

-DEDICATED TO LITHIUM-ION BATTERY TESTING AND DEVELOPMENT-



ELECTROLYTE WETTING MEASUREMENT SYSTEM

EWS1100

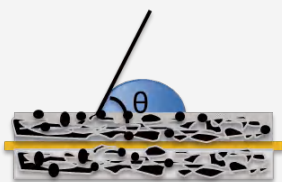


» The Importance of Electrolyte Wetting

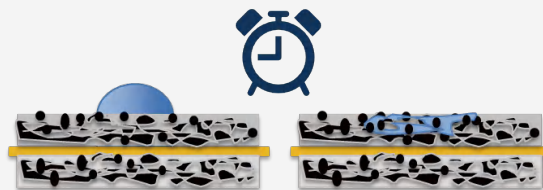
Electrolyte is the core part of lithium-ion battery (LIB) research and development. It is not only an important medium to ensure ion transmission, but also an important basis for the LIB to obtain high voltage and high specific energy. Relevant parameters of the electrolyte and its wettability to the electrode and separator directly affect the performance of the LIB. The wetting effect of the electrolyte in the electrode is closely related to the compaction density, pore size, porosity and other parameters of the electrode itself. The evaluation of the wetting effect of the electrolyte in the electrode can be used as a key indicator for the process optimization of the electrode, and can also provide a new direction for the research and development of high-performance LIBs; Similarly, as one of the main materials of lithium-ion batteries, the separator also need a good wetting performance of the electrolyte. Therefore, it is necessary to develop a kind of equipment that can effectively evaluate and test the stability of electrolyte wettability.

» Traditional test methods

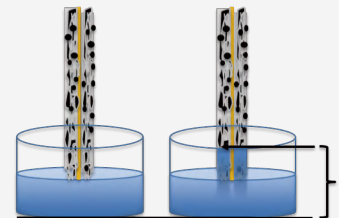
1 Contact Angle Measurement



2 Soaking Time Method



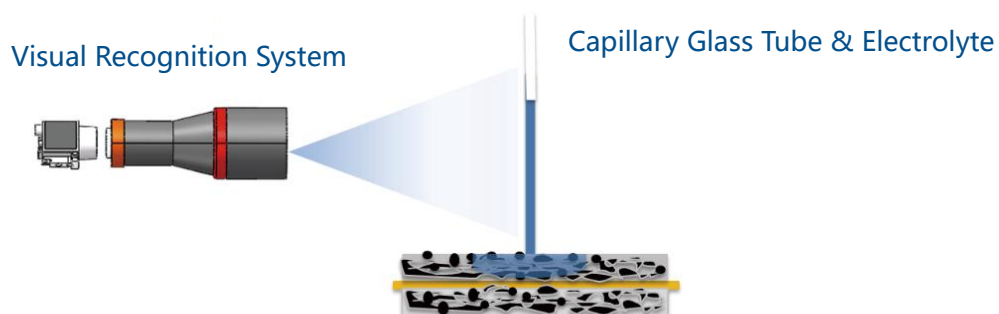
3 Wetting Height Method



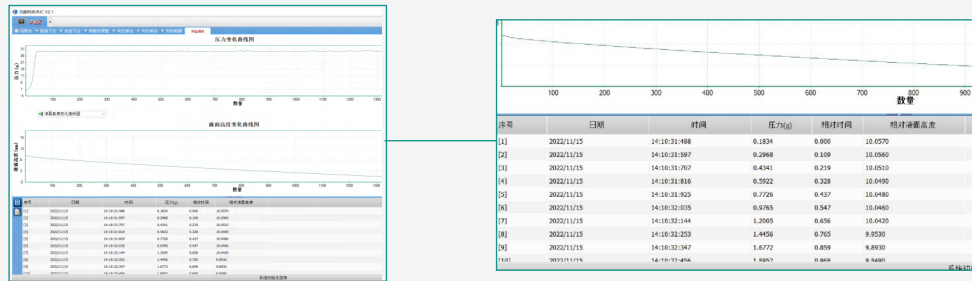
The traditional methods have poor repeatability and can not accurately evaluate the true infiltration effect of the electrolyte!

» Creative Solutions

1. Based on the capillary diffusion principle of electrolyte in the electrode and separator, quantitatively evaluate the difference of electrolyte infiltration;
2. Equipped with high-precision mechanical control and visual acquisition system, the test is stable and efficient;
3. It is applicable to the evaluation of infiltration of different electrodes, electrolyte, separator with different formula and process;
4. Real-time characterization of the wetting rate of the electrolyte in the sample.

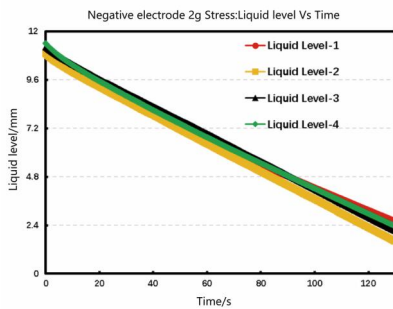


» Software Interface



» Application Cases

© Wettability test of negative electrode of lithium-ion battery



Negative 2g-4 group immersion - 50s			
Number	Initial liquid level/mm	50s Liquid height/mm	Height difference/mm
1	11.065	7.234	3.831
2	10.888	7.133	3.755
3	11.218	7.609	3.609
4	11.408	7.425	3.983
Mean	11.1448	7.3503	3.7945
σ	0.1917	0.1825	0.1349
COV	1.72%	2.48%	3.56%

Experiments: Select four different positions of the same negative electrode and complete four groups of repeatability tests. The test results are shown in the figure & table;

Result: the saturation curves of four repeated infiltration tests on the same negative electrode are basically consistent, and the standard deviation of the difference of the liquid level height at 50s is about 0.135, which indicates that the test consistency is good.

» Parameters and installation requirements

Model		Installation requirements	
Electrolyte wettability test system	EWS1100	Power Supply	220~240V/50~60Hz
Parameters		Voltage variation difference	±10%
		Ambient temperature	0~50℃
Stress control range	0~500g	Ambient humidity	≤80%RH (no steam condensation)
Stress Resolution/Accuracy	0.01g / ±0.3%F.S	Ambient magnetic field	Keep away from strong electromagnetic fields
Suction capacity	2μL	Size (W*D*H)	560*430*470mm

Note: IEST is committed to continuous improvement of products. IEST reserves the right to alter the specifications of its products without notice.



EWS202302

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