

# EXHIBIT 3



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# Certification of Translation

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COUNTY OF SUFFOLK  
COMMONWEALTH OF MASSACHUSETTS

July 7, 2023

This is to certify that the attached translation is, to the best of my knowledge and belief, a true and accurate translation from Simplified Chinese into English of the attached document:

- 意见陈述书-c

Linguistic Systems, Inc. adheres to an ISO-certified quality management system that ensures best practices are always followed in the selection of linguists skilled in both the languages and subject matters necessary for every translation.

*Fu Xiaohua*

Xiaohua Fu  
Project Manager  
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Linguistic Systems, Inc.

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Form OPS-QF-008 (rev.1)

☐ Preliminary Examination Procedure ☐ Post-grant Procedure

☒ Substantive Examination Procedure ☐ Revocation Procedure

## Statement of Argument

Please fill in each column of this form correctly according to the "notes to filling out the form" on the back of this form

IDC010033

|                                                                                                                                                                                                                                                                                                                             |                                                                                                                     |                                                                          |                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|-----------------------------------------|
| ① Patent Application or Patent                                                                                                                                                                                                                                                                                              | Application No. or Patent No. 01141615.7                                                                            |                                                                          | Date of Application: September 28, 2001 |
|                                                                                                                                                                                                                                                                                                                             | Invention and Secondary lithium-ion battery or battery pack, its protective circuit, Creation and electronic device |                                                                          |                                         |
|                                                                                                                                                                                                                                                                                                                             | Name                                                                                                                |                                                                          |                                         |
| Party Concerned                                                                                                                                                                                                                                                                                                             | <input checked="" type="checkbox"/>                                                                                 | Name of the applicant or the patentee                                    |                                         |
|                                                                                                                                                                                                                                                                                                                             | <input type="checkbox"/>                                                                                            | Name of the person requesting revocation of the patent right             |                                         |
|                                                                                                                                                                                                                                                                                                                             | <input type="checkbox"/>                                                                                            |                                                                          |                                         |
|                                                                                                                                                                                                                                                                                                                             |                                                                                                                     | Ren Xiaoping                                                             |                                         |
| <p>②</p> <p><b>In response to the <u>Notice on First Office Action</u> made by the Patent Office on <u>June 25, 2004</u> for the above, the arguments are stated as follows:</b></p> <p>Please see the attached page.</p> <p><input checked="" type="checkbox"/> Patent application<br/><input type="checkbox"/> Patent</p> |                                                                                                                     |                                                                          |                                         |
| <p>③ <b>List of attachments</b> Claims replacement sheet, in duplicate and 4 pages in total;<br/>Revised draft, one copy, 2 pages.</p>                                                                                                                                                                                      |                                                                                                                     |                                                                          |                                         |
| <p>④ <b>Signature and seal of the party concerned or agency</b></p> <p>人或代理机构签章</p> <p><b>CCPIT Patent &amp; Trademark Law Office</b></p> <p>2004年10</p> <p>October 19, 2004</p>                                                                                                                                            |                                                                                                                     | <p>⑤ <b>Handling opinions of the Patent Office</b></p> <p>MM/DD/YYYY</p> |                                         |

1011-A

34/ 27-1-24

## Attached Page of the Statement of Argument

The applicant has carefully read and studied the Notice on the First Office Action issued by the examiner. Based on this, responses are given as follows:

### I. Revision of the application document and explanation to the examination opinions one by one

1. On the unity issue mentioned in the examination opinion 1. The applicant points out that claim 1 relates to a method of increasing the capacity, operating voltage and specific energy of a secondary lithium-ion battery or battery pack, claim 2 relates to a secondary lithium-ion battery or battery pack, claim 4 relates to a protection circuit for a secondary lithium-ion battery or battery pack, and claim 5 relates to an electronic device powered with a secondary lithium-ion battery or battery pack. Each of the above invention subject has the following special technical features: increasing the limited charge voltage or the initial overcharge protection voltage and overcharge protection release voltage, and adjusting the positive and negative electrode ratio of a single lithium-ion battery accordingly. The limited charge voltage, initial overcharge protection voltage and overcharge protection release voltage of conventional lithium-ion batteries or battery packs are lower than that of the present invention. Therefore, according to the provisions of the Patent Law on unity, each of the above claims of the present invention complies with the unity requirement.

