### Supplementary Information

# Environmental and economic assessment of structural repair technologies for spent lithium-ion battery cathode materials

**Table S1. ICP test results and *I*003/*I*104 values for failing and repaired materials**

|  |  |  |  |
| --- | --- | --- | --- |
| Sample | Target Composition | Actual composition | *I*003/*I*104 |
| BLCO | LixCoO2 | Li0.491CoO2 | 8.03 |
| RLCO1 | LiCoO2 | Li0.906CoO2 | 1.59 |
| RLCO1.05 | Li1.05CoO2 | Li0.934CoO2 | 1.20 |
| RLCO1.1 | Li1.1CoO2 | Li0.921CoO2 | 1.86 |

**Table S2. Resistance parameters of the equivalent circuit in EIS test with the fitting error rates in parentheses**

|  |  |  |
| --- | --- | --- |
|  | *R*s / Ω | *R*ct / Ω |
| BLCO | 1.151 (9.59%) | 189.6 (1.68%) |
| RLCO1 | 1.419 (5.42%) | 102.1 (2.77%) |
| RLCO1.05 | 1.112 (7.93%) | 107.8 (1.56%) |
| RLCO1.1 | 1.034 (8.49%) | 144.3 (1.94%) |



**Fig. S1. Cost of each stage of regeneration of 1 kg of cathode material by different methods.**