Supplementary Material

**Table S1.** Used reference patterns for qualitative phase analysis

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| Phase | PDF number |
| LiCoO2 | PDF#50-0653 |
| LiFePO4 | PDF#83-2092 |
| LiMn2O4 | PDF#88-1749 |
| Li0.51Ni1.16O2 | PDF#70-3274 |
| Li0.99Ni0.01NiO2 | PDF#85-1967 |
| LiNi0.5Mn1.5O4 | PDF#80-2162 |
| Graphite | PDF#89-8487 |
| Li4Ti5O12 | PDF#49-0207 |
| Li3InCl6 | PDF#70-3274 |
| Li2OHCl | PDF#52-1159 |
| LiTi2(PO4)3 | PDF#35-0754 |
| Li10GeP2S12 | PDF#024-8307 |
| Li0.06NiO2 | PDF#49-0035 |
| InOCl | PDF#73-1560 |
| LiCl | PDF#04-0664 |
| LiOH | PDF#32-0564 |
| LiO | PDF#74-0115 |
| In2O3 | PDF#06-0416 |
| Li3PO4 | PDF#48-0956 |
| AlPO4 | PDF#45-0509 |
| Li2S | PDF#23-0369 |
| GeP5 | PDF#24-0455 |

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**FIGURE S2**. DSC and TG results of Li2OHCl (A), Li3InCl6 (B)

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**FIGURE S3**. XRD patterns of LCO/LOHC (A), LFP/LOHC (B), LMO/LOHC (C), LCO/LIC (D), LFP/LIC (E), LMO/LIC (F) mixtures that were sintered at 170, 320 °C and mixed powder at room temperature. Table S1 lists the consulted reference patterns.