2. With regard to the examination opinion 2, the applicant has made the following statements:

2.1) The “positive and negative electrode ratio” mentioned in claims 1 and 2 can be easily calculated as follows: The said positive to negative electrode ratio = the product of the amount of active material in the positive electrode of a lithium-ion battery and its specific capacity (gram capacity, i.e., capacity per unit amount of active material) when the charging potential relative to lithium metal is 4.2V/the product of the amount of active material in the negative electrode of the lithium-ion battery and its specific capacity when the charging potential relative to lithium metal is 4.2V. The specific capacity of various conventional active substances is well known in the art and those skilled in the art are able to calculate the above-mentioned positive to negative electrode ratio easily. Therefore, it is clear to skilled persons in this field.

## Attached Page of the Statement of Argument

The applicant has carefully read and studied the Notice on the First Office Action issued by the examiner. Based on this, responses are given as follows:

### I. Revision of the application document and explanation to the examination opinions one by one

1. On the unity issue mentioned in the examination opinion 1. The applicant points out that claim 1 relates to a method of increasing the capacity, operating voltage and specific energy of a secondary lithium-ion battery or battery pack, claim 2 relates to a secondary lithium-ion battery or battery pack, claim 4 relates to a protection circuit for a secondary lithium-ion battery or battery pack, and claim 5 relates to an electronic device powered with a secondary lithium-ion battery or battery pack. Each of the above invention subject has the following special technical features: increasing the limited charge voltage or the initial overcharge protection voltage and overcharge protection release voltage, and adjusting the positive and negative electrode ratio of a single lithium-ion battery accordingly. The limited charge voltage, initial overcharge protection voltage and overcharge protection release voltage of conventional lithium-ion batteries or battery packs are lower than that of the present invention. Therefore, according to the provisions of the Patent Law on unity, each of the above claims of the present invention complies with the unity requirement.

2. With regard to the examination opinion 2, the applicant has made the following statements:

2.1) The “positive and negative electrode ratio” mentioned in claims 1 and 2 can be easily calculated as follows: The said positive to negative electrode ratio = the product of the amount of active material in the positive electrode of a lithium-ion battery and its specific capacity (gram capacity, i.e., capacity per unit amount of active material) when the charging potential relative to lithium metal is 4.2V/the product of the amount of active material in the negative electrode of the lithium-ion battery and its specific capacity when the charging potential relative to lithium metal is 4.2V. The specific capacity of various conventional active substances is well known in the art and those skilled in the art are able to calculate the above-mentioned positive to negative electrode ratio easily. Therefore, it is clear to skilled persons in this field.

2.2) In addition, the preferred scope mentioned in claims 1 and 2 is deleted and recorded in a new dependent claim.

2.3) With respect to the subject of invention mentioned in claim 4, the protective circuit of the present invention differs from the prior art only in that the initial overcharge protection voltage and the overcharge protection release voltage are changed, as described in argument 1 above. Features such as circuit structure can be identical to the prior art and should not be recorded in claim 4 according to the provisions of the Examination Guidelines on writing independent claims (see pages 2-30 of Chapter 2, Party 2 of the Examination Guidelines).

3. As for the “positive and negative electrode ratio” mentioned in the examination opinion 3, the argument 2.1 above may be referred to. With regard to the said substance A, electrolyte B that has a high decomposition potential, and compound C, first of all, the said substances A, B, and C appear only in certain embodiments, and the present invention can also be realized even without the use of the said substances A, B, and C. In other words, the present invention does not depend on said substances A, B, and C. As described in paragraph 2 on page 6 of the specification, substance A or electrolyte B with a high decomposition potential “may also be used”, but not necessary. Secondly, the present invention has provided general instructions. Therefore, for those skilled in the art, it is also possible for them to select appropriate specific substances A, B, C in accordance with the present disclosure without expending creative labor. For example, the present invention has disclosed that electrolyte B is used to obtain a higher decomposition potential, and therefore, a person skilled in the art is able to select appropriate composition to obtain an electrolyte that has a higher decomposition potential. The applicant believes that a person of ordinary skill in the art is fully capable of implementing the technical solutions within the protection scope of the various claims in this application.

