weight	Overall Dimensions	550*600*750 mm	550*600*750 mm
	Net Weight	Approx. 80 kg	Approx. 80 kg
Vision-Assisted System	Blade Calibration	Automatic	Automatic
Electrode Thickness Measurement	Measurement Method	N/A	Non-contact closed-loop measurement
Sample Clamping & Motion Stage	Travel Range	0-200/500/700 mm (Optional & Adjustable)	0-200 / 500 / 700 mm (selectable & adjustable)
	Tension / Clamping Force	Fixed tension	Fixed tension
	Compatible Electrode Size	300/600/800*80mm	300/600/800*80mm
Blade & Carrier Platform	Blade Material	Tungsten carbide	Tungsten Steel
	Control Accuracy	1μm	1μm
	Effective Sampling Width	10-55 mm (Optional)	10-55 mm (Optional)

Initial Energy Science&Technology(Xiamen) Co., Ltd

Tel: (86)592-5367060

Fax: (86)592-5367062

Mail: info@iesttech.com

Web: www.iestbattery.com

Add: Bldg 2, Anren Ind. Park, No. 1068-3, Jimei North Avenue, Jimei District, Xiamen, China.

IEST 3 Major Business

- Battery R&D Solutions
- Battery Testing Service
- Battery Testing Instruments



IEST WeChat



IEST Instruments



IEST Instruments