53. The method of any one of claims 45 to 52, further comprising:

determining derivative enthalpies of the battery for a plurality of charging states of the battery; and

evaluating the health state of the battery based on the determined derivative enthalpies of the battery for the plurality of charging states of the battery.

54. The method of any one of claims 45 to 53, further comprising:

determining derivative entropies of the battery for a plurality of charging states of the battery; and

evaluating the health state of the battery based on the determined derivative entropies of the battery for the plurality of charging states of the battery.

55. The method of any one of claims ~~3045~~ to 54, further comprising:

determining differential enthalpies of the battery for a plurality of charging states of the battery; and

evaluating the health state of the battery based on the determined differential enthalpies of the battery for the plurality of charging states of the battery.

56. The method of any one of claims 45 to 55, further comprising:

determining differential entropies of the battery for a plurality of charging states of the battery; and

evaluating the health state of the battery based on the determined differential entropies of the battery for the plurality of charging states of the battery.

53. The method of any one of claims 45 to 52, further comprising:

determining derivative enthalpies of the battery for a plurality of charging states of the battery; and

evaluating the health state of the battery based on the determined derivative enthalpies of the battery for the plurality of charging states of the battery.

54. The method of any one of claims 45 to 53, further comprising:

determining derivative entropies of the battery for a plurality of charging states of the battery; and

evaluating the health state of the battery based on the determined derivative entropies of the battery for the plurality of charging states of the battery.

55. The method of any one of claims 45 to 54, further comprising:

determining differential enthalpies of the battery for a plurality of charging states of the battery; and

evaluating the health state of the battery based on the determined differential enthalpies of the battery for the plurality of charging states of the battery.

56. The method of any one of claims 45 to 55, further comprising:

determining differential entropies of the battery for a plurality of charging states of the battery; and

evaluating the health state of the battery based on the determined differential entropies of the battery for the plurality of charging states of the battery.