II. List of replacement sheet for document revision

Page 1-3 of the Claims.

Based on the above statements and after the amendments described above have been made to the application document, it's believed that this application is now in full conformity with the provisions of the Patent Law of China and its implementing rules. Therefore, the examiner is requested to grant authorization to this application as soon as possible. If the examiner believes that this application is still not eligible for the grant of a patent, it's hoped that the examiner will serve a written notice or make a call and give the applicant another opportunity to present his arguments. In conclusion, the applicant is willing to cooperate closely with the examiner so that this application can be granted authorization as soon as possible.

CCPIT Patent & Trademark Law Office

Agent: Cai Shengyou

Tel.: 66046119

Claims

1. A method of increasing the capacity, average operating voltage and specific energy of a secondary lithium-ion battery or battery pack, characterized in that the limited charge voltage of the single lithium-ion battery is greater than 4.2V, but not more than 5.8V, wherein ~~a limited charge voltage of 4.3V to 5.2V is preferred, and more preferably 4.3V to 4.8V;~~ the positive and negative electrode ratio of the single lithium-ion battery is calculated to be 1:1.0 to 1:2.5 based on the theoretical gram capacity at a limited charge voltage of 4.2 V, ~~and such a ratio within 1:1.15 to 1:2.5 is preferred.~~

2. The method according to claim 1, characterized in that the said limited charge voltage is in the range of 4.3V to 5.2V.

3. The method according to claim 1, characterized in that the said limited charge voltage is in the range of 4.3V to 4.8V.

4. The method according to any one of claims 1-3, characterized in that the positive and negative electrode ratio of the said single lithium-ion battery is calculated to be 1:1.15 to 1:2.5 based on the theoretical gram capacity at a limited charge voltage of 4.2 V.

2.5.A secondary lithium-ion battery or battery pack, characterized in that the limited charge voltage of the single lithium-ion battery is greater than 4.2V, but not more than 5.8V, wherein ~~a limited charge voltage of 4.3V to 5.2V is preferred, and more preferably 4.3V to 4.8V;~~ the positive and negative electrode ratio of the single lithium-ion battery is calculated to be 1:1.0 to 1:2.5 based on the theoretical gram capacity at a limited charge voltage of 4.2 V, ~~and such a ratio within 1:1.15 to 1:2.5 is preferred.~~

6. The secondary lithium-ion battery or battery pack according to claim 5, characterized in that the limited charge voltage of the said single lithium-ion battery is in the range of 4.3V to 5.2V.

7. The secondary lithium-ion battery or battery pack according to claim 5, characterized in that the limited charge voltage of the said single lithium-ion battery is in the range of 4.3V to 4.8V.

8. The secondary lithium-ion battery or battery pack according to any one of claims 5-7, characterized in that the positive and negative electrode ratio of the said single lithium-ion battery is calculated to be 1:1.15 to 1:2.5 based on the theoretical gram capacity at a limited charge voltage of 4.2 V.

3.9. The secondary lithium-ion battery or battery pack according to any one of claims 5-7, characterized in that the initial overcharge protection voltage of the single lithium-ion battery is

greater than 4.35V and the overcharge protection release charge is greater than 4.15V, ~~and it's preferred that the initial overcharge protection voltage is more than 4.45V and the overcharge protection release voltage is more than 4.25V.~~

10. The secondary lithium-ion battery or battery pack according to claim 9, characterized in that the initial overcharge protection voltage of the said single lithium-ion battery is greater than 4.45V and the overcharge protection release voltage is greater than 4.25V.

~~4.11. A protective circuit for the secondary lithium-ion battery or battery pack according to any one of claims 5-102 or 3, characterized in that the initial overcharge protection voltage of the single lithium-ion battery is greater than 4.35V and the overcharge protection release charge is greater than 4.15V, and it's preferred that the initial overcharge protection voltage is more than 4.45V and the overcharge protection release voltage is more than 4.25V.~~

12. The protective circuit according to claim 11, characterized in that the initial overcharge protection voltage of the single lithium-ion battery is greater than 4.45V and the overcharge protection release charge is greater than 4.25V.

