

21. Oct. 2011

Information of Anode Active Material Development for Li-Ion Battery

ISUZU GLASS CO., LTD, in collaboration with National institute of Advanced Industrial Science and Technology, had succeeded in developing high performance sulfide glass as an anode active material for rechargeable lithium-ion battery with high safety.

Although sulfide type material has been regarded efficient to be used as anode active material with high battery characteristics, various subjects such as safety, cycle life characteristics, and low-temperature characteristics made it difficult into practical usage.

Noticing sulfide glass as high water-resistance and acid resistance material, and utilizing the special glass material development technology cultivated for years, we promoted development of applying sulfide glass as anode active material for lithium-ion battery.

As a result, this material as anode active material has a very high stability against water and oxygen, and lithium dendrite, which causes internal short-circuit under low temperature working, has not be observed. It is confirmed that this material has high safety.

Furthermore, in performance aspect, this material has also been confirmed of exceeding high performance in cell capacity, output characteristic, cycle characteristics, etc., comparing with conventional graphite type material.

For example, for general case of mobile charge, 1 hour is needed. But our anode material had been confirmed having the characteristic of possibility to shorten this to 3 minutes.

(Depends on different conditions such as combination with cathode material.)

ISUZU GLASS pursue the goal of entering market of high capacity battery for information terminals such as smart phones and tablets, and field like electric vehicles and industrial battery, which is expected of full practical usage.



material powder

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(Extracts of Data on Cell Characteristic)

Test Temperature	Discharge Capacity
30	Approx 1400mAh/g
-5	Approx 1000mAh/g
-20	Approx 600mAh/g

Discharge capacity data is half-cell inspection data.

Charge Rate	Capacity retention
10C Charge	92%
30C Charge	80%
60C Charge	54%

Charge rate data is full-cell (coincell 2032 type) inspection data.

In any temperature range, occurrence of lithium dendrites and collapse of electrode is not confirmed.

Our developed sulfide glass + silicon composite material



anode electrode