**Supplementary material: Influence of geometrical manufacturing tolerances on lithium-ion battery performance**

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Table S1: Experimental procedure for steady state discharge tests

|  |  |  |  |
| --- | --- | --- | --- |
| **Step no.** | **Experimental step** | **Current rate** | **Stop criterion** |
| 1 | Set simulated cell parameters for Negative electrode coating tolerance to initial process tolerance values of -5% | - | - |
| 2 | Constant current discharge (20 min log periods) | C/50 | V <= 2.5V |
| 3 | Set simulated cell parameters to next 1% increment of process tolerance values | - | - |
| 4 | Repeat steps 2 to 3 | - | Process tolerance value > 5% |
| 5 | Set simulated cell parameters for Negative electrode calendering tolerance to initial process tolerance values of -5% |  |  |
| 6 | Repeat steps 2 to 3 | - | Process tolerance value > 5% |
| 7 | Set simulated cell parameters for Positive electrode coating tolerance to initial process tolerance values of -5% |  |  |
| 8 | Repeat steps 2 to 3 | - | Process tolerance value > 5% |
| 9 | Set simulated cell parameters for Positive electrode calendering tolerance to initial process tolerance values of -5% |  |  |
| 10 | Repeat steps 2 to 3 | - | Process tolerance value > 5% |
| 11 | Set simulated cell parameters for Electrode height to initial process tolerance values of -5% |  |  |
| 12 | Repeat steps 2 to 3 | - | Process tolerance value > 5% |
| 13 | Set simulated cell parameters for Electrode width to initial process tolerance values of -5% |  |  |
| 14 | Repeat steps 2 to 3 | - | Process tolerance value > 5% |
| 15 | End test |  |  |

Table S2: Experimental procedure for step load discharge tests

|  |  |  |  |
| --- | --- | --- | --- |
| **Step no.** | **Experimental step** | **Current rate** | **Stop criterion** |
| 1 | Set simulated cell parameters for Negative electrode coating tolerance to initial process tolerance values of -5% | - | - |
|  | **Single Pulse Cycle** |  |  |
| 2 | Voltage relaxation(0.1s log periods) | 0 | t >= 100s |
| 3 | Voltage relaxation(10s log periods) | 0 | t >= 800s |
| 4 | Constant current discharge (0.1s log period) | 5A | t >= 1s or V <= 2.5V |
| 5 | Constant current discharge (10s log period) | 5A | t >= 198s or V <= 2.5V |
| 6 | Constant current discharge (0.1s log period) | 5A | t >= 1s or V <= 2.5V |
| 7 | Repeat steps 2 to 6 | - | V <= 2.5V |
|  | **End of single discharge test** |  |  |
| 8 | Set simulated cell parameters to next 1% increment of process tolerance values | - | - |
| 9 | Repeat steps 2 to 7 | - | Process tolerance value > 5% |
| 10 | Set simulated cell parameters for Negative electrode calendering tolerance to initial process tolerance values of -5% | - | - |
| 11 | Repeat steps 2 to 9 | - | Process tolerance value > 5% |
| 12 | Set simulated cell parameters for Positive electrode coating tolerance to initial process tolerance values of -5% | - | - |
| 13 | Repeat steps 2 to 9 | - | Process tolerance value > 5% |
| 14 | Set simulated cell parameters for Positive electrode calendering tolerance to initial process tolerance values of -5% | - | - |
| 15 | Repeat steps 2 to 9 | - | Process tolerance value > 5% |
| 16 | Set simulated cell parameters for Electrode height to initial process tolerance values of -5% | - | - |
| 17 | Repeat steps 2 to 9 | - | Process tolerance value > 5% |
| 18 | Set simulated cell parameters for Electrode width to initial process tolerance values of -5% | - | - |
| 19 | Repeat steps 2 to 9 | - | Process tolerance value > 5% |
| 20 | End test | - | - |