~~5.13.~~An electronic device powered with the secondary lithium-ion battery or battery pack, characterized in that the electronic device is equipped with a protective circuit that enables the initial overcharge protection voltage of the single lithium-ion battery to be greater than 4.35V and the overcharge protection release voltage to be greater than 4.15V.

14. The electronic device according to claim 13, characterized in that the electronic device is equipped with a protective circuit that enables the initial overcharge protection voltage of the single lithium-ion battery to be greater than 4.45V and the overcharge protection release voltage to be greater than 4.25V.

Claims

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1. A method of increasing the capacity, average operating voltage and specific energy of a secondary lithium-ion battery or battery pack, characterized in that the limited charge voltage of the single lithium-ion battery is greater than 4.2V, but not more than 5.8V; the positive and negative electrode ratio of the single lithium-ion battery is calculated to be 1:1.0 to 1:2.5 based on the theoretical gram capacity at a limited charge voltage of 4.2 V.
2. The method according to claim 1, characterized in that the said limited charge voltage is in the range of 4.3V to 5.2V.
3. The method according to claim 1, characterized in that the said limited charge voltage is in the range of 4.3V to 4.8V.
4. The method according to any one of claims 1-3, characterized in that the positive and negative electrode ratio of the said single lithium-ion battery is calculated to be 1:1.15 to 1:2.5 based on the theoretical gram capacity at a limited charge voltage of 4.2 V.
5. A secondary lithium-ion battery or battery pack, characterized in that the limited charge voltage of the single lithium-ion battery is greater than 4.2V, but not more than 5.8V; the positive and negative electrode ratio of the single lithium-ion battery is calculated to be 1:1.0 to 1:2.5 based on the theoretical gram capacity at a limited charge voltage of 4.2 V.
6. The secondary lithium-ion battery or battery pack according to claim 5, characterized in that the limited charge voltage of the said single lithium-ion battery is in the range of 4.3V to 5.2V.
7. The secondary lithium-ion battery or battery pack according to claim 5, characterized in that the limited charge voltage of the said single lithium-ion battery is in the range of 4.3V to 4.8V.
8. The secondary lithium-ion battery or battery pack according to any one of claims 5-7, characterized in that the positive and negative electrode ratio of the said single lithium-ion battery is calculated to be 1:1.15 to 1:2.5 based on the theoretical gram capacity at a limited charge voltage of 4.2 V.
9. The secondary lithium-ion battery or battery pack according to any one of claims 5-7, characterized in that the initial overcharge protection voltage of the single lithium-ion battery is greater than 4.35V and the overcharge protection release voltage is greater than 4.15V.
10. The secondary lithium-ion battery or battery pack according to claim 9, characterized in that the initial overcharge protection voltage of the said single lithium-ion battery is greater than 4.45V and the overcharge protection release voltage is greater than 4.25V.

11. A protective circuit for the secondary lithium-ion battery or battery pack according to any one of claims 5-10, characterized in that the initial overcharge protection voltage of the single lithium-ion battery is greater than 4.35V and the overcharge protection release voltage is greater than 4.15V.

12. The protective circuit according to claim 11, characterized in that the initial overcharge protection voltage of the single lithium-ion battery is greater than 4.45V and the overcharge protection release charge is greater than 4.25V.

13. An electronic device powered with the secondary lithium-ion battery or battery pack, characterized in that the electronic device is equipped with a protective circuit that enables the initial overcharge protection voltage of the single lithium-ion battery to be greater than 4.35V and the overcharge protection release voltage to be greater than 4.15V.

14. The electronic device according to claim 13, characterized in that the electronic device is equipped with a protective circuit that enables the initial overcharge protection voltage of the single lithium-ion battery to be greater than 4.45V and the overcharge protection release voltage to be greater than 4.25V.

