CLAIMS

1. A battery state of charge (SOC) evaluation method, comprising:

acquiring charging-discharging data of a first battery cell pack at different first temperatures and different first rates, wherein the number of the first battery cell pack is at least one, and the first battery cell pack comprises a first battery cell;

acquiring first SOCs of the first battery cell pack according to the charging-discharging data, wherein the charging-discharging data comprises first voltages of the first battery cell pack;

establishing an association table of the first SOCs with the first temperatures, the first rates and the first voltages, wherein the first battery cell pack is taken as an experimental object when establishing the association table;

acquiring a second temperature, a second rate and a second voltage of a battery pack, and acquiring a second SOC of each second battery cell in the battery pack by the association table, wherein the battery pack comprises multiple second battery cells, and a model of the first battery cell is consistent with a model of the second battery cell.

2. The method according to claim 1, wherein acquiring the charging-discharging data of the first battery cell pack at different first temperatures and different first rates comprises:

acquiring the different first temperatures according to a preset change parameter, and controlling a measuring space to reach the first temperatures, wherein the measuring space is used for placing the first battery cell pack;

if each first battery cell pack comprises only one first battery cell, at each same first temperature, acquiring charging-discharging data of the first battery cell of each first battery cell pack at the different first rates;

if each first battery cell pack comprises at least two first battery cells, at each same first temperature, acquiring charging-discharging data of at least two first battery cells, individually and in combination, of each first battery cell pack at the different first rates.

3. The method according to claim 2, wherein if each first battery cell pack

comprises only one first battery cell, the method further comprises:

at each same first temperature, acquiring a first charging-discharging parameter of the first battery cell of each first battery cell pack at a same first rate;

acquiring the charging-discharging data of the first battery cell pack according to a first average value of the first charging-discharging parameter of at least one first battery cell at the same first rate and the first charging-discharging parameter;

if each first battery cell pack comprises at least two first battery cells, the method further comprises:

at each same first temperature, acquiring a second charging-discharging parameter of at least two first battery cells, individually and in combination, of each first battery cell pack at the same first rate;

acquiring the charging-discharging data of the first battery cell pack according to a second average value of the second charging-discharging parameter of at least one first battery cell pack at the same first rate and the second charging-discharging parameter.

4. The method according to claim 1, wherein establishing the association table of the first SOCs with the first temperatures, the first rates and the first voltages comprises:

for each first battery cell pack, associating the first temperatures and the first rates for acquiring the charging-discharging data with the first voltages in the charging-discharging data to obtain a first association set;

associating the first voltages in the charging-discharging data for acquiring the first SOCs with the first SOCs to obtain a second association set;

acquiring the association table according to the first association set and the second association set.

5. The method according to claim 1, wherein acquiring the second temperature, the second rate and the second voltage of the battery pack comprises:

acquiring a historical current and a historical temperature of the battery pack in a preset historical time period, and acquiring the second voltage and the second rate according to the historical current;

acquiring the second temperature of the battery pack according to the historical temperature.

6. The method according to claim 5, wherein acquiring the second voltage according to the historical current comprises:

acquiring a current variation according to the preset historical time period and the historical current;

acquiring a first coefficient according to the preset historical time period, a first parameter and a third parameter of the battery pack;

acquiring a second coefficient according to the preset historical time period, a second parameter and a fourth parameter of the battery pack;

acquiring a voltage compensation value according to the current variation, the first parameter, the second parameter, the first coefficient and the second coefficient;

acquiring the second voltage according to the voltage compensation value and a voltage value of the battery pack in a current state;

wherein the first parameter and the second parameter are different resistance parameters of the battery pack, and the third parameter and the fourth parameter are different capacitance parameters of the battery pack.

7. The method according to claim 2, wherein before controlling the measuring space to reach the first temperatures, the method further comprises:

acquiring a start time node where a humidity of the measuring space does not exceed a preset humidity;

acquiring a standing time length of the measuring space according to the start time node and a current time node, wherein the standing time length is a time length when the humidity of the measuring space does not exceed the preset humidity continuously;

if the standing time length exceeds a preset time length, confirming to place the first battery cell pack in the measuring space.

