New lithium battery ceramic diaphragm technology

Why is the diaphragm important in a lithium ion battery?
The diaphragm of a lithium-ion battery has important functions,such as preventing a short circuitbetween the positive and negative electrodes of the battery and improving the movement channel for electrochemical reaction ions.

Which diaphragm is used as a structural-functional ceramic composite?
The zinc borate modified diaphragmwas used as the structural-functional ceramic composite diaphragm,and the zinc borate and PVDF were prepared at a mass ratio of 90:10,and the ordinary diaphragm and the zinc oxide modified diaphragm were used as comparison samples. The battery electrolyte was 1 M LiPF6 in EC/DEC (1:1 vol ratio).

Why is Zinc borate ceramic modified diaphragm better?
This is because the zinc borate ceramic modified diaphragm has better electrolyte affinity and liquid retention ability,which makes the impedance between the diaphragm and the anode interface is small,the loss of electrolyte during charging and discharging is small,and the side reactions are less,which is conducive to the long cycle. Fig. 15.

Does zinc borate modify diaphragm increase lithium-ion migration number?
The results show that the zinc borate modified diaphragm increasesthe lithium-ion migration number of the battery. This is because the Lewis acid sites of zinc borate can absorb anions in the battery system,and the increase in the migration number of lithium ions will help improve rate performance .

How to prepare a modified diaphragm?
2.3.2. Preparation of modified diaphragm According to the proportion of the same active material,conductive carbon,and PDVF at 8:1:1,the prepared activated material was uniformly coated on the surface of the diaphragm and dried in a vacuum oven at 60°C for 10hto obtain a modified diaphragm.

What are the lithium ion migration numbers of ZNB modified diaphragm?
The lithium-ion migration numbers of ZnB modified diaphragm are 0.41,while the lithium-ion migration numbers of ZnO modified diaphragm and routine diaphragm are 0.3 and 0.21. When the battery is working,the charge transfer rate of lithium ions reflects the charging and discharging characteristics of the battery.

Shanghai Semcorp New Material Technology Co., Ltd. was founded in Pudong, Shanghai in 2010, has built Shanghai, Zhuhai, Jiangxi and Wuxi production base, was listed in September 2016. It is a world"s leading new energy company in ...

The electrochemical performance test results show that the modification of zinc borate can effectively improve

the comprehensive performance of the PE diaphragm and the overall cycle ...

The research work provides a new idea for the development of reliable high temperature resistant high performance lithium-ion battery diaphragm and technology, and becomes one of the effective ways and means to improve the safety of lithium-ion batteries.

since the early 1990s, lithium-ion battery had become the focus of new power technology research. Lithium-ion batteries were composed by positive and negative electrodes, electrolyte and diaphragm. The separator is an important part of lithium battery, who directly determines the performance of lithium battery. It is an important determinant of ...

Based on the current research situation, in this paper, we prepared the oxygen-doped graded porous hazelnut shell biomass carbon material by secondary roasting ...

A new lithium secondary battery system, the sulfur/lithium-ion battery, has been constructed by employing a lithium/Sn-C composite anode, a carbyne polysulfide cathode, ...

The invention relates to the technical field of lithium ion battery diaphragms, in particular to a ceramic-based diaphragm for a lithium battery of a new energy automobile and a...

Diaphragm is one of the important inner members in the structure of lithium battery. The characteristics of the diaphragm determine the page structure and internal resistance of the rechargeable battery. It immediately endangers the capacity, circulation system and safety factor of the rechargeable battery. Excellent diaphragm characteristics are the key element to ...

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