电子扫描(3)

☐ 初审程序    ☐ 授权后程序  
☒ 实审程序    ☐ 撤销程序

**意见陈述书**

请按照本表背面“填表注意事项”正确填写本表各栏

IDC010033

|                                                                                                                               |                                     |                                                                                                        |                 |
|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--------------------------------------------------------------------------------------------------------|-----------------|
| ①<br>专<br>利<br>或<br>申<br>请<br>利                                                                                               | 申请号或专利号 01141615.7                  |                                                                                                        | 申请日 2001年09月28日 |
|                                                                                                                               | 发明创造 二次锂离子电池或电池组、其保护电路以及电子装置<br>名 称 |                                                                                                        |                 |
|                                                                                                                               | 当<br>事<br>人                         | <input checked="" type="checkbox"/> 申请人或专利权人姓名或名称<br><input type="checkbox"/> 撤销专利权请求人姓名或名称<br><br>任晓平 |                 |
| ②                                                                                                                             |                                     |                                                                                                        |                 |
| 对专利局 2004年06月25日 作出的上述 <input checked="" type="checkbox"/> 专利申请 <input type="checkbox"/> 专利 的<br>第一次审查意见 通知书, 陈述意见如下:<br>请见附页 |                                     |                                                                                                        |                 |
| ③ 附件清单 权利要求书替换页, 一式二份, 共4页;<br>修改手稿, 一式一份, 2页。                                                                                |                                     |                                                                                                        |                 |
| ④ 当事人或代理机构签章<br>中国国际贸易促进委员会<br>专利商标事务所<br>专利申请专, 2004年10月19日                                                                  |                                     | ⑤ 专利局处理意见<br><br>年 月 日                                                                                 |                 |

1011-A

134/ 27-1-27

意见陈述书附页

扫描(3)

申请人认真阅读并仔细研究了审查员发出的第一次审查意见通知书。现在此基础上提出答复意见如下：

一、对申请文件的修改和对审查意见的逐一陈述

1、对于审查意见1提出的单一性问题。申请人指出，权利要求1涉及提高二次锂离子电池或电池组的容量、工作电压和比能量的方法，权利要求2涉及二次锂离子电池或电池组，权利要求4涉及二次锂离子电池或电池组的保护电路，权利要求5涉及以二次锂离子电池或电池组为能源的电子装置，以上各发明主题均具有以下特定技术特征：提高充电限制电压或首次过充保护电压和过充保护释放电压，并相应调整单体锂离子电池的正负极配比。在常规锂离子电池或电池组中，其充电限制电压、首次过充保护电压和过充保护释放电压均低于本发明。因此，按照专利法关于单一性的规定，本发明上述各个权利要求均具有单一性。

2、对于审查意见2，申请人陈述如下：

2.1) 对于权利要求1、2中所述的“正负极配比”，可以容易地计算如下。所述的正负极配比 = 锂离子电池正极活性物质的量与其相对于金属锂的充电电位为4.2V时的比容量(克容量，即单位量的活性物质的容量)的乘积/锂离子电池负极活性物质的量与其相对于金属锂的充电电位为4.2V时的比容量(克容量)的乘积。各种常规活性物质的比容量是本领域公知的，本领域技术人员可以很方便地计算上述正负极配比。因此，它对本领域技术人员而言是清楚的。

意见陈述书附页

扫描(3)

申请人认真阅读并仔细研究了审查员发出的第一次审查意见通知书。现在此基础上提出答复意见如下：

一、对申请文件的修改和对审查意见的逐一陈述

1、对于审查意见 1 提出的单一性问题。申请人指出，权利要求 1 涉及提高二次锂离子电池或电池组的容量、工作电压和比能量的方法，权利要求 2 涉及二次锂离子电池或电池组，权利要求 4 涉及二次锂离子电池或电池组的保护电路，权利要求 5 涉及以二次锂离子电池或电池组为能源的电子装置，以上各发明主题均具有以下特定技术特征：提高充电限制电压或首次过充保护电压和过充保护释放电压，并相应调整单体锂离子电池的正负极配比。在常规锂离子电池或电池组中，其充电限制电压、首次过充保护电压和过充保护释放电压均低于本发明。因此，按照专利法关于单一性的规定，本发明上述各个权利要求均具有单一性。

2、对于审查意见 2，申请人陈述如下：

2.1) 对于权利要求 1、2 中所述的“正负极配比”，可以容易地计算如下。所述的正负极配比 = 锂离子电池正极活性物质的量与其相对于金属锂的充电电位为 4.2V 时的比容量(克容量，即单位量的活性物质的容量)的乘积/锂离子电池负极活性物质的量与其相对于金属锂的充电电位为 4.2V 时的比容量(克容量)的乘积。各种常规活性物质的比容量是本领域公知的，本领域技术人员可以很方便地计算上述正负极配比。因此，它对本领域技术人员而言是清楚的。