8. A battery state of charge (SOC) evaluation apparatus, comprising:

an acquiring module, configured to acquire charging-discharging data of a first battery cell pack at different first temperatures and different first rates, wherein the

number of the first battery cell pack is at least one, and the first battery cell pack comprises a first battery cell;

a processing module, configured to acquire first SOCs of the first battery cell pack according to the charging-discharging data, wherein the charging-discharging data comprises first voltages of the first battery cell pack;

an associating module, configured to establish an association table of the first SOCs with the first temperatures, the first rates and the first voltages, wherein the first battery cell pack is taken as an experimental object when establishing the association table;

an evaluating module, configured to acquire a second temperature, a second rate and a second voltage of a battery pack, and acquire a second SOC of each second battery cell in the battery pack by the association table, wherein the battery pack comprises multiple second battery cells, and a model of the first battery cell is consistent with a model of the second battery cell.

9. The apparatus according to claim 8, wherein the acquiring module is specifically configured to:

acquire the different first temperatures according to a preset change parameter, and control a measuring space to reach the first temperatures, wherein the measuring space is used for placing the first battery cell pack;

if each first battery cell pack comprises only one first battery cell, at each same first temperature, acquire charging-discharging data of the first battery cell of each first battery cell pack at the different first rates;

if each first battery cell pack comprises at least two first battery cells, at each same first temperature, acquire charging-discharging data of at least two first battery cells, individually and in combination, of each first battery cell pack at the different first rates.

10. The apparatus according to claim 9, wherein the acquiring module is further configured to:

if each first battery cell pack comprises only one first battery cell,

at each same first temperature, acquire a first charging-discharging parameter of

the first battery cell of each first battery cell pack at a same first rate;

acquire the charging-discharging data of the first battery cell pack according to a first average value of the first charging-discharging parameter of at least one first battery cell at the same first rate and the first charging-discharging parameter;

if each first battery cell pack comprises at least two first battery cells,

at each same first temperature, acquire a second charging-discharging parameter of at least two first battery cells, individually and in combination, of each first battery cell pack at the same first rate;

acquire the charging-discharging data of the first battery cell pack according to a second average value of the second charging-discharging parameter of at least one first battery cell pack at the same first rate and the second charging-discharging parameter.

11. The apparatus according to claim 8, wherein the associating module is specifically configured to:

for each first battery cell pack, associate the first temperatures and the first rates for acquiring the charging-discharging data with the first voltages in the charging-discharging data to obtain a first association set;

associate the first voltages in the charging-discharging data for acquiring the first SOCs with the first SOCs to obtain a second association set;

acquire the association table according to the first association set and the second association set.

12. The apparatus according to claim 8, wherein the evaluating module is specifically configured to:

acquire a historical current and a historical temperature of the battery pack in a preset historical time period, and acquire the second voltage and the second rate according to the historical current;

acquire the second temperature of the battery pack according to the historical temperature.

13. The apparatus according to claim 12, wherein the evaluating module is specifically configured to:

acquire a current variation according to the preset historical time period and the historical current;

acquire a first coefficient according to the preset historical time period, a first parameter and a third parameter of the battery pack;

acquire a second coefficient according to the preset historical time period, a second parameter and a fourth parameter of the battery pack;

acquire a voltage compensation value according to the current variation, the first parameter, the second parameter, the first coefficient and the second coefficient;

acquire the second voltage according to the voltage compensation value and a voltage value of the battery pack in a current state;

wherein the first parameter and the second parameter are different resistance parameters of the battery pack, and the third parameter and the fourth parameter are different capacitance parameters of the battery pack.

14. The apparatus according to claim 9, wherein the acquiring module is specifically configured to: before controlling the measuring space to reach the first temperatures,

acquire a start time node where a humidity of the measuring space does not exceed a preset humidity;

acquire a standing time length of the measuring space according to the start time node and a current time node, wherein the standing time length is a time length when the humidity of the measuring space does not exceed the preset humidity continuously;

if the standing time length exceeds a preset time length, confirm to place the first battery cell pack in the measuring space.

15. A battery state of charge (SOC) evaluation device, comprising: at least one processor and a memory;

wherein the memory stores computer-executable instructions;

the at least one processor executes the computer-executable instructions stored in the memory, so that the at least one processor executes the battery SOC evaluation method according to any one of claims 1-7.

16. A computer-readable storage medium, having a computer program stored thereon, wherein steps of the battery SOC evaluation method according to any one of claims 1-7 are implemented when the computer program is executed by a processor.