子扫描(3)

2.2) 此外, 删去权利要求 1 和 2 中的优选范围, 并记载在新的从属权利要求中。

2.3) 对于权利要求 4 的发明主题, 如上述意见陈述 1 所述, 本发明的保护电路与现有技术的区别仅仅在于仅仅改变首次过充保护电压和过充保护释放电压。至于电路结构等特征, 可以与现有技术相同, 按照审查指南关于独立权利要求的撰写规定, 不应记载在权利要求 4 中 (参见审查指南第 2 部分第 2 章第 2-30 页)。

3. 对于审查意见 3, 对于“正负极配比”, 可以参见上述意见陈述 2.1。对于所述的物质 A、具有较高分解电位的电解液 B 和化合物 C, 首先, 所述的物质 A、B、C 仅仅出现在某些实施例, 即使不使用所述的 A、B、C 等物质, 也能够实现本发明。换言之, 本发明不依赖于所述的物质 A、B、C。如说明书第 6 页第 2 段所述, “也可以”使用物质 A 或具有较高分解电位的电解液 B, 而不是必须的。其次, 对于本领域技术人员, 本发明已经给出了一般性的教导, 按照本发明公开的内容, 在不花费创造性劳动的前提下, 本领域技术人员也可能选择适当的物质 A、B、C。例如, 本发明已经公开, 电解液 B 用于获得较高分解电位, 因此, 本领域技术人员能够选择适当的成分获得具有较高分解电位的电解液。申请人相信, 本领域普通技术人员完全能够实施的本申请各个权利要求所保护的技术方案。

电子扫描(3)

二、修改文件替换页清单

权利要求书第 1-3 页。

经过以上陈述以及对申请文本作出以上修改之后，相信本申请至此已完全符合中国专利法及其实施细则之规定。因此，恳请审查员早日对本申请予以授权。如审查员认为本申请至此仍然不具备授予专利权的条件，也希望审查员能来函或来电，再次给予申请人陈述意见的机会。总之，申请人愿与审查员密切配合，以使本申请能够尽早授权。

中国国际贸易促进委员会专利商标事务所  
代理人：蔡胜有  
电话：66046119

权利要求书

电子扫描(3分)  
丁

1. 提高二次锂离子电池或电池组的容量、平均工作电压和比能量的方法，其特征在于对该单体锂离子电池的充电限制电压大于4.2V，但不超过5.8V，优选该充电限制电压在4.3V~5.2V，更优选在4.3V~4.8V；单体锂离子电池的正、负极的配比按充电限制电压为4.2V时的理论克容量计算在1: 1.0~1:2.5，优选该配比在1: 1.15~1:2.5。
2. 如权利要求1所述的方法，其特征在于所述充电限制电压在4.3V~5.2V。
3. 如权利要求1所述的方法，其特征在于所述充电限制电压在4.3V~4.8V。
4. 如权利要求1-3中任一项所述的方法，其特征在于所述单体锂离子电池的正、负极的配比按充电限制电压为4.2V时的理论克容量计算在1: 1.15~1:2.5。
- 2.5. 二次锂离子电池或电池组，其特征在于该单体锂离子电池的充电限制电压大于4.2V，但不超过5.8V，优选该充电限制电压在4.3V~5.2V，更优选在4.3V~4.8V；其单体锂离子电池的正、负极的配比按充电限制电压为4.2V时的理论克容量计算在1: 1.0~1:2.5，优选该配比在1: 1.15~1:2.5。
6. 如权利要求5所述的二次锂离子电池或电池组，其特征在于所述单体锂离子电池的充电限制电压在4.3V~5.2V。
7. 如权利要求5所述的二次锂离子电池或电池组，其特征在于所述单体锂离子电池的充电限制电压在4.3V~4.8V。
8. 如权利要求5-7中任一项所述的二次锂离子电池或电池组，其特征在于所述单体锂离子电池的正、负极的配比按充电限制电压为4.2V时的理论克容量计算在1: 1.15~1:2.5。
- 3.9. 如权利要求5-7中任一项2所述的二次锂离子电池或电池组，其特征在于单体锂离子电池首次过充保护电压大于4.35V，过充保护释放电电压大于4.15V，优选在其首次过充保护电压大于4.45V，过充保护释放电

电子扫描(2)

大于 4.25V。

10. 如权利要求 9 所述的二次锂离子电池或电池组,其特征在於所述单体锂离子电池首次过充保护电压大于 4.45V, 过充保护释放电压大于 4.25V。

4.11. 用于权利要求 5-10 中任一项 2 或 3 的二次锂离子电池或电池组的保护电路, 其特征在於其单体锂离子电池首次过充保护电压大于 4.35V, 过充保护释放电压大于 4.15V, 优选在其首次过充保护电压大于 4.45V, 过充保护释放电压大于 4.25V。

12. 如权利要求 11 所述的保护电路, 其特征在於其单体锂离子电池首次过充保护电压大于 4.45V, 过充保护释放电压大于 4.25V。

5.13. 以二次锂离子电池或电池组为能源的电子装置, 其特征在於该电子装置具有使单体锂离子电池的首次过充保护电压大于 4.35V、过充保护释放电压大于 4.15V 的的保护电路。

14. 如权利要求 13 所述的电子装置, 其特征在於该电子装置具有使单体锂离子电池的首次过充保护电压大于 4.45V、过充保护释放电压大于 4.25V 的的保护电路。

电子扫描(3)

## 权利要求书

1. 提高二次锂离子电池或电池组的容量、平均工作电压和比能量的方法，其特征在于对该单体锂离子电池的充电限制电压大于 4.2V，但不超过 5.8V，单体锂离子电池的正、负极的配比按充电限制电压为 4.2V 时的理论克容量计算在 1: 1.0 ~ 1:2.5。
2. 如权利要求 1 所述的方法，其特征在于所述充电限制电压在 4.3V ~ 5.2V。
3. 如权利要求 1 所述的方法，其特征在于所述充电限制电压在 4.3V ~ 4.8V。
4. 如权利要求 1-3 中任一项所述的方法，其特征在于所述单体锂离子电池的正、负极的配比按充电限制电压为 4.2V 时的理论克容量计算在 1: 1.15 ~ 1:2.5。
5. 二次锂离子电池或电池组，其特征在于该单体锂离子电池的充电限制电压大于 4.2V，但不超过 5.8V；其单体锂离子电池的正、负极的配比按充电限制电压为 4.2V 时的理论克容量计算在 1: 1.0 ~ 1:2.5。
6. 如权利要求 5 所述的二次锂离子电池或电池组，其特征在于所述单体锂离子电池的充电限制电压在 4.3V ~ 5.2V。
7. 如权利要求 5 所述的二次锂离子电池或电池组，其特征在于所述单体锂离子电池的充电限制电压在 4.3V ~ 4.8V。
8. 如权利要求 5-7 中任一项所述的二次锂离子电池或电池组，其特征在于所述单体锂离子电池的正、负极的配比按充电限制电压为 4.2V 时的理论克容量计算在 1: 1.15 ~ 1:2.5。
9. 如权利要求 5-7 中任一项所述的二次锂离子电池或电池组，其特征在于单体锂离子电池首次过充保护电压大于 4.35V，过充保护释放电压大于 4.15V，。
10. 如权利要求 9 所述的二次锂离子电池或电池组，其特征在于所述单体锂离子电池首次过充保护电压大于 4.45V，过充保护释放电压大于 4.25V。



11. 用于权利要求 5-10 中任一项的二次锂离子电池或电池组的保护电路，其特征在于其单体锂离子电池首次过充保护电压大于 4.35V，过充保护释放电压大于 4.15V。

12. 如权利要求 11 所述的保护电路，其特征在于其单体锂离子电池首次过充保护电压大于 4.45V，过充保护释放电压大于 4.25V。

13. 以二次锂离子电池或电池组为能源的电子装置，其特征在于该电子装置具有使单体锂离子电池的首次过充保护电压大于 4.35V、过充保护释放电压大于 4.15V 的的保护电路。

14. 如权利要求 13 所述的电子装置，其特征在于该电子装置具有使单体锂离子电池的首次过充保护电压大于 4.45V、过充保护释放电压大于 4.25V 的的保护电路。